Do educational systems generate well-being inequalities? : an international comparative analysis

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▶ To cite this version:

Janine Jongbloed. Do educational systems generate well-being inequalities? : an international comparative analysis. Education. Université Bourgogne Franche-Comté, 2018. English. NNT : 2018UBFCH020 . tel-02083978

HAL Id: tel-02083978
https://theses.hal.science/tel-02083978

Submitted on 29 Mar 2019

THÈSE DE DOCTORAT DE L'ÉTABLISSEMENT UNIVERSITÉ BOURGOGNE FRANCHE-COMTÉ PREPARÉE À L'INSTITUT DE RECHERCHE SUR L'ÉDUCATION (IREDU)

École doctorale SEPT

Doctorat de Sciences de l'Éducation (CNU 70)

par
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Les systèmes éducatifs engendrent-ils des inégalités de bien-être ?
Une recherche comparative internationale

Thèse présentée et soutenue publiquement à Dijon, le 4 décembre 2018

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Titre en anglais : « Do educational systems generate well-being inequalities?
An international comparative analysis »

Pour Héloïse

Remerciements

Je tiens tout d'abord à remercier toute l'équipe de l'IREDU : mes camarades doctorant(e)s, les professeur(e)s, et le personnel qui m'ont aidée, accompagnée, et encouragée dès mes débuts à l'université de Bourgogne (et en France) jusqu'à cette soutenance. Je voudrais remercier plus particulièrement Jean-François Giret, le directeur de l'IREDU, pour son implication et son professionnalisme exceptionnels. Je ne saurais imaginer de meilleur « chez-soi » pour cette thèse que l'IREDU.

Je remercie mes directeurs de thèse, Jean-François Giret et Jake Murdoch, pour leurs retours et conseils précieux sur ma thèse et sur d'autres productions scientifiques ces dernières années. J'aimerais également remercier les membres du jury, dont j'admire les travaux. J'ai trouvé de l'inspiration pour mes propres recherches dans leurs théories et études empiriques riches et variées, et je suis honorée qu'ils aient accepté d'évaluer ce travail de recherche.

Finally, thank you to my parents, who instilled in me a love of learning and the perseverance to see a long project through to its conclusion (step-by-step and day-by-day); as well as my brother and sister, and all of my family and friends in Canada, who have supported me from afar. Of course, this list would not be complete without thanking my husband, Rafaël, for his precious daily encouragement, without which this thesis would not have been possible.

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Introduction

1. *Résumé en français*

Cette thèse étudie le lien entre l'éducation post-secondaire et le bien-être, dans une perspective comparative internationale, utilisant une conceptualisation du bien-être éclairée par l'approche des capabilités et les théories de l'*épanouissement*. L'objectif principal est d'examiner l'interaction « macro-micro » entre les arrangements institutionnels nationaux et les résultats individuels relatifs à la qualité de vie. La littérature existante se focalisant sur le lien entre l'éducation post-secondaire et le bien-être, particulièrement dans le cadre des approches du capital humain et des capabilités, est explorée, avec l'accent mis sur les effets non marchands des études supérieures. Une revue de la littérature concernant la conceptualisation et l'opérationnalisation du bien-être est aussi présentée, avec l'accent mis sur les notions *eudaimonic* du bien-être. D'une approche intégrant les perspectives des capabilités et du capital humain, l'éducation post-secondaire, opérationnalisée comme le diplôme le plus élevé obtenu, est supposée être significativement liée avec le bien-être, toutes choses étant égales par ailleurs, au niveau de l'individu et du pays. Des critiques majeures de ces approches, qui supposent des effets indirects par le biais de l'emploi au niveau individuel et par le biais des facteurs économiques au niveau national, sont également étudiées.

Au-delà de ces liens globaux, des différences par pays sont anticipées du fait des différents systèmes éducatifs et de leurs interrelations avec les marchés du travail dans les contextes divers de l'état-providence. Par conséquent, un cadre analytique qui réunit la littérature des régimes de protection sociale et la recherche comparative sur l'éducation en Europe est présenté, qui réunit (1) les groupements existants des États-providences et des systèmes éducatifs en Europe, et (2) des analyses quantitatives descriptives des caractéristiques nationales des arrangements institutionnels des systèmes éducatifs. Une taxonomie analytique mesurant la stratification et decommodification de l'éducation post-secondaire dans un pays est proposée pour encadrer la recherche sur les différences dans les

niveaux moyens et la distribution du bien-être (mesuré ici par une conceptualisation du bien-être éclairée par l'approche des capabilités et les théories de l'*épanouissement*) parmi ces pays.

Cette grille de lecture des « régimes éducatifs du bien-être social » est mobilisée pour comparer les niveaux de l'éducation et le bien-être, et la relation entre eux, dans certains pays. Spécifiquement, l'hypothèse est posée que l'éducation supérieure joue un rôle plus important en prédisant le bien-être des individus où les systèmes éducatifs sont moins decommodifiés et plus stratifiés, en raison du fait que ces caractéristiques sont présumées contribuer à l'égalité des chances et des résultats. En cohérence avec une approche par les capabilités, cette égalité des individus est supposée inclure non seulement « leurs résultats et leurs orientations scolaires » mais aussi l'impact de l'éducation « sur leur cours de vie » (Verhoeven, Dupriez, & Orianne, 2009, p. 7). Ces effets sont testés paramétriquement dans des analyses de régression utilisant des termes d'interaction (afin d'évaluer les effets modérateurs) et une procédure en deux étapes de modélisation multi-niveaux, ainsi que des modèles de médiation comparant des perspectives du capital humain–capabilités (« *human agency »*) et des critiques relatives à la sélection sociale.

Ces résultats sont interprétés au travers d'une optique ciblée sur les inégalités éducatives relatives à la qualité de vie, constatant que l'éducation et le bien-être sont significativement associés aux niveaux micro et macro, toutes choses étant égales par ailleurs. Toutefois, les tendances dans l'intensité et le sens de cette relation entre des pays sont complexes, variant avec l'opérationnalisation du bien-être utilisée et différant autant en fonction du niveau de stratification éducationnel que de decommodification éducationnel. Ces résultats appuient l'argument que les systèmes éducatifs favorisant la réversibilité des parcours, ainsi qu'une forte implication de l'état dans le financement des études et l'accessibilité des bourses d'études universelles, jouent un rôle déterminant dans la formation

des inégalités du bien-être. Enfin, ces résultats proposent un regard original sur les inégalités scolaires entre les systèmes éducatifs européens.

Cette introduction présente les arguments centraux de la thèse, qui incluent le rôle présumé de l'éducation dans la société, la notion du bien-être pluriel d'une perspective des capabilités, et l'importance du contexte « macro » des pays dans la compréhension du lien entre ces deux variables. Les objectifs et la logique de la thèse sont résumés, et sont décrit ci-dessous dans la *Figure 1*. Les axes thématiques, ainsi que les questions de recherche et les hypothèses sont également résumés dans le Tableau *1*.

Conception de l'étude

<u>Phase</u> <u>Procédure</u> <u>Produit</u>

Construction d'un cadre théorique reliant éducation et bien-être

Création d'une approche analytique internationale et comparative

Intégration des résultats théoriques et empiriques dans une typologie des pays

Définition d'une mesure du bien-être comme l'*épanouissement*

Inspection des associations éducation-bien-être

Élaboration des conclusions et implications pour des recherches futures

- Résume des théories permettant la mise en relation de l'éducation et du bien-être

- Explore les études actuelles et les définitions du bien-être dans la littérature

- Examine les typologies existantes des pays par régimes sociaux et systèmes d'éducation

- Teste les groupements des pays par régimes éducatifs empiriquement

- Compare les niveaux de l'éducation et du bien-être à travers ces contextes

- Étudie l'association éducation-bien-être à travers ces contextes

- Considère les effets médiateurs qui expliquent potentiellement ces liens

- Identifie des facteurs « macro » qui impactent ces associations

- Conteste les opérationnalisations de l'éducation et du bien-être

- Évalue des répercussions de l'étude pour les politiques éducatives

- Résumé de la littérature sur les effets non marchands de l'éducation

- Résumé de la littérature sur les mesures du bien-être

- Résumé de la littérature sur les typologies pertinentes des pays

- Catégorisation des pays dans des groupements de « régimes éducatifs »

- Analyses de « cluster » des indicateurs de stratification et decommodification

- Statistiques descriptives des différences éducatives entre les pays

- Analyses factorielles des données de capabilités centraux pour la mesure du bien-être

- Statistiques descriptives des différences en bien-être entre les pays

- Analyses déductives examinant l'association entre l'éducation et le bien-être

- Analyses en deux étapes identifiant des facteurs « macro » importants

- Analyses « KHB » des médiateurs potentiels

- Vérification de la robustesse des résultats en utilisant des mesures alternatives

- Élaboration des recommandations de recherche

Figure 1. Modèle visuel de l'étude (adaptée d'Ivankova, Creswell, & Stick, 2006).

Tableau 1. *Questions de recherche et hypothèses*

Axe thématique	Questions de recherche	Hypothèses
Synthèses des effets non marchands de l'éducation post-secondaire	Q_{1a}: L'éducation est-t-elle significativement associée avec le bien-être des individus en Europe ? Comment diffère le bien-être entre les niveaux d'éducation post-secondaire ? Q_{1b}: Y-a-t-il une preuve d'effets indirects, voir de médiation, par le rôle de « sélection » joué par l'école ?	H_1: L'éducation post-secondaire a un effet direct et significatif sur le bien-être. H_2: L'éducation post-secondaire a un effet indirect et significatif sur le bien-être par la voie de la sélection. H_3: Ces effets sont façonnés, ou modérés, par les contextes des « régimes éducatifs d'état-providence ».
Revue des conceptualisations et des opérationnalisations du bien-être	Q_{2a}: Comment peut-on conceptualiser et mesurer le bien-être avec la théorie des capabilités ? RQ_{2b}: Les liens entre l'éducation et le bien-être changent-ils (et comment) en fonction des dimensions et mesures du bien-être utilisées ?	H_4: Les niveaux d'éducation sont significativement liés avec le bien-être *eudaimonic*. H_5: Les niveaux d'éducation ne sont pas significativement liés avec le bien-être hédonique. H_6: De multiples indicateurs du bien-être *eudaimonic* conceptualisé comme le développement des capabilités centrales peuvent être mesurés dans un « *construct* » unique (latent) .
Développement d'un cadre comparatif des « régimes éducatifs d'état-providence »	Q_3: En quoi affectent-t-ils les facteurs éducatifs contextuels de la stratification et la decommodification de l'éducation post-secondaire sur les niveaux généraux de l'éducation et du bien-être ?	H_7: Des pays peuvent être distingués empiriquement par des clusters de « régimes éducatifs d'état-providence », basés sur les caractéristiques des systèmes éducatifs liés à la stratification et la decommodification. H_8: Ces facteurs du niveau pays sont associés avec les niveaux généraux de l'éducation et du bien-être dans une société.
Exploration de la manière dont ces contextes éducatifs impactent la distribution de bien-être des individus	Q_{4a}: Les pays avec des « régimes éducatifs du bien-être social » distincts montrent-ils des associations différentes entre l'éducation post-secondaire et le bien-être ? Q_{4b}: Ces contextes éducatifs affectent-ils la manière dont le bien-être est distribué dans la société ? Q_{4c}: Quelles caractéristiques des « régimes éducatifs du bien-être social » impactent le plus les résultats individuels en termes de la qualité de vie ?	H_9: Les contextes des « régimes éducatifs du bien-être social » façonnent la distribution du bien-être individuel par niveaux d'éducation. H_{10}: Les niveaux de la stratification et la decommodification de l'éducation post-secondaire d'un pays sont liés à l'égalité des résultats individuels en termes de bien-être. H_{11}: Les niveaux de la stratification et de la decommodification de l'éducation post-secondaire d'un pays sont liés avec la taille et la fiabilité de l'association entre l'éducation et le bien-être au niveau individuel.
Confirmation des résultats par des tests de robustesse et sensibilité	Q_5: Ces effets sont-ils robustes à l'inclusion d'autres variables explicatives (les facteurs économiques) au niveau du pays? RQ_6: Ces effets sont-ils consistants en considérant de multiples spécifications de modèles et opérationnalisations des variables clés ?	H_{12a}: Ces liens restent significatifs quand les variables de contrôle individuel et national sont inclus dans les modèles. H_{12b}: Ces liens ne sont plus significatifs quand des opérationnalisations différentes (hédoniques) sont utilisés dans les analyses.

2. Summary

This study investigates the association between post-secondary education[1] and later adult well-being in international comparative perspective, conceptualizing well-being as a capability-informed measure of *flourishing*. Existing literature on the link between education and well-being, in particular from human capital and capability approaches, is explored, with a focus on the non-market effects of post-secondary education. The literature related to the conceptualization and measurement of well-being is also explored, with a focus on *eudaimonic* conceptualizations of well-being. Post-secondary education, operationalized as highest post-secondary educational credential, is expected to have a positive association with well-being net of all controls based on a combined human capital-capabilities perspective, while prominent critiques of these approaches suggest that education plays a role only through occupational sorting, with no direct effects on well-being.

Beyond these overall associations, differences amongst countries are anticipated due to differences in educational systems and their interrelations with labour market systems in differing welfare state contexts. Thus, a modified welfare regimes framework informed by comparative educational research is presented based on (1) existing groupings of welfare regimes and educational systems, and (2) quantitative multivariate descriptive analyses of country-level post-secondary education institutional characteristics. An analytical taxonomy mapping onto post-secondary educational stratification and decommodification is proposed to frame the investigation into the differences between various country contexts in overall levels and distribution of educational attainment and well-being (as measured by the capability-informed measure of *flourishing* developed in this study).

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[1] Various terms referring to education are used: 'Post-secondary education' refers to all types of further education after secondary school, 'vocational education and training' (VET) refers to practically-based education that is occupationally-specific, and 'tertiary education' refers to post-secondary education that has more advanced educational content, including academic and/or professional knowledge, skills and competencies. When used alone, 'education' refers to all of the aforementioned types of education, as well as primary and secondary education.

These 'educational welfare regimes' are then mobilized to compare the education-well-being association between groups of countries. Specifically, higher education is expected to play a stronger role where systems of post-secondary education are less decommodified and more stratified, due to the fact that these characteristics are theorized to lead to greater equality in opportunities and outcomes. The effects of post-secondary educational credentials on *flourishing* and its sub-components are examined parametrically in regression models using interaction effects and a 'two-step' approach to hierarchical data analysis, as well as mediation models comparing human agency-orientated approaches and their prominent critiques. Finally, these findings are interpreted as a unique glimpse into educational inequalities in non-market outcomes between differing post-secondary educational systems in Europe.

3.   Well-being seen from an educational standpoint

Education plays a key role in society: It forms future citizens, creates necessary skills sets for national and international labour markets, and shapes individual life outcomes. Individual and societal outcomes are conventionally based on economic outcomes, such as GDP at the macro-level and individual wages and household income at the micro-level. However, multiple forces at the societal and individual levels have put into question this strict economic focus. Climate change, large-scale immigration, and violent extremism have created, or rather re-shifted the focus to, more basic roles for education: creating citizens who can live together on a finite planet in the years to come. These problems underscore the limitations and indeed the dangers of exclusive foci on economic indicators. In recent years researchers from a variety of disciplines have begun using alternative measures of individual and societal outcomes that focus on personal and societal well-being. These approaches shift the focus from monetary measures to physical and mental health, social trust and cooperation, freedom

of choice and autonomy, and personal growth and purpose in life. These new approaches further our understanding of the extent to which different factors promote human well-being, including education.

Key problems arising within this research are to what extent effects of education are direct or mediated by other variables, and how to define the concept of well-being itself. In order to examine direct versus indirect effects and compare measures of well-being, we also need to understand the role that national contexts play in this relationship. Most research has been limited to single countries, or has ignored national context, in particular in regards to educational system characteristics. The majority of comparative research into social well-being has been limited to the use of variations of Esping-Andersen's 'Three Worlds' welfare regime typology (described in Chapter 3); however, this theory is restricted in its ability to fully assess the impact of national context on the relationship between education and well-being because it does not take into account educational system characteristics.

This thesis utilizes a new empirical typology based on post-secondary educational system characteristics and investigates how the distribution of both post-secondary education and well-being, as well as the association between education and well-being, varies across countries and country groupings. This study follows the theoretical arguments of the capability approach in assuming that education shapes citizens' well-being outcomes in terms of capabilities, while modifying the scope of the argument by claiming that the structure of educational institutions and the design of educational policies, as captured in the analytical dimensions of post-secondary educational stratification and decommodification, shape the association between individual educational attainments and well-being outcomes. Drawing on research from educational studies, psychology, economics, and sociology, this multi-disciplinary study focuses on understanding the distribution of educational and well-being outcomes in European countries, as well as the association between post-secondary

educational attainments and later adult well-being across country contexts, by analyzing how individual- and national-level factors modify these variables and relationships.

3.1. Education's role in society

Education is a central institution in all societies, shaping social arrangements, belief systems, and knowledge, simultaneously addressing individual, community, and state needs and priorities, while both minimizing and creating new forms of social inequality. Given the dominant role of education in social life, researchers and policy makers view educational institutions as key actors in the push for social and individual betterment (Nussbaum, 2006b, 2006a). Economists often underline the ways in which educational attainment impacts later earnings, overall prosperity, and social protection, while educationalists emphasize the capacity for education to shape intelligent, discerning citizens (W. W. McMahon & Oketch, 2013; Nussbaum, 1997). However, when educational outcomes are examined empirically, they are most often measured by later economic productivity, rather than the subjective evaluations, intangible factors, or other indicators that attempt to grapple with quality of life (Gouthro, 2010; Seeberg, 2011).

The growing field of positive psychology and the increasingly mainstream use of subjective well-being measures offer a promising way to enhance these standard approaches to understanding educational outcomes (Forgeard, Jayawickreme, Kern, & Seligman, 2011; Zepke, 2013). By looking at individuals' welfare in non-monetary terms, it is possible to take a step towards examining directly what income examines indirectly; that is, to what extent is a person able to live a life that they have reason to value? Furthermore, these associations uncover new questions in the study of educational inequality, such as: how do national educational contexts impact the distribution of well-being in societies?

The knowledge-based economy is largely framed as encouraging increasing levels of educational credentials for increasingly larger proportions of the population, often constituting an unequal state, community, family, and individual investment (W. W. McMahon, 2009; van de Werfhorst, 2009). Examining and comparing the relationship between individual educational attainments and well-being on one level, and societal patterns of educational attainment and societal well-being on a second level, opens up new avenues of inquiry regarding this extensive investment.

A number of researchers investigating well-being at the individual level have illustrated that there is a (small) significant direct statistical relationship between this outcome and highest formal educational credential (Blanchflower & Oswald, 2004; Dolan & White, 2007; Salinas-Jiménez, Artés, & Salinas-Jiménez, 2013). However, other researchers contest this link, pointing out that the effect of education often changes or loses statistical significance when model specifications are altered, or when inter- and intra-country relationships are compared (Helliwell, Layard, & Sachs, 2012; Helliwell & Putnam, 2004). From this second perspective, education is argued to have little, if any, direct impact on well-being, but rather to affect well-being indirectly through the enhanced occupational, financial, and social possibilities it provides for segments of the population (Helliwell et al., 2012). Indeed, mediating and moderating effects of education through other variables, such as income or primary earner status, have been found (Castriota, 2006; W.-C. Chen, 2011).

Encompassing these debates within a broader perspective, researchers in psychology and quality of life studies have considered how these contradictory findings might instead be due to the diverse ways in which well-being itself is measured (Michalos, 2008; Ryan & Deci, 2001). In fact, researchers often use different definitions and terms interchangeably when examining well-being (van Praag & Ferrer-i-Carbonell, 2008; van Praag, Frijters, & Ferrer-i-Carbonell, 2003). Indeed, a number of conceptualizations of well-being have been

proposed in the academic research, each framed from particular theoretical assumptions and understandings of what makes a 'good life.' Most studies exploring the effects of education on well-being use single-item 'satisfaction' measures of well-being, which may lead to under-estimation of education effects (Jongbloed, 2018; Nikolaev, 2018). These differing notions and resulting operationalizations are not necessarily comparable between studies.

Furthermore, these mixed findings on the association between education and well-being rely on research that either examines this relationship in single countries or across a number of countries, with fixed effects and often with macro-economic control variables, but not by types of educational systems or welfare regimes. Indeed, no published empirical study has taken into account national post-secondary educational system contexts while examining the link between post-secondary educational credentials and later well-being in adulthood. This may be due to the fact that educational systems are an often forgotten or ignored component of the welfare state, despite being closely interconnected with other social protection policies (Busemeyer & Nikolai, 2010; Iversen & Stephens, 2008; Jongbloed & Pullman, 2016). Indeed, while all Organisation of Economic Cooperation and Development (OECD) countries have widespread compulsory education, these countries do differ meaningfully in both secondary and post-secondary educational system organization, especially regarding institutional financing and institutional differentiation. Policies related to both secondary and post-secondary education are important to the study of post-secondary education in these contexts, as policies 'upstream' have important implications for higher education. For example, tracking in secondary education systems leads to important differences in post-secondary educational access and attainment (Triventi, 2013; Willemse & de Beer, 2012).

These system-level differences can be usefully combined with a welfare regime approach to understand the association between educational attainment and later well-being

outcomes. However, this requires a rethinking of the basis for the welfare regime groupings. Specifically, it is necessary to consider education as a stratifying force in these contexts. Indeed, it is argued that "most inequalities result from particular welfare production regimes (i.e. combinations of product market strategies, skill profiles, and the political-institutional framework that supports them)" (Estevez-Abe, Iversen, & Soskice, 2001, p. 157). Thus, different welfare regimes distribute well-being in varying manners, leading to different patterns of 'well-being inequality.'

This research is therefore at the intersection between the political-institutional frameworks in which citizens' 'productive' and social lives are situated, and the individual skill and competence sets mobilized by citizens both within and as a result of this juxtaposition. This framework creates particular hypotheses for direct effects and indirect effects of education through occupational sectors and income, both for vocational and tertiary credentials, across 'educational welfare regimes.' The role of education in promoting the ability to live a life that one has reason to value will depend not only on the education one has, but also on the specific context in which this education is then mobilized as a producer, consumer, and human being. These gaps in the research, in regards to both the measurement of well-being and the comparative educational context, have important implications for social policy recommendations relating to the role of education in promoting valuable non-market outcomes for both individuals and societies.

3.2. Education for what?

Two central components of this thesis are the creation of a capability-informed measure of *flourishing* and an exploration of education's effects on this outcome that includes an awareness of the multidimensional role of education in imparting knowledge, skills, and socialization within specific national contexts. Post-secondary educational credentials and

years of schooling have been found to be linked to many life outcomes beyond occupational outcomes, such as health, community involvement, and future-oriented decision-making (these are explored in Chapter 1). This link is perfectly logical when one considers that cognitive skills, knowledge, and problem-solving techniques learned in educational contexts do not transfer uniquely into workplace settings: These same skills, knowledge, and techniques will also influence one's hobbies, health behaviours, parenting styles, financial decision-making, and the plethora of other areas of adult life outside work. Thus, the cognitive and non-cognitive skills acquired in compulsory, secondary, and post-secondary education impact adult well-being above and beyond their influence on occupational trajectories and income.

Indeed, when considering the link between education and well-being, one can focus on well-being in or through education (Wilson-Strydom & Walker, 2015a). This research project takes the latter as its impetus. Education impacts not only the lives of the individuals currently involved within the educational system, but also influences in a continual fashion the lives of all those who have participated in education in more or less permanent and potentially irreversible ways. When considering well-being through education, the satisfaction or happiness of students is not the central focus, nor are the immediate effects within the classroom (Garnett Jr., 2009). Rather, the longer-term impacts of the educational experience are pertinent. These two educational effects, in and through, may not necessarily even go hand-in-hand: moments of discontent may be necessary for later fulfillment (Nussbaum, 2008; Saito, 2003).

Thus, the focus here is not on student 'satisfaction,' rather, the central argument is that educational institutions, within societal contexts, succeed to greater or lesser extents in building capacities in students that can then be put to use in constructing their lives. Indeed, students may have been "troubled" towards their own contentment during their studies

(Gibbs, 2014), with a view to the well-being of their long-term 'future selves' (Sen, 1999). However, the wide assortment of experience, knowledge, and skills learned through education provide them with the capacities necessary to 'produce' their own lives, as well as their work (Grossman, 2005; Schwartz, 1982).

3.2.1. An alternative view of the outcomes of education

This project examines the relationship between higher education and later well-being in life from a capability perspective. Amartya Sen (1993) criticizes classic utilitarian stances, arguing that objective indicators are necessary, but that measures of actual accomplishments (functionings) are not enough: It is necessary to tap into the possibilities that individuals are presented with in their lives. Thus, well-being should be measured by an individual's capability set, or the variety of functionings that are open to them while living a life that they have reason to value. This approach has been further refined by Martha Nussbaum (2011), who outlines ten central capabilities that are necessary to a truly human existence. Her list is in many ways consistent with measures of flourishing in the psychological literature, and has been found to be linked with subjective measures of well-being such as life satisfaction (Anand, Hunter, & Smith, 2005). This will be explored in more detail in Chapter 2.

Both Sen and Nussbaum underline education as a key variable in promoting capabilities, both as a tool for development and for the enrichment of advanced democracies. However, relatively few studies have examined the association between education and well-being as measured by capabilities in developed countries, and education is often only vaguely defined. Indeed, education has the potential to be capability hindering as well as capability building (Olympio & Di Paola, 2018). This is, for example, the case within educational systems where there is a systematic perpetuation of social inequalities (Unterhalter, 2003). Thus, the characteristics of educational systems must be carefully considered and taken into

account when examining the distribution of, and relationship between, education and well-being.

Education may itself be considered a capability, and has been formulated by some as a fertile functioning that encourages further capability formation (Wolff & De-Shalit, 2007). Indeed, this study considers education as both a resource and fertile functioning impacting the key variable of interest, well-being as defined as a capability-informed measure of *flourishing*. Education is defined by educational credentials and years of education, which are understood to include both the knowledge and skills that form the content of this education, and the social marker which may impact social status position, occupational opportunities, and pecuniary outcomes (Chapter 1 includes a more in-depth discussion of the roles of education in society).

3.2.2. Why study well-being?

Studies concerning education and individual outcomes abound in educational studies, sociology, and economics. These studies tend to examine the link between educational credentials or years of schooling and objective outcomes, such as labour market status or wages. A smaller body of research explores the non-market effects of education on health, personal relationships, child and family well-being, and longevity, among others. These outcomes can all be considered as part of a global conceptualization of well-being; however, these approaches rarely take into consideration the viewpoints of the individuals themselves on their outcomes. Thus, individual differences in values are ignored. A pertinent example is a well-educated individual who has the opportunity to make a large salary working for a company whose policies she ethically disagrees with, or make half this salary for another company whose values align with her own. A purely economic approach would view the second choice as illogical or a 'failure,' although her health, relationships, and other non-

market outcomes may be greatly enhanced. Beyond this, even if her non-market outcomes do not increase, her valuation of her own work and life may increase as a result of this choice.

Naturally, these outcomes interact with one another. Within the literature on the impact of education on individual lives, four main categories of effects have been outlined: economic, occupational or workplace, social, and cognitive and health (illustrated in *Figure 2*). Economic outcomes include income or salary from employment, but also personal savings and savings for retirement as a proportion of wage (Pallas, 2000; Vila, 2000). Occupational and workplace outcomes include prestige, status, working hours (which tend to be higher for those with more education), autonomy, and benefits (Jenkins & Wiggins, 2015; W. W. McMahon & Oketch, 2013).

Social outcomes include better family health and child health, but mixed benefits and disadvantages for marriage and friendships (Gibson, 2001; Powdthavee, Lekfuangfu, & Wooden, 2015). Cognitive and health effects are clearer: Those with more education exhibit better problem solving skills, are more aware of domestic and international current events, exhibit more involvement with political and democratic processes, and have enhanced health, with less health-threatening behaviours (Field, 2009; Vila, 2005). Furthermore, an "emotional outcomes" box has also been added to *Figure 2*, as education may also contribute to an individual's 'emotional capital' (Gendron, 2005b). Each of these domains is explored in more detail in Chapter 1.
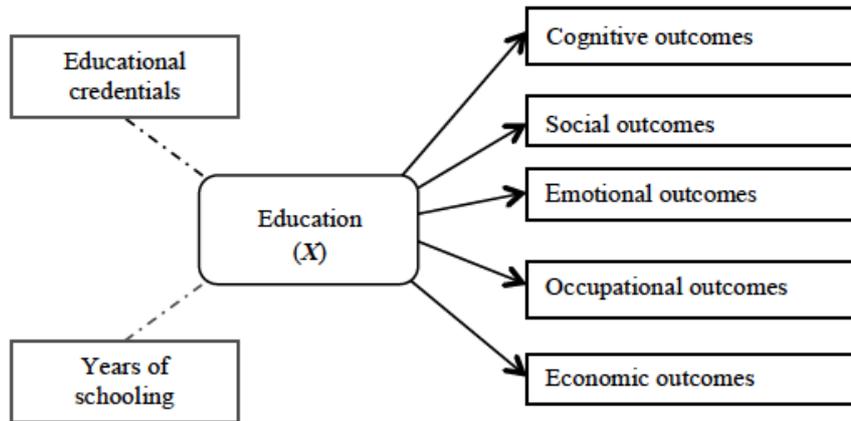
Figure 2. Various outcomes of education on adult lives (adapted from Pallas (2000)).
Note: This schema shows the different groups of outcomes, economic and non-economic, that have been found to be associated with education, measured by both educational attainments and years of education, in the literature.

These associations support the role of education as promoting multiple areas of what can be considered well-being in a broad sense. However, once we begin to consider these potential areas of impact on individual lives, it becomes evident that education will impact many more areas of life: Interactions with one's doctor, choice of films and newspapers to read, hobbies, conversations around the dinner table, and one's participation in adult learning groups and activities. Some of these effects are studied and others not, but their extreme diversity points to the fact that it may be more useful empirically to conceptualize these hundreds of small mediating effects as a 'black box' direct effect of education. Evidently, every direct effect can be broken down in smaller sub-effects, but the utility and the goal of the research must be considered: In this case, the interest is the extent to which education contributes to later adult well-being conceptualized as a capability-informed measure of *flourishing*.

3.2.3. A pluralistic and multi-dimensional account of well-being

This study problematizes the construct of well-being based on the theorizing of Sen (1999) and Nussbaum (2011) in a capability perspective, as well empirical evidence within the literature (Delle Fave, Brdar, Freire, Vella-Brodrick, & Wissing, 2011) and from recent research by this author (Jongbloed, 2018; Jongbloed & Andres, 2015). Well-being is seen as necessarily comprised of both hedonic and eudaimonic components, best measured through both subjective and objective indicators, which align with a conception of the good life that is both Aristotelian and open to differences in values and human plurality. (This approach and its measurement aspects are outlined in Chapters 2 and 5, respectively.)

This compromise between specification and allowance of diversity may be termed 'mild perfectionism.' As defined by Melanie Walker (2008) within the context of educational capabilities, this method consists in "giving at least some content" to the definition of well-being, "while still keeping open the possibility of a plurality of reasoned choices about what makes for a good life" (p. 150). Thus, a "mild perfectionism" consists in steering a path between not identifying any capabilities and "an overspecified list which comprehensively prescribes one good society" or way of being 'well' (Walker, 2008, p. 150). Applied to the concept of well-being, this method entails both the enumeration of valuable human outcomes and the opportunity for individuals to determine – 'subjectively' – the importance of various outcomes to their own well-being.

3.2.4. Situating the education-well-being link in international context

Based on the central assertion of this research, that education, if it indeed imparts knowledge, skills, and attitudes to students, will impact individuals' behaviours, and therefore outcomes, outside of paid employment as much as within it, this study investigates the impact of education on adult well-being in international comparison. Countries are compared based on

the characteristics and outcomes of their post-secondary educational systems, with a focus on the stratification and decommodification of these systems. This aspect of the research is constructed upon two underlying and complementary arguments:

1) Education affects individuals' access to material (e.g. money, social networks) and non-material (e.g. power, knowledge) resources in both occupational and other life spheres that allow them to both avoid risks and maximize the positive consequences of events and circumstances that impact their overall well-being; and

2) Societies' institutional arrangements determine individuals' life chances by shaping the social conditions that generate systems of (re)distribution of resources, relative social hierarchies, patterns of inclusion and exclusion, and thus overall levels of inequality (Beckfield, Olafsdottir, & Bakhtiari, 2013).

Based on these assumptions, this study investigates overall levels and distribution of well-being, as well as the association between education and well-being across countries, with an eye to the ways in which broader social forces shape these outcomes.

Thus, the current research recognizes that education is a social construct, and that the institutional organization of educational systems shapes its influence on individual lives. In other words, the role of education in adult lives is structured by these systems (Iversen & Stephens, 2008; Rubenson & Desjardins, 2009). The value and impact of a particular level of education will therefore differ by national educational context, due to historic and current political, economic, labour market and welfare context specificities. By taking a capability-informed measure of *flourishing* as the dependent variable of interest, this study challenges on philosophical and normative grounds the idea that the only important outcomes of education are wages in the labour market. However, interactions between education and labour market outcomes are recognized as important to individual well-being. In particular, educational systems and labour market contexts are highly interrelated within welfare

regimes, and both may be more or less 'capability-enhancing' in their structure and organization (Bonvin & Orton, 2009; Egdell *&* Graham, 2017; Olympio, 2012).

To account for this, the association between education and well-being will be examined both within and across educational welfare regime (EWR) contexts. The commonalities across countries found both inductively (in Chapter 3) and deductively (in Chapter 4) provide justification for the country groupings used in this study and a potential explanation for cross-national differences in the education-well-being association. As shown in *Figure 3* below, national differences in post-secondary educational institutional contexts are hypothesized to impact both individual and societal educational outcomes, the relationship between education and well-being within each country, and perhaps even overall levels of well-being directly. The subjective effects of institutional patterns on individuals' perceptions of their lives, as well as objective effects on material conditions, have been illustrated in the literature (Mau, 2004; Vergolini, 2011a, 2011b).
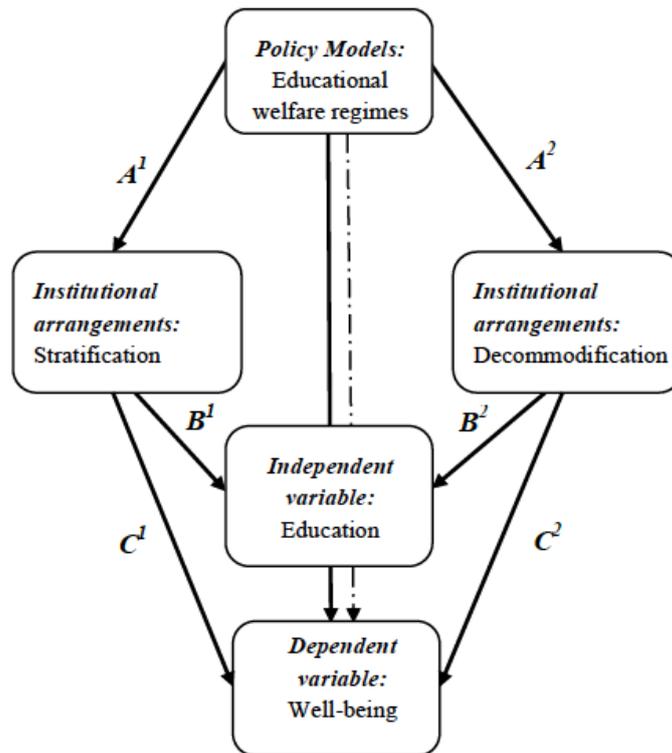
Figure 3. The education-well-being association in international institutional comparative context (adapted from Mau (2004) and Vergolini (2011)).

Note: This schema shows the impact of the educational welfare regimes grouped in this study on educational institutional arrangements related to stratification and decommodification, which in turn shape individual and societal educational outcomes. They may also directly impact levels of well-being (arrows C^1 and C^2).

4. Research objectives

4.1. Statement of the problem

This doctoral research attempts to make sense of the disparate findings regarding the relationship between education and well-being, hypothesizing that they are in part due to the different national 'educational welfare regime' contexts in which peoples' lives are lived and in part dependent on the conceptualization of well-being used in previous research. To do so, this study employs an international comparative approach based on aspects of both comparative educational research and welfare regime typologies on the one hand, and a capability approach to situate the education-well-being association within political-institutional context on the other (Iversen & Stephens, 2008; Olympio, 2012). Countries are

compared and grouped with a focus on the educational component of social welfare, and in particular how this relates to post-secondary educational stratification and decommodification. Well-being outcomes by educational attainment levels are then compared across countries and regime groupings, using a capability-informed measure of well-being as *flourishing*.

Educational engagement is understood to be associated with different risks and benefits dependent upon how welfare provisions, protection, and levels of decommodification and stratification shape both systems of education and inequality. For example, there are significant differences in institutional stratification (Triventi, 2013), inequality in learning outcomes (Peter, Edgerton, & Roberts, 2010), general versus specific skills focus (Estevez-Abe et al., 2001a), and connections between the higher education system and the labour market (Jutta Allmendinger, 1989) between countries. The findings will be interpreted from an (in)equality standpoint: Although a positive relationship between higher levels of education and well-being net of individual-level controls is intuitively appealing as a positive result, this effect in fact signifies that important social cleavages are at work, which allow certain groups more opportunity to form the lives they have reason to value than others within particular societal settings. Thus, this study challenges the assumption that the relationship between education and well-being can be theorized as universal; rather, the educational institutional contexts specific to welfare production regimes are shown to shape the distribution of well-being across educational categories in unique ways.

4.2. Study aims and logic

The study design is illustrated in *Figure 4*. In Part I, a multi-disciplinary literature review of the theoretical frameworks is provided in two parts: Chapter 1 summarizes prior research on the non-market effects of education, in particular exploring the prominent critiques of human

capital approaches, the link between education and well-being, and research using the capability approach to study educational outcomes. As described earlier, while educationalists emphasize post-secondary education's ability to shape engaged and discriminating citizens, economists typically underscore the influence of education on earnings and prosperity (W. W. McMahon & Oketch, 2013; Nussbaum, 1997) and intangible demand-side factors are largely ignored (Gouthro, 2010; Seeberg, 2011).

Chapter 2 provides a synthesis of diverse approaches to the measurement of individual well-being, with a focus on *eudaimonic* conceptualizations of well-being as 'flourishing.' This study aims to fill this gap in the literature by investigating the association between post-secondary education and well-being in international comparative perspective, conceptualizing well-being as a capability-informed measure of *flourishing*. Building upon prior research using the European Social Survey (ESS) (Huppert, Marks, Michaelson, Vázquez, & Vittersø, 2013; Huppert & So, 2011) and capability theory (Anand et al., 2005; Nussbaum, 2011; Sen, 1999), well-being is assessed using a multi-dimensional construct that captures individual feeling and functioning: the capability-informed *flourishing* scale.

In Part II, analytical tools from political economy and comparative educational studies are put to use in order to group countries into 'educational welfare regimes.' In Chapter 3, existing international comparative studies and groupings of welfare regimes and educational systems and their characteristics are examined, and an approach grouping educational systems from a capability approach is explored in comparison with previous welfare regime groupings. The first set of analyses is conducted in Chapter 4, where several quantitative multivariate descriptive techniques are mobilized, including cluster and multi-dimensional scaling analyses, to group countries along two analytical dimensions: post-secondary educational stratification and decommodification.

Based on these analyses, post-secondary educational systems in Europe are empirically grouped into 'educational welfare regimes' (EWR). Data from the European Social Survey (ESS) are then used to investigate the differences between various welfare state regime types in overall levels and distribution of educational attainment across 20 countries, while individual state-level indicators of levels of tertiary education, governmental support, and other relevant indicators (outlined in Chapter 4) generate further insight into how differences in social context might influence the relationship between post-secondary education and well-being. This creates the comparative framework from which associations between vocational and tertiary education and well-being are compared across groups in the main empirical analyses of the final chapter.

In Part III, Chapter 5, the methodologies, datasets, and measures used are described, and statistical tools from psychology are mobilized to create the scales mapping onto the construct of capability-informed *flourishing*. Following this, overall levels of well-being within and across the country groupings are summarized descriptively. In Chapter 6, the final chapter, quantitative approaches from sociology, economics, and political science are utilized to examine the effect of education on well-being across educational welfare contexts and test the hypotheses outlined in the previous chapters. The effects of post-secondary educational credentials on *flourishing* and its sub-components are explored in the pooled data for all countries, in individual countries, and across educational welfare regimes.

Patterns are tested parametrically using interaction effects and a 'two-step' approach to hierarchical data analysis, which also incorporates the analytical dimensions mapping onto post-secondary educational stratification and decommodification. Finally, mediating effects are explored, comparing human agency-orientated approaches and their prominent critiques, and robustness checks are conducted. The conclusion summarizes the study findings and identifies policy recommendations for post-secondary educational systems in Europe.

The main contributions this research aims to make is: (1) to demonstrate how post-secondary education impacts well-being in Europe; (2) to illustrate how this relationship differs across countries and between different 'educational welfare regimes'; and (3) to provide insight into how state-level post-secondary educational stratification and decommodification impacts both overall levels of well-being and the association between individual-level post-secondary education and well-being. Based on these aims, the research questions and hypotheses of the study are summarized in Table *2*. They are discussed in more detail throughout this doctoral thesis in the relevant chapters.

Study design

<table>
<tr><th>Phase</th><th>Procedure</th><th>Product</th></tr>
<tr>
<td>Construction of a relational theoretical framework</td>
<td>• Summarize theories linking education and well-being from human capital and capability approaches</td>
<td>• Literature reviews summarizing:
  • Non-market effects of education
  • Well-being measures
  • Comparative typologies</td>
</tr>
<tr>
<td>Creation of an analytical international comparative approach</td>
<td>• Explore existing studies and definitions of well-being in the literature

• Review existing groupings of countries by welfare regimes and educational systems</td>
<td>• Categorization of countries into 'educational welfare regime' groupings
  • Cluster analyses of analytical taxonomy country-level data
  • Descriptive statistics of country-level differences in educational outcomes</td>
</tr>
<tr>
<td>Integration of theoretical and empirical findings into a categorization of countries</td>
<td>• Test educational welfare regime groupings empirically

• Compare levels of education and well-being across these contexts</td>
<td>• Creation of a well-being measure through factor analyses of central capabilities individual-level well-being data
  • Descriptive statistics of country-level differences in well-being outcomes</td>
</tr>
<tr>
<td>Definition of a capability-informed measure of *flourishing*</td>
<td>• Examine the education-well-being association across these contexts

• Investigate potential mediating effects accounting for this association</td>
<td>• Inferential regression analyses examining the association between education and well-being
  • 'Two-step' analyses identifying macro-level factors affecting the association between education and well-being
  • KHB mediation analyses of potential intervening variables</td>
</tr>
<tr>
<td>Examination of the education-well-being association(s)</td>
<td>• Identify macro-level factors influencing this association

• Challenge the operationalizations of education and well-being</td>
<td>• Robustness checks contrasting findings when using alternative measures</td>
</tr>
<tr>
<td>Development of conclusions and implications for future research and policy</td>
<td>• Explore implications of the study for educational policies and outcomes</td>
<td>• Elaboration of further research and policy recommendations</td>
</tr>
</table>

Figure 4. Visual model of the study (adapted from Ivankova, Creswell, & Stick, 2006).

Table 2. *Research questions and hypotheses*

Thematic Focus	Research Questions	Hypotheses
Synthesis of the non-market effects of education	Q_{1a}: Is educational attainment significantly associated with individual well-being in Europe, and how do individual levels of well-being differ by post-secondary educational categories? Q_{1b}: Is there evidence for indirect, or mediating, effects through the social 'selection' function of education?	H_1: Post-secondary education has a direct effect on well-being.
		H_2: Post-secondary educational credentials have an indirect effect on well-being through occupational sorting.
		H_3: These effects are shaped, or moderated, by educational welfare regime contexts.
Review of conceptualizations and operationalizations of well-being	Q_{2a}: How can well-being be conceptualized and operationalized empirically from a capability approach? Q_{2b}: How does the association between education and well-being differ across dimensions and measures of well-being?	H_4: Post-secondary educational credentials are significantly associated with *eudaimonic* well-being.
		H_5: Post-secondary educational credentials may not be significantly associated with *hedonic* well-being.
		H_6: Multiple indicators of *eudaimonic* well-being in terms of capability development can operationalized and measured as a single construct.
Development of a comparative educational framework	Q_3: How do the educational contextual factors of post-secondary educational decommodification and post-secondary educational stratification affect overall levels of education and well-being?	H_7: Countries can be distinguished empirically into clusters based on post-secondary system characteristics related to stratification and decommodification.
		H_8: These country-level factors are associated with overall societal levels of education and well-being.
Exploration of how educational contexts impact the distribution of individuals' well-being	Q_{4a}: Do countries with different 'educational welfare regimes' exhibit different relationships between post-secondary education and well-being? Q_{4b}: Do they affect how well-being outcomes are distributed within societies? Q_{4c}: What characteristics of educational welfare regimes are most determinant of outcomes?	H_9: Educational welfare regime contexts shape the distribution of individuals' well-being by educational categories. H_{10}: Levels of stratification and decommodification in post-secondary education are linked to greater equality in well-being outcomes. H_{11}: Levels of stratification and decommodification in post-secondary education are associated with the strength of the relationship between educational attainments and well-being at the individual level.
Confirmation of findings through sensitivity and robustness checks	Q_5: Are these effects robust to other potential country-level explanatory variables? Q_6: Are these effects consistent across multiple types of models and operationalizations of key variables?	H_{12a}: This relationship remains significant when individual-level control and country-level economic variables are included in models. H_{12b}: These associations may not remain significant across alternative models and measures.

Part I
Well-being through education:
Theoretical groundings

Chapter 1. Non-market effects of education

1. Résumé en français

L'incidence de l'éducation sur les résultats obtenus dans le marché du travail est bien établie (W. W. McMahon & Oketch, 2013), et il existe un bon argument logique selon lequel les compétences et connaissances acquises dans l'éducation post-secondaire ont un effet sur tous les domaines de la vie, et non seulement sur le travail (Grossman, 2005). En effet, il existe déjà une grande quantité de littérature soutenant le fait que les individus avec des niveaux de qualification plus ou moins élevés se comportent différemment dans leurs vies privées, ainsi que leurs vies professionnelles (Pallas, 2000). Les études ont montré que les individus plus diplômés tirent des avantages en termes de santé, de capital social et culturel, et des compétences non-cognitives et émotionnelles. Cependant, ces impacts non marchands de la scolarité sont moins étudiés que les résultats économiques, et il existe notamment très peu de recherches sur leurs effets sur la qualité de vie (Oreopoulos & Salvanes, 2011).

Les justifications théoriques de cette étude s'appuient sur un regroupement de la littérature du capital humain et de l'approche par les capabilités (Chiappero-Martinetti & Sabadash, 2012). Des critiques majeures de ces approches et des perspectives opposées sont explorées, en particulier par rapport à des tierces variables auxquelles on peut potentiellement attribuer ces associations (par exemple, la sélection et la reproduction sociale). Les théories exposées dans ce chapitre suggèrent que l'éducation affecte les résultats individuels dans de multiples domaines relatifs à la qualité de vie, et que ces effets peuvent être énumérés et mesurés. En outre, ces grilles intellectuelles conduisent vers l'hypothèse que l'éducation influence le bien-être des individus non seulement directement, mais aussi indirectement, au travers de son effet sur la sélection occupationnelle (« *occupational sorting* »). Cette

hypothèse alternative, qui suppose des effets indirects par le biais de l'emploi, sera également étudiée dans les analyses de cette recherche doctorale.

2.   Summary

The effects of education on labour market outcomes are well documented, and there is a strong logical argument that skills and knowledge gained through education affect all areas of life, without being limited to the workplace. Indeed, there is a great deal of literature supporting the fact that those with different levels of education act differently in their private as well as occupational lives. However, these non-market effects have been less fully explored, in particular in relation to overall quality of life. Theoretical support for this position is drawn from a combination of the human capital and capability approach literatures. Critiques and contrasting perspectives are explored, in particular in relation to potential third variables driving educational and labour market outcomes. The theories outlined in this chapter suggest that education impacts individuals' outcomes in multiple non-work-related areas of life, and that these diverse outcomes can be enumerated and measured.

3.   The lifelong effects of education

Education is a term encompassing a range of schooling and learning activities, experiences, and credentials. Its goals and roles within societies are contested: Educational institutions internationally are places where knowledge is imparted, attitudes are learned, and skills practiced, but also sites of power struggles, discrimination amongst forms of learning, and creation of lasting hierarchies of social status and occupational outcomes. Post-compulsory secondary and post-secondary educational attainment is now widespread in all developed countries and, although its effects differ by context, it has lasting and sometimes irreversible effects on individuals' lives (Birkelund, 2006; Blau & Duncan, 1967; Gambetta, 1987).

Educational pathways and credentials have been linked to diverse outcomes, such as later occupational status, monetary returns from work, health behaviours, recreational activities, and child-rearing practices (Gambetta, 1987; Pallas, 2000; Vila, 2000; Woessmann & Schuetz, 2006).

Box 1: A note on defining education and schooling

In order to investigate 'well-being through education,' the conceptualization and possible roles of education must be made explicit. In order to differentiate clearly amongst diverse aspects of education, for the purposes of this study the following definitions will be used:

1) Education is all systematic instruction of knowledge, skills, and attitudes received through compulsory and non-compulsory, public and private institutions recognized by national governments. This may include both formal learning credentials (for example, a high school diploma) and non-formal learning (for example, on-the-job training or professional workshops).

2) Schooling is limited to formal learning credentials and the time spent earning these credentials (for example, a high school diploma or a degree from a post-secondary institution).

3) Learning is a broader construct, including all of the above, as well as informal learning (for example, life and work experience in the form of hobbies and mentorships).

The argument for causation between schooling and these outcomes mirrors the assumption made for schoolings' impact on job performance: Just as schooling is linked to productivity and the utilization of skills in the workplace, it can also be linked to these same enhanced capacities *outside* the workplace. On an intuitive level, the line of reasoning is clear:

> [T]he knowledge that a person has acquired through schooling is imbedded within himself [or herself] and accompanies him [or her] wherever he [or she] goes: to the labor market where earnings are produced, to the doctor where health is produced, to the bedroom where sexual satisfaction and perhaps children are produced, to plays and movies where entertainment is produced, and to the tennis court and the ski slope where exercise and recreation are produced. If knowledge and traits acquired through schooling influence decisions made at work, they are just as likely to influence decisions made with regard to cigarette smoking, the

types of food to eat, the type of contraceptive technique to use, and the portion of income to save. (Grossman, 2005, p. 2)

Thus, a clear distinction cannot be drawn between individuals as workers and individuals as human beings; knowledge, skills and experiences from one domain will inevitably impact other domains, and these impacts may be both positive and negative (Schwartz, 1982).

4.   Education from a human capital approach

Human capital theories, as developed in several different forms by Jacob Mincer, Theodore Schultz, Edward Denison, Gary Becker, and others (Becker, 1964; Psacharopoulos, 1973; Schultz, 1963), are based on the idea that education is an investment that yields economic returns at both a societal and personal level. Generally, from these perspectives, *human capital* is an individual's knowledge and skill that has economic value and is the product of investment (both individual and societal). This knowledge and skill – influenced by both formal and informal education – translates into productive ability. Education, and in particular schooling, can therefore be viewed as a mode of human capital accumulation from human capital approaches. Schooling, from this perspective, cultivates particular qualities in people that then impact economic productivity and growth. This hypothesis was used to explain why economic growth may continue even when physical capital reaches the point of experiencing diminishing returns (Becker, 1964), and the superior productive capabilities of technically advanced nations.

Most researchers mobilizing human capital approaches assume that education is an investment, not consumption, and therefore generates a positive rate of return. In its most simplified form, education leads to productivity, which leads to increased wages. This approach contends that education provides individuals with productivity-enhancing skills to be put to use in the workplace (Becker, 1964). The basic argument is that education imparts knowledge and skills that directly impact the worker's productivity, and at the societal level,

"the population's ability to engage in productive activities" (Gendron, 2005, p. 3). For this reason, employers are willing to pay higher wages to more educated workers because of their higher productivity (van de Werfhorst, 2011). Thus, individuals invest in education in order to increase their abilities and, through this, their earnings (Weiss, 1995). This principle causal mechanism outlined in human capital approaches is that students acquire productivity-enhancing competencies during the schooling period and later put these to use in the workplace, and has been termed the "learning model" (Weiss, 1995).

This approach has traditionally measured the success of education in terms of its rate of return for a society and for individuals (Psacharopoulos, 1973; Schultz, 1963), as could be done for physical capital. The social and private financial returns on education can be compared by size, as can the returns for various levels of schooling (W. W. McMahon, 2009). However, the fact that learning outside of formal schooling is extremely difficult to measure means that monetary returns of education conceptualized more broadly may very well be underestimated (Becker, 1964).

4.1. *Market effects of schooling*

The role of education, and, in particular, formal schooling, is strongly associated with later earnings and occupational trajectories (W. W. McMahon, 2009). Attaining higher levels of schooling positively impacts an individual's chances of being employed, negatively impacts the probability and duration of unemployment and has a positive influence on later labour market earnings[2] (Vila, 2000; Woessmann & Schuetz, 2006). Those with higher educational credentials report higher incomes than those with less schooling throughout the life course

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[2] The reason for these associations is normally assumed to be a result of (a) the increased productivity of more educated employees, and (b) the direct application of skills learned in schooling in the work environment. This is evident in theories such as skill-biased technological change (SBTC), whereby "the incomes of workers with high levels of technological skills rise disproportionately from technological change relative to low skill workers" (Bennett and Vedder, 2015, p. 255). However, these assumptions are contested (Bennett & Vedder, 2015).

(W. W. McMahon & Oketch, 2013). These advantages differ widely, however, by field of study and also by measures of the quality of the educational institution, such as the socio-economic characteristics of the student body and its connections within the labour market (Goudard & Giret, 2010). They are also influenced by cognitive ability net of education effects (Woessmann & Schuetz, 2006).

Beyond simple measures of wage or earnings, those with more schooling report better fringe benefits and working conditions (Haveman & Wolfe, 1984; Woessmann & Schuetz, 2006). For example, they typically report higher task discretion at work than those with lower levels of education (Gallie, 2013; F. Green, 2008; Pullman & Jongbloed, 2017). Education has also been linked to better job opportunities, more adaptability on the job market, more prestigious occupational status, and an enhanced sense of accomplishment from work (Furnée, Groot, & van den Brink, 2008; Guardiola & Guillen-Royo, 2014; Oreopoulos & Salvanes, 2011). Those with more education are less likely to work in manual labour jobs, more likely to be in a supervisory position, more likely to perform non-routine work, have more autonomy and control over their work, and less likely to engage in alienated work (Roessler, 2012).

Indeed, education's effects may be underestimated because market earnings are not the sole criterion by which individuals measure their life outcomes and well-being. As Haveman and Wolfe emphasize:

> As a guide to policy choices, the net present value of the benefits of (or marginal returns to) additional schooling estimated from earnings effects has limited value. To the extent that schooling generates impacts valued by people which are not recorded in earnings differences, the standard rate of return estimates yield biased estimates of the value of incremental schooling. A full accounting must consider all of schooling's effects, positive and negative, and not simply those recorded in a single market. (Haveman & Wolfe, 1984, p. 379)

Thus, there are strong arguments for why effects of education must be considered in a wider scope than simply monetary returns within the job market.

4.2. Non-market effects of schooling

The human capital literature has also highlighted many non-market benefits of education for individuals. Non-market benefits of education are defined as "outcomes for which the full economic impacts escape pecuniary measurement" (Vila, 2005, p. 4). Education may act in two ways to create non-market effects: It may raise the efficiency of production in the non-market sector, or it may cause individuals to choose a different mix of inputs to produce a commodity in this sector (Grossman, 2005). As mentioned above, the argument for non-market benefits of education rests on the fact that, "if knowledge and traits acquired through schooling influence decisions made at work, they are just as likely to influence decisions…" made outside the workplace (Grossman, 2005, p. 2). This argument has been supported in multiple domains.

4.2.1. Health

Education has a well-documented relationship with physical health supported by a strong body of evidence (Hartog & Oosterbeek, 1998; Woessmann & Schuetz, 2006). This includes various indicators of health, such as better reported overall health of the individual, better family (child and spousal) health, lower infant mortality, increased longevity, less illness, lower medical care expenditures, and an increased ability to achieve desired family size (Haveman & Wolfe, 1984; W. W. McMahon & Oketch, 2013; Woessmann & Schuetz, 2006). Prior research has found that "educational attainment is positively associated both with health status and with healthy lifestyles," while "self-rated health, in turn, has been shown to be a reliable predictor of health problems, health-care utilization, and longevity" (Hayward, Pannozzo, & Colman, 2007, pp. 37-38). Higher levels of education are associated with increased health through both *productive* and *allocative* efficiency, which consist of "a

person's efficiency as a producer of health," but also their choices of inputs to produce this commodity (Grossman, 2005, p. 12).

Education also affects individuals' behaviours relevant to physical health. Individuals with more schooling are less likely to smoke, have lower blood pressure and cholesterol levels, and are more likely to engage in pro-health behaviours, such as engaging in exercise, a healthier diet, quitting smoking and using seatbelts (Pallas, 2000; Weiss, 1995; Woessmann & Schuetz, 2006). This is likely related to aspects of information acquisition on the subject of health (Haveman & Wolfe, 1984). They are also more likely to visit the doctor when needed (Hartog & Oosterbeek, 1998). Later in life they are less likely to have severe chronic pain, arthritis, and hearing and vision problems, are better able to engage in light physical activities, are less likely to have employment disabilities (Pallas, 2000).

4.2.2. Consumption of goods and savings

Schooling impacts decision-making and the efficiency of choices within the private sphere of market consumption and non-market activities (Woessmann & Schuetz, 2006). This is because "education yields information, facts, and ideas which enable persons with more schooling to make consumption choices more efficiently, implying a reduction in the time and other resource costs of making these decisions" (Haveman & Wolfe, 1984, p. 387). This efficiency takes both *productive* and *allocative* forms, and operates in both the market and non-market sectors (Grossman, 2005). For example, higher levels of education are linked to increased savings, even when controlling for income (Woessmann & Schuetz, 2006).

4.2.3. Social capital

In terms of social outcomes, the positive impact of schooling is clear in regards to political participation: Those with more education are more likely to vote, report a higher sense of

civic duty, and are more likely to report being interested in politics (Pallas, 2000; Vila, 2005). Education also appears to have an impact on social participation and support later in life, which is enhanced for those with more schooling (Huang, Maassen van den Brink, & Groot, 2009). Those with more education have more extensive social networks, higher levels of social support, more involvement in cultural events, and show more belonging to voluntary associations (Field, 2009; Pallas, 2000; Vila, 2000). These impacts are not simply indirect effects through socio-economic status, as they remain significant even when occupational status and income are controlled, although family effects may play role. In the case of volunteering in particular, twin studies have shown that controlling for family background may erase or even reverse the effect of schooling (Gibson, 2001).

4.2.4. Leisure

Schooling is clearly associated with leisure time activities later in life. Individuals with more schooling spend more time attending cultural and arts-related events, and fitness and educational activities, and spend less time sleeping, doing housework, and grooming (Field, 2009, 2011; Pallas, 2000). Educated people also spend more time working (Pallas, 2000). These relationships (i.e. with schooling) are stronger than those with either occupation or income.

4.2.5. Family and home-related activities

Adult family lives are also impacted by levels of schooling, but the evidence is less clearly positive. Those with higher levels of education are not any more likely to be satisfied with their marriages, but they are less likely to divorce and have delayed marriage and childbearing (Pallas, 2000; Woessmann & Schuetz, 2006). They are also more likely to marry

people with similar levels of education, a tendency termed "homogamy," which is often interpreted as 'improved' marital choice (Woessmann & Schuetz, 2006).

Individuals with more schooling spend less time on do-it-yourself projects at home, intra-family relations, and childcare, but may receive higher value in return for time spent (Grossman, 1999; Haveman & Wolfe, 1984). These differences in quality also extend to gender differences: More educated couples tend to display more egalitarian task sharing within the household than less-educated couples. As well, more recently, time spent on childcare may actually increase with education in some cases (Eckermann, 2014).

4.2.6. Values

In terms of values, those with more schooling value self-direction versus conformity more highly, are more likely to hold liberal positions on topics such as freedom of information, due process of law, liberty of expression, and equality of opportunity for minorities, and are more likely to trust others (Delhey, 2010; Inglehart & Christian, 2005; Pallas, 2000). This may be due to the "broadening activity" that takes place at school, where individuals are exposed to diverse ideas and values that may not be present in their family or friend circles (Nussbaum, 2006a; Pallas, 2000). There is also evidence that individuals' values may shift to more 'post-materialist' concerns with higher levels of education (Delhey, 2010).

4.2.7. Soft skills

Education has also been linked to personality factors, such as perseverance (Weiss, 1995), self-control and "grit" (Duckworth & Gross, 2014), sustained interest (Akos & Kretchmar, 2017), long-term orientation (Von Culin, Tsukayama, & Duckworth, 2014) and self-esteem (Drago, 2008). These have also been termed "psychological capital" (Goldsmith, Veum, & Darity, 1997), and intersect with the concept of "emotional capital" described below and in

the next chapter (Gendron, 2005b). Notably, the 'Big Five' personality factors – namely, conscientiousness, openness to experience, extraversion, agreeableness, and emotional stability – have been linked to both educational attainments and positive life outcomes (Heckman & Kautz, 2013). Furthermore, research suggests that these "character skills" are learned as a result of the socialization that takes place both in schools and in the home (hence the term "skill," and not trait; Heckman & Kautz, 2013).

Soft skills are also valued in the labour market: These non-cognitive factors have been found to significantly contribute to the explanation of different levels of wages for those with similar socio-demographic and cognitive attributes (Bowles, Gintis, & Osborne, 2001b, 2001a). For example, communication skills, sociability, and risk aversion have been found to be significantly predictive of wages, *ceteris paribus* (Albandea & Giret, 2016). However, the line of causality is often unclear. In the case of self-esteem, this aspect of "psychological capital" has both direct and indirect effects on wages, while "both relative wages and human capital contribute to self-esteem" as well (Goldsmith et al., 1997, p. 815). Thus, these factors can be seen both as non-market effects and as predictors of outcomes in their own right.

4.2.8. Emotional capital

Education is associated with various emotional competencies that go beyond cognitive (*savoirs*) or occupational (*savoir-faire*) skills to developing new ways of being (*savoir-être*), with important repercussions for both social and human capital (Gendron, 2005b; Gendron, Kouremenou, & Rusu, 2016). Indeed, as outlined above in regards to 'soft skills,' education has been shown to be significantly associated with "cognitive, social and emotional skills" (Desjardins & Schuller, 2006; Miyamoto, 2013; Miyamoto, Van Damme, Borgonovi, & Schuller, 2010). These effects will be further discussed in the next chapter, and also include personal factors such as self-efficacy, a sense of agency, and mental health (Field, 2009).

4.2.9. Limitations

These findings present quite a positive view of schoolings' effects; however, there are also threats to the validity of causal claims. Both potential antecedent factors and potential alternative mechanisms may explain all or part of how education influences adult outcomes: One such variable is family background, and another is cognitive ability (Heckman, Stixrud, & Urzua, 2006). Furthermore, these factors may themselves be mediated through other indirect effects, such as persistence, for example (Marks, 1997; Pfeffer, 2008; Schütz, Ursprung, & Wößmann, 2005). Thus, self-selection effects may also impact these associations (Heckman & Kautz, 2013). The bias of self-selection is nearly impossible to fully eliminate in educational research, but its impact must always be considered as a potential limitation when interpreting education effects.

5. Critiques of the human capital approach

The research outlined above tends to assume that the knowledge, skills, and attitudes learned in the schooling process have an impact on market or non-market behaviours and productivities. However, there is ample evidence that education's role is not so straightforward. Indeed, while education may enhance productive skills, it may also act as a visible characteristic for occupational 'sorting' or as a marker of social class.

Different theories of the impact of education on individual outcomes can be grouped into common clusters of approaches. Herman van de Werfhorst (2011) summarizes the potential impacts of education on labour market outcomes in three groups: 'education as an indicator of productive skills,' 'education as a positional good' and 'education for social closure,' which may play strongly varying roles between countries (van de Werfhorst, 2011, p. 522). The first aligns with traditional human capital theory, the second and third question this direct effect of education.

In another approach, Pallas (2000) divides the explanations of schooling effects into three main theoretical perspectives: socialization theory (schooling as the transformation of individuals), allocation theory (schooling selects gifted individuals for higher places in society), and institutional theory (education is believed to be a measure of quality and thus becomes important due to this belief). Each of these approaches takes a different perspective on the way by which schooling affects individuals' lives and each places more or less importance on structure and agency. The first places the strongest emphasis on human agency, as opposed to the second and third 'critical-institutional' types of theories.

These groupings might also be thought of as "absolute effects," "relative effects" and "selection effects" (Horowitz, 2015, p. 2). Absolute or "learning" effects were described above in relation to human capital theory and will be referred to again in relation to the capability approach; relative and selection effects are explored in the next section as alternative explanations for the link between education and life outcomes.

5.1. *Relative value: Education as signal*

The second potential role for education in society complicates traditional human capital interpretations with the problem of information gaps in the market structure, in particular in regards to the interaction of human capital in the form of education and the labour or job market. Indeed, there is a great deal of uncertainty for employers when predicting the marginal productivity of potential employees. This uncertainty arrives from two sources: Employers cannot accurately predict which knowledge and skills employees bring with them to the labour market, and they cannot be sure how these competencies will affect the employee's productivity. In order to limit this uncertainty, employers look for signals that give clues about these characteristics for groups of applicants (Spence, 1973). One of the most important of these characteristics is educational attainment: Educational credentials,

such as a post-secondary degree, allow employers to predict (in a general manner) the productivity of potential employees with this qualification. These qualifications are then used to screen workers (Arrow, 1973).

This role of education can be labeled as the 'education as a positional good' perspective (van de Werfhorst, 2011). It was prominently brought to light by Michael Spence in the 1970s (Spence, 1973). In particular, he noticed that, assuming individuals make rational investment choices in schooling and employers have particular beliefs about this education and the individual's productivity, wage offers will not only be influenced by education, but will also:

> …in turn determine the returns to individuals from investments in education, and finally, those returns determine the investment decisions that individuals make with respect to education, and hence the actual relationship between productivity and education that is observed by employers in the marketplace. This is a complete circle. Therefore it is probably more accurate to a say that in equilibrium, the employers' beliefs are self-confirming.
> (Spence, 2002, p. 437)

This theory, known as signaling theory, differentiates between *indices*, which are "attributes over which one has no control," and *signals*, which are visible, alterable attributes that are partly designed to communicate information (Spence, 2002, p. 434). Signals can be used by individuals to their benefit in the job market, more or less accurately reflecting actual productivity (the unobserved attribute), and these can in turn influence the cost and value of the signal (schooling) itself.

5.1.1. Screening functions of education

In another similar theory, Kenneth Arrow (1973) demonstrates that higher education acts as a screening or "*filter*" device, sorting "individuals of differing abilities, thereby conveying information to the purchasers of labor" (Arrow, 1973, p. 194). From Arrow's perspective, in opposition to the socialization hypothesis, in which education supplies skills (cognitive or

social) that lead to higher productivity, any increased value rests on employers' expectations rather than on a real difference in "ability" or productive capability (Arrow, 1973). Joseph Stiglitz (1975) was also prominent in theorizing the screening approach, and he emphasizes how education functions in the labeling of individuals in the labour market, in particular in economies with imperfect information.

5.1.2. Job competition

From above-mentioned perspectives, schooling is always relative within a particular context. This is also supported by the research of Lester Thurow (1972, 1975), who developed the *job competition* model, which describes a job market in which two queues, or line-ups, exist in parallel. The first is comprised of all of the available job vacancies available to applicants and is ordered by the complexity of the positions; while the second is comprised of all the potential employees ordered based on their educational qualifications. The labour market functions to select and allocate applicants for jobs by matching up these two queues, beginning with the most complex jobs and the potential employees with the highest educational credentials. This model therefore supports the contention that education is a positional good that is used to obtain a more complex job with a higher income, and thus that one's position relative to others, and not just one's characteristics alone, are important. This can also be termed a 'sorting' model of education (van de Werfhorst, 2011b).

An important limitation for measuring the effects of education in these models is that individuals may also be sorted based on characteristics that existed before entering schooling (e.g. intelligence, perseverance, etc.) as well as those resulting from schooling (e.g. literacy, numeracy, etc.). However, these self-selection effects do not negate the fact that education functions as a positional good, but rather bring to light the fact that education may sort individuals based on characteristics that are not the result of schooling itself.

5.1.3. Summary of sorting approaches

In summary, based on these critiques, it is proposed that educational credentials will have value *relative* to those of the other individuals in the labour market, and act as a *sorting device* rather than a clear indication of knowledge, skills, and attitudes imparted within education. This research is important to a critique of human capital approaches because it points to the inaccuracies that may well be promoted within a market through its normal functioning, and the fact that job market responses (i.e. wage offers) do not necessarily reflect quality of schooling or any inherent value, but rather arbitrary creations of the functioning of the job market itself. Thus, the relationship between schooling, productivity, and higher wages is problematized. This provides further impetus for using an alternate measure of the outcomes of educational attainments, but also sheds light on the potential impacts of these same self-selection effects in the relationship between education and well-being.

5.2. *Social reproduction through education*

A third interpretation of the role of education within society views education as a conservative keeper of the *status quo*, not only sorting individuals relative to those around them based on educational attainments, but doing so in order to protect a particular hierarchy of social class existing within a society. This role can be described as the 'social closure perspective' and argues that education "functions as a legitimised means for social inclusion and exclusion… [where] elites monopolise 'access to resources and rewards' by closing off opportunities to less-advantaged groups" (van de Werfhorst, 2011, p. 524). This role is not often differentiated from the 'positional good perspective.' Indeed, both are often referred to as 'sheepskin effects,' which claim that educational credentials give access to high-paying jobs not through merit or skills, but simply a visible demarcation of status (Chevalier & Feinstein, 2006; van de Werfhorst, 2011b). However, from the first perspective, educational

credentials serve as a (imperfect) measure of productivity (Park, 1999; Rodríguez & Muro, 2015), while in the second, the sheepskin is simply a social cue of a status hierarchy. Three important theories explaining the role of education in terms of 'social closure' are cultural reproduction theory (Bourdieu, 1985), credentialism theory (Collins, 1971), and the correspondence principle (Bowles & Gintis, 1976).

5.2.1. Cultural reproduction theory

The theories of the French sociologist Pierre Bourdieu on the role of education in society fit within this third perspective and challenge standard human capital approaches (Bourdieu, 1980, 1985, 1990). Power relations, and in particular the reproduction of social hierarchies without conscious intent, are the focus of Bourdieu's work (Bourdieu, 1985; Musoba & Baez, 2009). This subject aligns him with Marx, but Bourdieu argues against Marxist theory in three main ways: (1) he focuses on relationships rather than simply groups; (2) he presents social space as multi-dimensional rather than just economic; and (3) he focuses on meaning-making and symbolic struggles in a break from strict objectivism (Bourdieu, 1985).

Bourdieu describes the social world as a field or multi-dimensional space constituted by a set of active properties or forces that define the relative positions of agents and groups of agents. Different social fields are characterized by different properties, i.e. types of power or capital. In each field, agents are positioned according to both the amount of capital they have and its composition or make-up of different properties. The distribution of capital in a field creates particular power relations (i.e. *positions*) and sometimes long-lasting social statuses that offer differential power and profits to some agents (i.e. different *conditions*). Agents clustered together by position and condition can be viewed as *probable classes*, which develop similarities in dispositions, interests, practices, and stances. Thus, the social world is a space of relationships, with distances measured in time and movements that are made

possible through work, effort, and time. This account doesn't discount other social groupings, but suggests that capital distributions are more stable and long lasting than other hierarchies.

Bourdieu defines social identity as the end result of "the *work of representation* … that [actors] constantly perform in order to impose their view of the world" (Bourdieu, 1985, p.727). He claims that this happens through a "double social structuration," which is both subjective and objective: properties are indeterminate and yet unequally probable. These aspects of the social world are also mainly unconscious – internalized notions of the 'sense of one's place' in the social world. This implicit aspect contributes to the reproduction of particular power relations, but these arrangements can also be made explicit through methods of meaning making such as categorization and the creation of a *common sense* in a group. *Naming*, and the legitimate authority to name, is of central importance here. It is a way of managing both material resources and symbolic advantages through agents' and groups' positions in the social world.

The social world, according to this account, is a *symbolic system*. This system includes various lifestyles, which are conspicuous and act as signs within the system. This symbolic capital may be visible as patterns of consumption or of practice, and signifies a position in a symbolic hierarchy to other agents who perceive it within the distribution of the social world. The ability to legitimately create meaning, names, and representations of the social world is important and contested, and agents need symbolic capital or recognition from a group in order to attempt to change the legitimate view. Thus, those who benefit from the current view are the most able to do this, but are probably also the least likely to seek change, because of the benefits they have; this suggests that change is difficult. Moreover, although agents can make of the social world what they want to a certain extent, they also need to know both the structure of this world and their position within it in order to enact change.

However, these structures do not normally operate at the conscious level, and so change is even more unlikely (Bourdieu, 1985).

5.2.2. Education, 'credentialism,' and class conflict

Another theory of the role of education from a 'social closure perspective' takes a slightly different view of education, but also focusing on educational stratification. In particular, and related to the work of Spence (1973) above, Randall Collins (1971) investigated the impact of education on occupational attainment and consequently social mobility through the lens of a functional theory, closely related to human capital approaches, and a conflict theory based on the work of Max Weber. He summarizes these two approaches as:

> (a) a "technical-function theory," stating that educational requirements reflect the demands for greater skills on the job due to technological change; and
> (b) a "conflict theory," stating that employment requirements reflect the efforts of competing status groups to monopolize or dominate jobs by imposing their cultural standards on the selection process. (Collins, 1971, p. 1002)

He questions the first approach, criticizing the assumption that the needs of society determine individual behavior and rewards within the processes of the labour market. The 'demands' of a vacant job position cannot be exactly fixed, but rather must adapt to the match-up between the successful applicant and employer. This match-up is a compromise between competing aims: Potential employees attempt to gain rewards in the form of material goods, power, and prestige, while employers attempt to gain the maximum amount of productive skill. Thus, applicants must demonstrate skills that are sufficient for the position, which "depends on how much clients, customers, or employers can successfully demand of them, and this in turn depends on the balance of power between workers and their employers" (Collins, 1971, p. 1007).

Based on these observations, Collins (1971) outlines a conflict theory of stratification in which various status groups within a society, defined as 'ideal types' by their life style, power positions, and life situations, are engaged in a struggle for advantage within a society in the form of various goods, such as wealth, power, or prestige. This struggle takes place in the various organizations that make up a society (e.g. in the military, businesses, etc.). For Collins (1971), education is central to this process: "The main activity of schools is to teach particular status cultures, both in and outside the classroom… schools primarily teach vocabulary and inflection, style of dress, aesthetic tastes, values and manners" (p. 1010). Thus, the socialization function of education is predominant in this theory. Based on this implicit purpose, educational credentials serve as a marker within the labour market of shared values with a particular cultural elite. These contentions can be clearly linked back to Bourdieu's theorizing (Bourdieu, 1985; Bourdieu & Passeron, 1977).

As van de Werfhorst (2011) convincingly argues, this approach falls within a 'social closure perspective,' questioning the fact that selection within the labour market on the basis of educational qualifications benefits either the productivity or the efficiency of organizations (van de Werfhorst, 2011, p. 524). This problematization of both 'learning' and human capital approaches suggests that education does not function as an indicator of productivity, but rather a legitimized manner of ascription. Indeed, educational qualifications provide a socially acceptable and "widely acknowledged form of exclusion; by demanding formal qualifications for access to jobs, employers can control access to privileged positions" (van de Werfhorst, 2011, p. 524). This approach also questions the very basis of human capital and rejects the assumption that schools generate skills necessary and useful in the workplace. This 'conflict' theory instead views schooling attainments as arbitrary markers of social class.

5.2.3. Correspondence theory

Samuel Bowles and Herbert Gintis provided another revolutionary interpretation of the role of schooling in society in the context of the capitalist America of the 1970s. Their book, *Schooling in Capitalist America* (1976), also questioned the commonly held assumption linked to human capital approaches that cognitive skills developed through formal education explain individuals' economic success. Rather, they argued that schooling functions primarily as preparation for adult work rules by socializing pupils into roles imitating those of corporate hierarchies. This hypothesis led to the development of the *correspondence principle* (Bowles & Gintis, 1976, 2002), which postulates that schools accomplish this preparation "by structuring social interactions and individual rewards to replicate the environment of the workplace" (p. 2). Thus, the 'socialization function' of schooling – an implicit rather than explicit curriculum, incorporated into the structure of schools – is the focus of this theory. Their empirical investigations supported their hypothesis, showing that cognitive skills alone did not explain the relationship between schooling and economic success.

These authors also used econometric models to show that the inherited advantage of children of well-off families is explained only in very small part by higher cognitive abilities, and historical studies to show that school systems develop not out of the refinement of pedagogical ideals, but as a mirror to larger social processes of class conflict and re-organization in the workplace. Generally, this body of work has stood up to the test of time and there is clear support for the position that cognitive development alone – in particular IQ, but also other traits – *cannot* explain why those with more schooling have higher earnings, leading to a need for more research on the non-cognitive effects of schooling (Bowles & Gintis, 2002; Bowles et al., 2001b). Indeed, these 'social reproduction' or 'socialization'

theories of education can be seen as the flip side of the coin of 'non-cognitive effects' or 'soft skills,' which might even be seen as the "hidden curriculum" itself (Duru-Bellat, 2015).

5.3. *Limits of a rational perspective*

The perspectives outlined above suggest that the assumption that individuals choose particular educational directions based on rational and conscious reasoning is oftentimes false. The work of Bourdieu emphasizes sub-conscious forces and the work of Collins the implicit role of reproduction, but both point to the fact that human beings are not always logical decision-makers and, indeed, not always free *in practice* to choose amongst all the educational options in theory available to them. Furthermore, these theories of the effects of socialization necessitate a 'black box': they identify and christen "the various correlations that can be observed between the way people have been raised and educated and their beliefs and behavior," but do not explain them (Boudon, 2003, p. 3). This limitation will be further discussed in relation to the capability approach, below.

5.3.1. Intervening variables

In discussing human capital approaches, *human capital* was presented as a single entity; however, this can be broken down into more specific sources of capital, such as knowledge capital, health capital, social capital, psychological capital, and emotional capital (Gendron, 2005b). All of these human attributes affect the production of economic value through the ability to perform labour. There are strong interrelations between each of these subcomponents, complicating analyses. In particular, schooling is often best conceptualized as an endogenous variable, with potentially omitted third variables impacting both human capital in the form of schooling and outcomes (Grossman, 2005). These third variables may include personality factors, such as future orientation (as suggested in the research into

psychological capital), and socio-economic factors, such as parental social class (as suggested in the critical-institutional theories). It may or may not be possible to control for these variables in empirical analyses, depending on the data and models used.

As described above, one of the main dangers highlighted thus far is that of overly simplifying the role of education. Importantly, schooling's effects are not necessarily direct: Many intervening, or mediating variables, can influence these relationships. One intervening variable that may operate directly between schooling and individuals' life outcomes is knowledge and cognitive development beyond specific productive skills. Pallas (2000) summarizes a large body of literature that links more schooling to greater knowledge of national and international current events, greater cognitive flexibility, enhanced problem-solving skills, greater political knowledge, higher levels of adult literacy, and increased openness to new ideas and innovation. Importantly, these influences are thought to result more so from individuals' disposition toward learning shaped within educational contexts and then applied to a variety of situations later in life. For example, more educated individuals are more likely to read print media including newspapers, magazines, and books (Pallas, 2000). This is also consistent with the "Matthew effect," whereby more educated people are more likely to partake in both formal and informal adult learning opportunities, due in part to an increased sense of control and confidence in learning contexts (Walberg & Tsai, 1983).

Socio-economic outcomes may also mediate education effects, as suggested by allocation theory. Those with more schooling are more likely to participate in the labour force, have more orderly careers, earn higher salaries and have higher household wealth, and hold higher-status or prestige jobs (Pallas, 2000). They are also less likely to 'flounder' between a variety of jobs early in their careers. However, it is difficult to know whether these impacts are determined by cognitive factors that predate schooling, i.e. are biological or influenced by the early-childhood family environment.

Linked to the work of Bourdieu, Boudon, and Collins above, the potential third variable effect of social class is a critical oversight in many studies of the effects of education from human capital approaches. In fact, in the case of volunteering, for example, the positive non-market effect of education disappears and actually reverses once family background is taken into account (Gibson, 2001). Thus, education effects may actually reflect socio-economic status effects and not true effects of education *per se*.

5.3.2. Other limitations of human capital approaches

Human capital approaches have been complicated by the competing conceptualizations of capital and positive outcomes outlined above, but they have also been directly challenged on philosophical and ethical grounds. Three central critiques have been levied at human capital approaches:

5.3.2.1. There is too narrow of a market focus

Human capital research has typically examined returns to education only in terms of monetary value or income. However, a strong body of research has now looked at other outcomes neglected in early research, such as health (Grossman, 2005), and these non-market outcomes are a growing part of economic research (Chiappero-Martinetti & Sabadash, 2012).

There is now a strong evidence-base for wide-ranging non-market effects of education, as described above, including effects on the cognitive development of children, family nutrition and health, life expectancy, health knowledge, savings, type of employment, efficiency of decisions at work and at home, risky behaviours, charity and volunteer work, and political involvement (Chiappero-Martinetti & Sabadash, 2012). These non-market measures become even more important when we pose the question, "*Why* do we seek economic growth?" (Sen, 1997; Unterhalter, 2009) It is generally agreed upon that the

economy serves to enhance the quality of human life, but, as Sen emphasizes, it is not the only, nor the best measure of overall human well-being (Sen, 1987).

5.3.2.2. It takes a utilitarian approach to well-being

Utilitarian theory is central to arguments concerning the impact of education on later life outcomes from this perspective. Utility is a basic concept of economics more generally and studies of individual well-being in particular, and yet not necessarily clearly defined (see *Box 2*). For example, van Praag (1993) explores how to define utility in the study of well-being, and decides that utility is "an evaluation by the individual of his or her situation." From a classic Benthamite stance, "utilitarianism takes the preferences of individuals as a given and regards attempts to maximize satisfaction of those preferences as 'good'" (Gutmann, 1982, p. 262). This allows for individual differences in values, but also leads to clear problems, such as those related to *adaptive preferences* and *expensive tastes*, which will be explored in more depth later in this chapter.

> **Box 2: 'Utilitarianism'**
>
> A moral philosophy 'utilitarianism' was developed by Jeremy Bentham (1789) and asserts that actions should be judged by their consequences on individual happiness, or 'the sum of pleasures and pains' in an individual's psychological experience. Thus, the 'utility' of various behaviours can be judged accordingly, and, moreover, these judgements can be aggregated into a societal rule of the 'greatest happiness for the greatest number.' More specifically, 'rule-utilitarianism' leads to the assertion that "policy makers should aim at a society that provides the greatest happiness for the greatest number of citizens" (Veenhoven & Kalmijn, 2005, p. 422). This utilitarian approach to well-being is ubiquitous in comparative well-being research, as it is present each time that average levels of well-being are compared across countries and differences are explained in relation to the societal characteristics. However, the danger in this approach, as identified in the capability literature, is that it may overlook or even legitimize the inequalities existing amongst different groups of people within a population.[3]

5.3.2.3. It fails to address dimensions of inequality

Human capital approaches also tend to assume a meritocratic allocation of individuals within education and then from education into the labour market (Unterhalter, 2009). This somewhat mechanistic view of the role of education neglects the social processes that may impact its value (for example, Collins, 1971). Furthermore, various personal characteristics and their repercussions on individual lives in social context may also impact the relationship between education and outcomes. For example, well-being has been shown to differ by gender (Stevenson & Wolfers, 2008), employment status (Bockerman & Ilmakunnas, 2006), age (Mcmahan & Estes, 2012), and ethnicity (Yang, 2008).

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[3] Related to education, Bentham famously designed a utilitarian educational structure, named *Chrestomathia*, which aimed to make a child's mind "an instrument of his or her own happiness" through helping pupils to secure "profit-yielding employment," find "good company" (from which one could also find good employment), avoid boredom and excess sensuality, and, finally, gain the respect of other people (Gutmann, 1982, p. 264). These secondary goals of education are clearly not value-free, and it is also likely that that are not consistent with the yardstick of the 'greatest happiness for the greatest number' – in particular, the 'good company' item is reminiscent of the 'selection' and 'social closure' functions of education highlighted above.

5.3.3. How can this approach be improved?

Resistance to purely economic measures of success in educational research mirrors similar strands of thought within research on the quality of work. Purely economic measures, such as wages, occupational prestige, and benefits, while important, fail to tap into many aspects of work that are integrally important to people in their daily lives. Indicators of work quality, including autonomy, creativity, and meaning, are beginning to attract more attention in mainstream research (Boltanski & Chiapello, 2005; F. Green, 2013; Roessler, 2012).

However, much like the debate within well-being research, conceptualizations of quality are seen as value-laden and normative, while objective indicators – income or wages being first and foremost – are seen as 'value-free.' This is despite that fact that prioritizing financial incentives above other factors is evidently a value (perhaps assumed or ignored) in itself. As Luc Boltanski and Ève Chiapello (2005) astutely underline when critiquing economic science more generally as a force in the justification of capitalist institutions:

> The strength of the arguments… stemmed precisely from the fact that they were presented as non-ideological, not directly dictated by moral motives, even if they involved reference to end results generally conformable to an ideal of justice for the best and of the well-being for the greatest number… This made it possible to impart substance to the belief that the economy is an autonomous sphere, independent of ideology and morality, which obeys positive laws, ignoring the fact that such a conviction was itself the product of an ideological endeavour, and that it could have been formed only by incorporating – and then partially masking by scientific discourse – justifications whereby the positive laws of economics are in the service of the common good. (Boltanski & Chiapello, 2005, p. 12)

This assumption of objectivity needs to explored and contested if more meaningful measures of the outcomes of education are to come into fruition.

Important advancements in human capital approaches, taking into consideration aspects of inequality, problems of information within the market, and more diverse measures of outcomes, such as non-market benefits, have taken a large and crucial step in the right direction. However, as Sen asserts:

The use of the concept of human capital, which concentrates only on one part of the picture (an important part, related to broadening the account of "productive resources"), is certainly an enriching move. But it does need supplementation. This is because human beings are not merely means of production but also the end of the exercise. (Sen, 1999, p. 295-296)

6.   Education from a capabilities approach

An extensive body of research makes clear that education most certainly contributes indirectly, and quite possibly directly, to individual well-being beyond economic effects (Vila, 2000, 2005). This perspective can be captured theoretically by the capability approach. The capability approach clearly differentiates "between incomes and achievements, between commodities and capabilities, between our economic wealth and our ability to live as we would like" (Sen, 1999, p. 13). Utility, measured in pecuniary or hedonic[4] terms, is not sufficient to describe well-being, nor does it the measure the equally important human outcome of agency. Thus, the capability approach asserts that freedoms should take a central role as both the ends and means of development.

6.1. The capability approach

Amartya Sen (Sen, 1977, 1979, 1981, 2005) developed the capability approach in reaction to the utilitarian basis of economic science and the repercussions still evident within the field in the 1970s and 1980s. The utilitarian approach was based on three pillars:

   a) *act consequentialism*, so that a decision is evaluated according to the resulting state,
   b) *welfarism*, in that decisions are evaluated according to a social welfare function defined over the levels of individual utility,
   c) *sum-ranking*, in that the criterion is the sum of individual utilities. (Atikinson, 1999, p. 175)

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[4] The use of the term '*hedonic*' here can "be connected to the idea that all there is to a good life is the presence of pleasure and the absence of pain" (Straume & Vittersø, 2012, p. 387) and will be discussed in detail in the next chapter.

Sen (1985, 1993) and others who use the capability approach (for example, Nussbaum, 2011; Robeyns, 2006) make a distinction between *capabilities* and *functionings* when looking at quality-of-life issues. Sen (1999) defines capabilities as "the alternative combinations of functionings that are feasible for a person to achieve" (p. 75) and functionings as "various things a person may value doing or being" (p. 75). Thus, the term "capability" can be defined as the answer to the question, "What is this person able to do and to be?" and "functioning," in turn, can be defined as the "active realization of one or more capabilities" – or, otherwise stated, "beings and doings" (Nussbaum, 2011, p. 24-25).

Capabilities are not simply a person's abilities, but their freedoms or opportunities to achieve various functionings. Thus, the central assertion of the capability approach is that people should have the "freedom to live the kind of life that, upon reflection, they have reason to value" (Robeyns, 2005, p. 94) through capabilities and functionings that reflect "the various things a person may *value* doing or being" (Sen, 1999, p.75, *italics added*). This concept has its basis in Aristotelian philosophy in that it connects human well-being not only to what one has and does, but also to a reasoned personal idea of the good life (Nussbaum, 2011).

The capability approach is a 'pluralist evaluative theory' (Verhoeven et al., 2009). An agent, within this approach, is defined as someone who "acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well" (Sen, 1999). This aligns with research on personal autonomy, which defines 'autonomy' as "being able to reflect about how one wants to live on the basis of reasons, beliefs, motives, and desires which are one's own—not imposed by others for personal or political reasons—and to live one's own life accordingly" (Roessler, 2012, p. 73).

As with the present critique of human capital approaches regarding effects of education on one's behaviours in the workplace and outside of the professional sphere, personal autonomy and autonomy in specific life domains, such as work, cannot be clearly separated from each other. As Schwartz (1982) argues:

> Becoming autonomous is not a matter of coming to exercise intelligence and initiative in a number of separate areas of one's life. Rather, it is a process of integrating one's personality: of coming to see all one's pursuits as subject to one's activity of planning and to view all one's experiences as providing a basis for evaluating and adjusting one's beliefs, methods, and aims… a society must encourage all its members to pursue unified lives if it is to aid each one of them to achieve autonomy. (Schwartz, 1982, p. 638-639)

Jobs that allow no opportunities for self-direction are clearly counter-productive to personal autonomy, and *vice versa*. Indeed, the education-work nexus has been highlighted as central to the study of the development of capabilities (Verhoeven, Orianne, & Dupriez, 2007). Due to the fact that incorporating a larger evaluative frame is one of the key advantages of this approach (Verhoeven et al., 2009), a holistic approach incorporating multiple areas of one's life is clearly necessary in order to capture these concepts and their interrelations.

6.2. *Nussbaum's contribution*

While Sen's (1999) approach is termed the 'capability approach,' Martha Nussbaum's work with the approach might be better termed a '*capabilities* approach.' She has worked extensively with the capability approach and created a list of ten 'central capabilities' necessary to a truly human existence (see *Box 3*). Moreover, she proposes her list as a way to compare societies by asking the question, "What is each person able to do and to be?" (Nussbaum, 2011, p. 18).

Nussbaum (1993) argues for the importance and universality of virtues in determining the good life. However, when choosing a list of substantive goods, the perspective from

which we look at what makes a good life also complicates matters.[5] Furthermore, freedom does not only reside in the person: The "political, social, and economic environment" also shapes individual freedoms (Nussbaum, 2011, p. 20). Nussbaum emphasizes the fact that people may voice preferences that are shaped not only by what they want but also what they *are capable of imagining* due to various social circumstances and constraints and terms these 'adaptive preferences' (a concept that aligns well with Bourdieu's concept of *habitus*).

Box 3: Nussbaum's ten central capabilities

Nussbaum, unlike Sen, outlines a list of central capabilities in an 'objective-list approach' to well-being. These are conceptualized as 'opportunities for functioning' and include: life; bodily health; bodily integrity; senses, imagination, and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment (both political and material). This approach is meant to deal directly with the question of fundamental human entitlements and to take a step towards defining "central political principles that can be the basis for constitutional guarantees" (Nussbaum, 2008, p. 104).

Although charged with being 'paternalistic' (Dolan & White, 2007), this approach does not take as its aim to impose certain criteria of well-being on all individuals, but rather works from the tradition of the human rights approaches, which attempt to outline fundamental constitutional rights that lay the groundwork for a basic level of justice within a society. Thus, the definitions within the list are deliberately 'partial' to allow for individual differences in values. Furthermore, because this is a list of *capabilities* and not functionings, each individual retains the ability to choose to partake or not of each of these items (Nussbaum, 2008). Nussbaum's central capabilities are discussed in more depth in Chapter 2.

In a concrete example of her theoretical approach, Nussbaum points to the example of spousal abuse of women, prevalent worldwide, and contends that:

> A universalist approach seems to entail that there is something wrong with the preference (if that is what we should call it) to put up with abuse, that is just should not have the same role in social policy as the preference to protect and defend one's bodily integrity. It also entails that there is something wrong with not seeing oneself in a certain way, as a bearer of rights and a citizen whose dignity and worth are equal to that of others (Nussbaum, 2001, p. 69).

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[5] Is it our own life? Is it the life of our child? Of the citizens of our country? Of the world? Each of these perspectives might change what we want to take into account when deciding what the good life will be: Do we need to know people's preferences? Their goals beyond happiness? The cultural specificities of the country in which they live?

This is obviously a position that few would disagree with; however, many would simply argue that these preferences are mistaken and the result of a lack of adequate information or distorted information.[6]

Nussbaum thus situates her approach between two extremes, *subjective welfarism* on the one hand, and *platonism* on the other hand. The position of *subjective welfarism* claims that all individual preferences are equal and that political and social choices should be made based on some sort of aggregation of all of these preferences. The second position, *platonism*, works from the other extreme, discounting whether people prefer something as irrelevant and often too prey to error to be trusted, instead guarding an 'objective' list of criteria of what is just and good (Nussbaum, 2001). There are potential benefits in both positions:

> Welfarism springs from respect for people and their actual choices, from a reluctance to impose something alien upon them, or even to treat the desires of different people unequally. In effect, it starts from respect for persons, interpreting that as equivalent to respect for preferences. Platonism springs from an urgent concern for justice and human value, and from the recognition that in the real world these values are frequently subordinated to power, greed, and selfish indulgence (Nussbaum, 2001, p. 70).

However, as Nussbaum highlights, there are also certain problems inherent to each approach: *subjective welfarism* makes radical critique of institutions almost impossible, while *Platonism* disregards people's actual lived experiences. She concludes that we "must try to preserve the important values contained in each of these two extremes, while avoiding their defects" (Nussbaum, 2001, p. 70).

For this reason, it is important to consider both capabilities and functionings when evaluating quality of life, as inequalities in functionings may point to unmeasured capabilities or the influence of adaptive preferences (Robeyns, 2005; Schokkaert, 2007). Moreover, "simplistic interpretations of the idea that taking account of freedom requires adopting the

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[6] An approach that takes account of these potential errors could resolve the problem. In fact many welfarists hold the same view, cautioning that anti-social preferences are not to be held to the same regard as other preferences. Some researchers extend this to 'cultural conditioning' as well. This same perspective emerges in the study of cognitive biases, where 'mistakes' in thinking and decisions are accounted for, and some preferences can be discounted on these ('objective,' 'value-free') grounds (Kahneman, 2011).

capability metric and dropping any concern for achievements" comes with inherent dangers, as "mistakes can easily be made about the measurement of capabilities" (Fleurbaey, 2006, p. 308). Indeed, within the rich literature concerning the capability approach, authors have argued for tapping into individual values and preferences by using subjective scales (Schokkaert, 2007), taking into account achievements rather than capabilities as such (Fleurbaey, 2006), as well as basing the domains of well-being on 'objective' criteria (Jayawickreme, Forgeard, & Seligman, 2012). These 'moderate' positions provide guidance to the present research.

6.3. The multiple roles of education

Sen, (1985, 1993, 2009) and Nussbaum (2008, 2011) both emphasize education as a capability of central importance for both human freedom and well-being. Other researchers using the capability approach also emphasize education as a capability that enhances human agency by forming the basis for other capabilities, such as emotional and physical health (Unterhalter, 2003). Chiappero-Martinetti and Sabadash (2012) assert that education can play three roles in the well-being process within a capability approach: Education can be viewed as a part of well-being itself as a valued functioning, it can be viewed as an instrument or input that impacts well-being, and it can be viewed as conversion factor between other inputs, such as welfare state provisions, and well-being outcomes.

When applying the capability approach to educational policy, one of the key questions to ask is: "How does education contribute to enlarging the 'real freedoms' of individuals, not only in their educational results and [employment] outcomes, but in terms of its impact on their life?" (Verhoeven et al., 2009, p. 7, *author's translation*). In order to do so, one must consider not only educational inputs in terms of resources, but also individual conversion factors (such as non-cognitive skills) and environmental conversion factors (such as school

characteristics). For example, individuals' opportunities to develop valued capabilities and convert them into functionings may be impacted by the neighbourhood in which they live (Couppié, Giret, & Moullet, 2010) or the extent of tracking within the educational system, leading to potentially irreversible academic decisions (Olympio & Di Paola, 2018).

The term '*fertile*' capability or functioning can be used to describe capabilities or functionings that feed into other capabilities and functionings (Wolff & De-Shalit, 2007). Within this framework, one's capability set determines both one's freedom and well-being, the latter by providing one with the ability to live out a meaningful life that one has reason to value. For example, education may enlarge individuals' sets of functionings and capabilities in terms of employment opportunities, reducing the probability that individuals lack sufficient resources to live a life that they have reason to value (Becchetti, Massari, & Naticchioni, 2010; Flores-Crespo, 2007) and allowing them to find a job that offers them a sense of accomplishment and meaning (F. Green, 2013; Lanzi, 2007). Thus, from this approach, education should improve one's well-being, provided that it indeed is a *fertile* capability that further expands one's capability set. This fact has been asserted by almost all researchers working with the capability approach, including Sen and Nussbaum, although some researchers emphasize situations where education may have a negative and not a positive effect (for example, Unterhalter, 2003).

Education, from the view of the capability approach, is important not only for instrumental reasons, such as getting a more satisfying job, a higher income, and a better social position; but also for intrinsic reasons. Thus, the capability approach "offers a larger frame of evaluation: it allows us to embrace both its intrinsic contributions… and extrinsic contributions" (Verhoeven et al., 2009, p. 9). In fact, Drèze and Sen (2002) outline five roles of education: education for its intrinsic importance, instrumental personal economic role, instrumental collective economic role, instrumental personal non-economic role, and

instrumental collective non-economic role. Thus, education can be valued for its own sake, or to help one find a better job; it maybe be valued for creating a more educated workforce, for allowing one to speak to people from another country in their language, or for helping to build a more tolerant society (Sen & Drèze, 2002).

However, these roles have not been fully developed theoretically, nor very often explored empirically (Verhoeven et al., 2009, 2007). Furthermore, the capability approach is most often used in research examining developing countries, and only quite rarely in research examining developed countries (Alkire & Santos, 2014; Collomb, Alavalapati, & Fik, 2012; Rojas, 2007). While clearly a valuable evaluative framework for education, this approach also faces several challenges, including the difficulty of measuring individuals' real opportunities, the sheer number of important outcomes, and incorporating individuals' *reasoned* preferences in their welfare, as outlined below and in the next chapter.

6.3.1. Measuring the impact of education

As outlined above, the capabilities approach allows multiple conceptualizations of education. In general, a capabilities approach considers three main variables: the inputs, or means to achieve; the capabilities set, or freedom to achieve; and the functionings set, or the actual achievements. These variables are also impacted by conversion factors, which moderate the relationship between inputs and capabilities, and choices, which determine the functionings selected from the capability set, as illustrated in *Figure 5*. Thus, an individual's capability set exists in relation to his or her social and personal context (Robeyns, 2005).

Education can be conceptualized at different stages in the process. Schooling may be an input that creates capabilities and therefore impacts later life chances, while the resulting educational attainment may be considered an output or functioning. The ability to use and produce knowledge is also an important capability, as emphasized by Nussbaum (2000).

Thus, having the numeracy skills necessary to perform a particular job or manage one's finances may be a valued capability, for example.
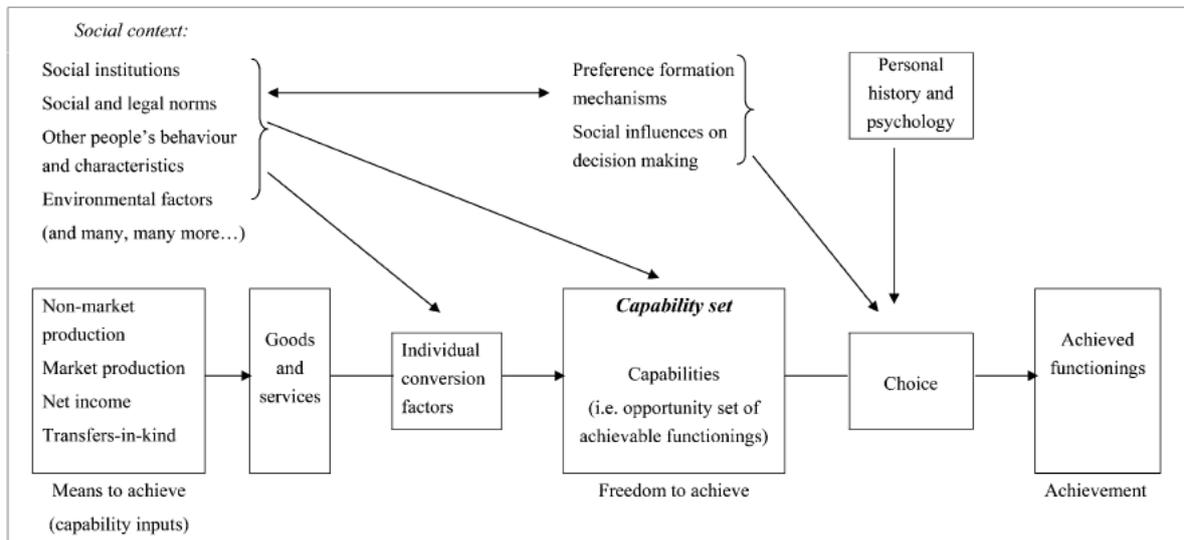
Figure 5. Relationships between inputs, capability sets, conversion factors, and functionings sets (reproduced from Robeyns, 2005, p. 98).
Note: This schema shows the social context of capability development, where individual capability sets depend not only on individual factors, but also on macro-institutional characteristics at varying levels. For example, educational system characteristics form part of the social context that impacts an individual's ability to participate in post-secondary education, perhaps presenting specific barriers, which then shape an individual's freedom to achieve desired functionings, such as having the numeracy skills necessary to perform a particular job or manage one's finances.

Furthermore, at the 'meso' level, education or schooling may be conceived of as a conversion factor that moderates the relationship between welfare state provisions of health care, for example, and individuals' ability to access these provisions and have good health. Thus, education is valued in and of itself, but also as a tool for creating other capabilities and functionings. The current study views educational attainments in terms of inputs and conversion factors – although the intrinsic value of education is not questioned, the goals of this research are to examine to what extent education impacts *other* important functionings, in particular evaluations of various life domains related to well-being.

These impacts will evidently depend on the 'quality' of schooling as well, which will differ between and within countries. In the present study, the impact of educational

attainments on well-being are examined along with, and as shaped by, structural characteristics of educational systems. These characteristics are undoubtedly associated with common measures of educational quality: Funding, performance on international skills assessments, degree of stratification, and other attributes can all be considered as indicators of 'quality.' In particular, test scores have been argued to be key to measuring system quality across countries (Altinok, Angrist, & Patrinos, 2018; Altinok, Diebolt, & Demeulemeester, 2014). While some international tests, such as the Program for International Student Assessment (PISA), attempt to capture "skills for life," these standardized test scores provide a limited view of the aims of schooling (Duru-Bellat, 2015; OECD, 2001). Furthermore, they may emphasize global competition in scores and even 'performance obsession' (Malet, 2009, 2012). Despite this, alternative measures are difficult to find in the international comparative research.

This research argues that well-being as measured by the capability approach is an alternative measure of educational 'quality.' While specific academic skills are unquestionably important, indicators capturing the degree to which an educational system expands individuals' chances to build a life that they have reason to value are almost non-existent in the research, and as such merit deeper exploration. In doing so, we are able to examine educational outcomes that are separate from, but may contribute to, outcomes in typical human capital terms (Gendron, 2005b). The role of educational context in shaping capability development will be discussed in more detail in Chapter 3.

6.3.2. Advantages of a capability perspective

Education is an investment in the future. While recent research has begun to focus on student well-being in schools and universities, the present study takes as its aim the later well-being of adults with different levels of education within contemporary societies. Thus, the role of

education in promoting valued capabilities, as well as education 'gradient' in well-being, will be explored. As other authors have argued, education is "a process being and becoming in the future" whereby the future freedom of children is protected and enhanced (Walker, 2008, p. 149). This future-oriented perspective, along with issues of access, reversibility, and equal opportunities for success, render some educational systems more capability-friendly than others (Olympio, 2012).

The benefits of working with a capability approach as opposed to a standard human capital approach when looking at education and educational policy is that non-market effects of education are considered at the same level of importance as pecuniary measures. Robeyns (2006) compares three potential underpinnings for educational policy: human capital theory, the capability approach, and the human rights approach. She critiques the human capital approach for being "economistic, fragmentized and exclusively instrumentalistic" (p. 69). She asserts that human capital approaches often view individuals solely as workers and the goal of education as investing in and increasing the productivity of those workers. Thus, education increases well-being only insofar as it increases income. Robeyns (2006) asserts that this approach blocks out "the cultural, social and non-material dimensions of life" (p. 72) and disregards individuals' social commitments and responsibilities, viewing them as "independent and unconstrained" (p. 80). Despite this, she does not advocate doing away with human capital theory altogether, but rather – in line with Sen (1997) – recognizes that human capital is an important part of understanding education's function in society, but that we need to move beyond it to acquire greater breadth and recognition of the complexity of its role.

This argument underscores the role of education in promoting capabilities that are not necessarily recognized in most human capital approaches (Robeyns, 2006). Education thus

has the potential to increase individuals' well-being through the development of a broad array of outcomes:

> The accumulation of human capital expands people's achievable opportunities and functionings, and enlarges individual freedom 'to do and to be' in other not directly "productive" spheres. These individual functionings, include for example being able to communicate and to argue, to know, to participate in the life of a community, to be able to interact with other people based on mutual respect, and all related functionings that constitute the background of human agency, i.e. the ability to pursue one's life goals. (Chiappero-Martinetti & Sabadash, 2012, p. 15)

Notably, these individual functionings bring people closer to those things they *value* doing or being. Furthermore, education can also add to one's ability to exercise practical reason, which enables one to both create a conception of the good life and work towards it (Nussbaum, 2011). These arguments provide support for the position that the capability approach offers a better basis for educational policy (Robeyns, 2006).

6.3.3. Complementing the capability approach

The capability approach focuses on freedom and agency; however, structures in place that inhibit these freedoms are not always clearly theorized. In order to supplement this freedom-based approach with more structuralist accounts, some researchers have combined Bourdieu's theories with those of Sen to provide complementary conceptualizations of aspects of both freedom and structure for the individual and the society (Andres, 2009; Bowman, 2010; Hart, 2013; Kim & Kim, 2008). Sen's capability approach, as outlined in the previous subsection, concerns the individual, while Bourdieu's theories concern social structures.

Bourdieu's theories are often used in North American research to make arguments about individuals; however, this confounds James Coleman's interpretation of capital with that of Bourdieu himself, whose theories do not deal directly with human agency (Musoba &

Baez, 2009). In Bourdieu's research, classes were the unit of analysis, not the individual *per se*. Coleman focuses explicitly on individual attainment using the concepts of social and human capital to explain social mobility, while Bourdieu outlines a theory of social reproduction and oppression based on cultural, social, and human capital (Musoba & Baez, 2009). Thus, Bourdieu can be used to explain the role of higher education as part of a system of social relations, while the work of Sen is more useful and appropriate to analyze the relationship between education and well-being of individuals.

Researchers who have combined the work of Sen and Bourdieu have seen Bourdieu's concepts of capital as enriching our understanding of the commodities, or resources, that create and enable individuals' capabilities, and the conversion factors that may aid or impede this process (Hart, 2013). Bourdieu's theory helps us to understand how these advantages are passed down from generation to generation and how our choices and values are in fact (at least partially) socially constructed. Sen's approach allows us to look at the commodities and capabilities of the individual, after they have been converted from the three forms of capital.

However, Sen's work does not enable us to look directly at the influence of culture in shaping people's preferences and the relationship between social structures and everyday practices, while Bourdieu outlines this explicitly (Bowman, 2010). Bourdieu's theories, on the other hand, do not allow us to explain the freedom and agency of the individual (Musoba & Baez, 2009). Both, however, draw on the work of Aristotle and are concerned with explaining inequality as well as changing it.

Research informed by these two perspectives focuses on structure-agency interaction, and highlights the 'bounded' nature of human agency (Rubenson & Desjardins, 2009). Bourdieu's theorizing allows us to consider the interplay between an individual's *habitus* and social context, while Sen's (1999) approach encourages us to think about how the social context "regulates the perceived opportunities and liberties that individuals face, and hence

their functioning, or what people can actually do" (Rubenson & Desjardins, 2009, p. 196). This necessitates that individuals not only have resources available, but also information "about the range of possibilities of how these resources can be used to realize things that matter to them and knowing how to do so" (Rubenson & Desjardins, 2009, p. 196). A combined approach informed by these two lines of theorizing emphasizes the importance structural barriers, including institutional ones, such as those we find in educational policies.

6.3.4. Inequality and the capability approach

The capability approach, by considering the ability to live a life that one has reason to value as the ultimate outcome in human development (including both agency and well-being aspects), underlines the importance of education to create valued outcomes, or *functionings*, but also to allow the largest field of freedom of choice available to all individuals. Thus, the aims of social justice and equal opportunities for well-being are necessarily relevant for educational researchers using a capability approach.

Importantly, this 'ultimate outcome' is often distributed unequally amongst individuals. One type of inequality is that by gender. Some researchers, such as Robeyns (2003), have used the capability approach to study gender inequality in Western countries. The fact that the capability approach is ethically but not ontologically individualistic is integrally important to an analysis by gender. Thus, the units under study are individuals, and not households or communities, but these individuals are understood to exist within these social structures and to both influence and be influenced by these supra-individual entities. Education can play an important role in empowering women, in particular women in financial or personal difficulty, such as low-income mothers (Deprez & Butler, 2007).

This concern with human diversity contrasts strikingly with the tendency in standard welfare economics to neglect intra-house-hold inequalities in non-market labor and total

workloads. Equality is therefore often measured in ultimately 'male terms,' only focusing on market dimensions. Indeed, although

> Feminist scholars have argued that many theories of justice claim to address the lives of men and women… closer scrutiny reveals that men's lives form the standard and gender inequalities and injustices are assumed away or remain hidden, and are thereby indirectly justified. (Robeyns, 2003, p. 66)

The capability approach therefore provides a needed perspective, notably in the economic literature, due to the fact that it does not limit its analysis of equality to equality of income. Although this is one important facet of human equality, it is important to recognize that capability and functioning in multiple areas of life – education, family formation, social networks, political participation, healthcare – are all important to human well-being.

6.4. Limitations and critiques

John Elster (1982) mounts a critique of all utilitarian approaches in the form of the concept of *adaptive preferences*, as illustrated by the fable of the fox and the (sour) grapes. He asks:

> Why should individual want satisfaction be the criterion of justice and social choice when individual wants themselves may be shaped by a process the pre-empts the choice? And, in particular, why should the choice between feasible options only take account of individual preferences if people tend to adjust their aspirations to their possibilities? (Elster, 1982, p. 219)

He extends this critique to Sen's arguments about welfare, which differentiate 'reasoned' preferences from those simply based on one's past experience, and thus not permanent or invariable.

Nussbaum is not entirely convinced by this critique, pointing out that adaptive preferences are not necessarily negative restrictions on freedom in a real sense. She uses the example of a young girl (herself) who dreams of being a famous opera singer, but later gives up the dream in light of the evidence (that she can't sing). This is a perfectly rational approach, based on the evidence. She goes even further in her critique to state: "People's

liberty can indeed be measured, not by the sheer number of unrealizable wants they have, but by the extent to which they want what human beings have a right to have" (Nussbaum, 2001, p. 79). Her informed-desire account attempts to take into account the issue of *adaptive preferences*, considering individual desires and preferences in light of their individual circumstances and (assumed) causes.

However, this argument refuting one critique opens the approach to others: One of the main critiques that can be levied against the capability approach is that choosing a vector or list of well-being criteria is a paternalist approach (Dolan & White, 2007; Nussbaum, 2008). For example, although rejected earlier as an overall approach, it is also important to consider the fact that people may make educational choices based purely on monetary considerations (Alstadsæter, Kolm, & Larsen, 2008), without consideration for their psychological well-being as such. Although the capability approach focus on 'reasoned choices' may contest these values, it remains plausible option of a life that one has reason to value.

Another critique, which can equally be charged against human capital approaches, is that these approaches tend to view individuals as rational agents, who are able to make choices between various options available to them. What is often not considered is that their choices are also limited by their exposure to relevant information, which may in turn be influenced by their socio-economic status, as well as parental social and cultural capital (Andres, 2009). This 'bounded rationality' means that individual's actions do not occur in a void, but are rather the outcome of a process of interactions between their desires, beliefs, and the information available to them from various sources (Elster, 2009).

Furthermore, the various aspects of rational action within individual lives are all interrelated, because "desires and opportunities are not always (as is sometimes assumed) independent of each other" (Elster, 2007, p. 165). Elster (2009) emphasizes the complicated nature of rational choice:

On the one hand, the agent can choose only among the options that he thinks are available to him [or her]. The objective existence of an option superior to those he is aware of cannot influence his [or her] action. On the other hand, the agent chooses among the options of which he [or she] is aware according to the possible consequences he [or she] attributes to them and his [or her] estimate of the probability that they will occur… For action to be rational, the beliefs on which it is based must themselves be well founded. (Elster, 2009, p. 21-23)

Consequently, agency in terms of post-secondary educational decisions might be better termed 'bounded agency,' as described earlier.

Rubenson and Desjardins underscore this in their "Bounded Agency Model," which examines the "interaction between structurally and individually based barriers to participation" in adult education (Rubenson & Desjardins, 2009, p. 187). While individuals may have a high degree of freedom in some educational settings, they are "also bounded by structures and contexts and by features of the self that constrain choices" (p. 192). Within this context, *not* participating, as well as participating, may become "highly rational" acts (p. 192). This means that the associations between post-secondary educational attainment and well-being must be interpreted carefully, as these relationships are influenced by both national educational contexts and a myriad of other personal factors.

7. Marrying human capital and capability perspectives: An absolute or relative role for education?

Thus, human capital and capability approaches are not necessarily at odds when examining the outcomes of education. Indeed, due to difficulties with fully enacting a capability research approach, authors often choose to take a pragmatic approach, extending a classic human capital approach to include aspects of the capability framework, both for individuals as well as 'positive spillover' effects for societies. Education moves beyond having a simple role as an instrument for future productivity and earnings, and is also viewed for its impact on other

domains of life. Accordingly, the *meaning* of education changes from purely income-based, cost-based, or stock-based approaches to human capital accumulation and its effects on life outcomes, as is most common in the economic literature to date, to approaches emphasizing outcomes in terms of political participation, autonomy, values, social trust, as has been explored in sociological and educational studies (Chiappero-Martinetti & Sabadash, 2012).

Sen describes the differences between the human capital and capability approaches thusly:

> Given her personal characteristics, social background, economic circumstances, etc., a person has the ability to do (or be) certain things that she has reason to value. The reason for valuation can be direct (the functioning involved may directly enrich her life, such as being well-nourished or being healthy), or indirect (the functioning involved may contribute to further production, or command a price in the market). The human capital perspective can - in principle - be defined very broadly to cover both types of valuation, but it is typically defined - by convention - primarily in terms of indirect value: human qualities that can be employed as "capital" in production in the way physical capital is. In this sense, the narrower view of human capital approach fits into the more inclusive perspective of human capability which can cover both direct and indirect consequences of human abilities. (Sen, 1997, p. 1959)

In particular, concerning education, Sen makes the same argument outlined above: namely, that education contributes not only in the sphere of work, but also in all other spheres of life, contributing to overall well-being. He describes this example:

> If education makes a person more efficient in commodity production, then this is clearly an enhancement of human capital. This can add to the value of production in the economy and also to the income of the person who has been educated. *But even with the same level of income, a person may benefit from education, in reading, communicating, arguing, in being able to choose in a more informed way, in being taken more seriously by others, and so on.* The benefit of education, thus, exceeds its role as human capital in commodity production. The broader human-capability perspective would record - and value - these additional roles. (Sen, 1997, p. 1959, *italics added*)

This is consistent with some research on the non-market returns from schooling, which include supra-individual effects as well as for the individual herself. This approach also

allows for a consideration of subjective perspectives, taking into account the diversity arising from different individual and cultural values.

The capabilities approach provides a good frame for this study because it outlines a language and space for analyzing both individuals' quality of life and international comparative contexts. It allows for an analysis of the impact of post-secondary education on well-being that is not strictly utilitarian, emphasizing human freedom alongside well-being, and not limiting well-being to the strictly mental conception of happiness. Using the capabilities approach as a framework allows the researcher to take an underutilized approach of looking not only at what people earn and do for work, but also at what they are *able* to be and do in all parts of life.

The aim of the present study is to explore the impact of education on well-being in a combined human capital-capability approach in comparative perspective. Thus, it is also important to address potential critiques of these approaches, as outlined above. While both human capital and capability approaches emphasize human agency, important critiques of these approaches focus on the selection and allocation processes that may operate through the institutionalization of education. In order to compare these perspectives, it is necessary to consider multiple potential causal mechanisms, both direct and indirect. Additionally, capability and traditional human capital approaches also differ in whether education is assumed to contribute to well-being mainly through market or non-market mechanisms.

Moreover, the relationships explored within this study are not assumed to be universal; rather, how they may differ across contexts is a central aspect of the present research. Indeed, by focusing on the link between education and well-being at both the individual and country levels, it is necessary to situate these associations within and in relation to characteristics of national educational systems and labour markets. (The potential moderating effects of national contexts will be discussed in more depth in Chapters 3 and 4.)

Based on the literature review above, two different understandings of the education-well-being association are possible:

a) One from a combined human capital and capability framework, which assumes the connection between education and well-being is directly based on diverse knowledge, skills, and behaviours acquired from education (a "learning" hypothesis); and

b) Another from a critical 'selection' approach, which alternatively argues that the relationship between education and well-being is at least in part due to occupational sorting and the effects of occupational and social status on individual well-being.

Thus, two possible research outcomes arise. First, as illustrated by arrow *A* in *Figure 6* below, given that human capital and capability approaches assume an "absolute value" for education (Horowitz, 2015, p. 750), education may directly increase well-being, even when controlling for occupational sector. Second, informed by the prominent critiques of human capital approaches, the effect of education on well-being may be partly explained by education's strong relationship with outcomes in the labour market. In this case, the impact of education on well-being would be mediated, or explained, by individuals' occupational status, as illustrated by arrow *B* in *Figure 6*.
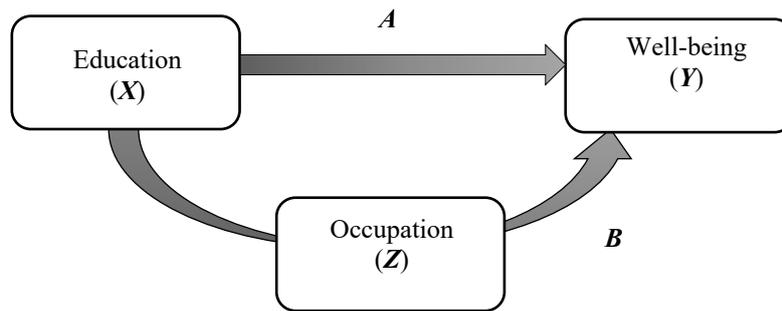
Figure 6. Schema illustrating the potential relationships between education and well-being (adapted from Pullman & Jongbloed, 2017).

Note: This path diagram shows the proposed causal effect of education (X) on well-being (Y) where, in addition to the partial direct effect of education (X) on well-being (Y), education also has an effect on occupation (Z), which in turn has an effect on well-being in a mediated relationship (Wu & Zumbo, 2008).

The second perspective suggests a "relative value of education" (Horowitz, 2015, p. 751). As critical-institutional perspectives suggest, education functions as a 'sieve' (Stevens, Armstrong, & Arum, 2008, p. 129), sorting individuals into various occupations that then create varied opportunities for well-being (in this case, further capability development). Given that credentials are argued to have a signaling effect, the indirect relationship between education measured by highest educational credential, as compared to years of education, and well-being would support a 'selection' perspective (van de Werfhorst, 2011b).

Evidence for this alternative 'indirect' explanation of an educational gradient in well-being is found in the literature. Indeed, it has been argued that it is "mainly through the impact of education on income and occupational status" that education is correlated with well-being (Argyle, 1999, p. 353). Thus, the empirical analyses will test for these mediating effects, in order to better define the nature of this relationship. As well as examining mediation models, the overall levels and dispersion of well-being scores across educational categories within countries will also provide evidence for or against these relative effects.

8. Conclusion

The research questions of this study are thus grounded both theoretically, as discussed above, and empirically. From this framework of inquiry outlined in the first chapter, three research questions arise:

1) Is educational attainment significantly associated with individual well-being in Europe, and how do individual levels of well-being differ by post-secondary educational categories?

2) In there evidence for indirect, or mediating, effects through the social 'selection' function of education?

3) How do these relationships differ across institutional contexts?

These research questions lead to three interrelated hypotheses. The theoretical reasoning in relation to the capability approach and the studies of the non-market benefits of education suggest that post-secondary education has a direct effect on individual well-being as measured through a combined human capital and capability-informed approach (H_1). These effects may operate through post-secondary educational credentials and/or years of education completed. A more traditional human capital approach would suggest that post-secondary education has an indirect effect on well-being through income, which will be explored in preliminary analyses as robustness checks. Finally, the critical approaches suggesting that 'selection' and 'social closure' mechanisms are at work within educational systems lead to the hypothesis that post-secondary educational credentials have an indirect effect on well-being through occupational sorting (H_2). These effects are also assumed to be shaped, or moderated, by educational welfare regime contexts (H_3), which will be outlined in the following chapters.

Chapter 2. Understanding well-being

1. Résumé en français

Il existe de multiples interprétations du concept de bien-être dans la littérature scientifique. Ces approches peuvent être séparées en trois groupes : celles qui mettent l'accent sur la satisfaction du désir, qui dominent les études économiques ; celles qui se focalisent sur la plaisir hédonique ou le fait de « se sentir bien, » qui sont souvent utilisées dans la littérature psychologique ; et les approches qui proposent des listes ou des modèles de ce que des individus ont besoin, comme la liste objective des capabilités humaines centrales de Nussbaum et des conceptualisations « *eudaimonic* » trouvées dans quelques théories philosophiques et psychologiques du bien-être et de la qualité de vie. Dans ce chapitre, des conceptualisations existantes du bien-être sont problématisées, et une mesure éclairée par l'approche des capabilités et les théories de l'*épanouissement* est suggérée comme une solution à la fois théorique et empirique. Cette approche évite les critiques opposées dans la littérature scientifique de (1) la subjectivé excessive dans les approches utilitaires du bien-être et (2) du paternalisme excessif dans les approches des capabilités par rapport à la qualité de vie.

Suivant le développement de cette conceptualisation, qui comprend l'*épanouissement* d'une façon *eudaimonic* inspiré de la liste de Nussbaum (2011) des capabilités humaines centrales, les recherches existantes qui étudient le lien entre l'éducation et le bien-être sont explorées, avec un focus particulier sur l'éducation post-secondaire. Les différences entre les mesures hédoniques et *eudaimonic* du bien-être sont soulignées : alors que de nombreux chercheurs arguent que l'éducation a peu d'impact direct sur la satisfaction dans la vie et, au contraire, affecte le bien-être indirectement à travers des opportunités professionnelles,

financières, et sociales enrichies (Castriota, 2006; W.-C. Chen, 2011; Helliwell et al., 2012), il apparait que l'éducation a des effets substantifs et directs sur les mesures du bien-être multidimensionnelles et *eudaimonic* (Jongbloed, 2018; Nikolaev, 2018). Malheureusement, le manque de résultats des recherches sur les effets non marchands de l'enseignement et la formation professionnels (EFP) a limité cette discussion aux impacts de l'éducation post-secondaire globaux. Enfin, une grille intellectuelle est introduite proposant que le contexte social en termes de politiques éducatives joue aussi un rôle déterminant dans la qualité de vie des individus et sur l'association entre l'éducation et le bien-être selon les pays (Haller & Hadler, 2006; Rothstein, 2010), qui sera étendu dans le prochain chapitre.

2. Summary

There are many different interpretations of the concept of well-being in academic literature. These approaches can be separated into three main groups: Approaches that emphasize desire-fulfillment, which dominate economic studies; approaches that focus on hedonic pleasure or 'feeling good,' which are prominent in the psychological literature; and approaches that propose lists or models of what people *need*, such as Nussbaum's objective list of capabilities and the *eudaimonic* conceptualizations found in some philosophical and psychological theories of well-being and quality of life. In this chapter, existing conceptualizations of well-being are problematized, and a capability-informed measure of *flourishing* is suggested as a theoretical and empirical solution avoiding the opposing criticisms of excessive subjectivity in utilitarian approaches to well-being and excessive paternalism in capability approaches to quality of life in the scientific literature.

Following the development of this conceptualization, existing studies on the link between education and well-being are explored, with a particular focus on post-secondary education. Differences between hedonic and *eudaimonic* well-being measures are

highlighted: While many researchers argue that education has little direct impact on life satisfaction and rather affects well-being indirectly through enhanced occupational, financial, and social opportunities (Castriota, 2006; W.-C. Chen, 2011; Helliwell et al., 2012), there is evidence that education has substantive direct effects on well-being as measured by multi-dimensional *eudaimonic* scales (Jongbloed, 2018; Nikolaev, 2018). Finally, a frame of inquiry in introduced, suggesting that social context in terms of national differences in educational policies also plays a role in determining both individual well-being and the education-well-being association across countries (Haller & Hadler, 2006; Rothstein, 2010), to be extended in the next chapter.

3. The concept of well-being

3.1. A (very) brief history of happiness studies

Well-being has been a topic of human study since the time of the Buddha and the ancient Greeks, and surely even earlier (McMahon, 2006). Over this time, ideas on what constitutes well-being and how we can attain it have shifted over place and time. In ancient Greece, Plato theorized that a person could achieve the deepest happiness by being just – and living in a just society (Plato, 1974). Plato argued that the just person, who is the natural product of the just society, is the happiest possible person because each part, both within the individual and society, is acting according to its specialized function with reason in charge of the whole (Plato, 1974). This argument suggests that happiness does not depend on the individual, but depends on social action, because individuals are always a reflection of the society in which they live.

During the time of the Roman Empire, the idea of the 'Divine Self' emerged in the theories of Marcus Aurelius, who asserted that one could only find happiness through knowing one's 'Self.' In contrast with earlier Greek theories, Aurelius' approach suggests

that happiness depends on the personal development of the individual and will therefore differ from person to person (Aurelius, 1942). In contrast, the teachings of Siddhartha Gautama, or the Buddha, claim that suffering often arises from our *craving* for happiness and our tendency to cling to an inflated sense of 'Self' (Lee, 2008)

Later, in Geneva and France, Jean-Jacques Rousseau described finding happiness as going in search of one's lost 'natural' self, buried below civilization's artificial idea of the self (Rousseau, 1762). He claimed that if civilization were stripped away, individuals would rediscover their true selves and, therefore, their inherent happiness (Rousseau, 1974). On the other hand, several prominent German philosophers of the next century took a much different stance, arguing that happiness is the result of hard work and struggle. For example, Arthur Schopenhauer and Friedrich Nietzsche suggested that true happiness could only arise as secondary to the grander accomplishments of genius and heroism (Bruford, 1975).

In the late nineteenth century, the emergence of the field of psychology shifted attention away from well-being and toward mental illness. Finding 'authentic happiness' was no longer a primary goal, but rather, guided by thinkers such as Jeremy Bentham (1789), the primary aim became finding an absence of pain and a presence of pleasure. However, as an undercurrent to these predominant views, Carl Jung (Jung & Dell, 1940) saw happiness as emerging from the process of individuation – integrating aspects of one's conscious and unconscious being in order to become whole – which takes place within the context of the shared 'collective unconscious.'

The birth of the modern academic study of happiness is often pinpointed as Warner Wilson's (1967) article, "Correlates of Avowed Happiness." Wilson (1967) found that the "happy person emerges as a young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person with high self-esteem, high job morale, modest aspirations, of either sex and of a wide range of intelligence" (p. 294). After this early

scientific work, a small field of study developed around the correlates of well-being, including education (Haveman & Wolfe, 1984; Nagpal & Sell, 1985; Tuijnman, 1990; Witter, Okun, Stock, & Haring, 1984). This domain then grew exponentially in the 1990s and into the 2000s (Csikszentmihalyi, 1990, 1997; Diener, Suh, Lucas, & Smith, 1999; Kahneman & Krueger, 2006; Seligman & Csikszentmihalyi, 2000; Veenhoven, 2010a). Importantly for the present study, this early assertion that the 'well-educated' are happier has been supported by more recent research (presented later in this chapter), although not unanimously or without contestation.

In 1972, happiness became an official aspect of national public policy for the first time: The state of Bhutan put into use the index of 'Gross National Happiness' (GNH) as a replacement for traditional economic indicators to measure progress, such as GDP (Schroeder, 2018). Rooted in Mahayana Buddhism, this multi-dimensional development model asserts the universality of happiness as a human aspiration and thus its central importance for public policy. The components incorporated in GNH come from "a well-rounded balance of the material and non-material," constructed on four original 'pillars' – "equitable social and economic development, environmental conservation, cultural preservation and promotion, and good governance" – and expanded into nine domains, including "health, education, living standard, ecological diversity and resilience, cultural diversity and resilience, good governance, community vitality, time use, and psychological well-being" (Royal Government of Bhutan, 2012; Schroeder, 2018, p. 22). Its application to education has infused "GNH values and principles" into Bhutanese secondary school curricula, with positive (although mixed) impacts on student and teacher's self-reported behaviours and experiences (Giri & Krogh, 2016).

The Bhutanese government's approach of attempting to directly measure well-being predated and inspired other policy initiatives, such as the Stiglitz-Sen-Fitoussi Commission

(Stiglitz, Sen, & Fitoussi, 2009), the OECD 'Better Life Initiative' (Smith & Exton, 2013), and the Earth Institute's 'World Happiness Reports' (Helliwell et al., 2012).[7] The United Nations also recognized the merit in this approach in an organized summit on the use of the GNH to measure progress, and highlighted that a number of national governments had begun measuring the well-being of their populations, including "the United Kingdom, Germany, Italy, Australia, Slovenia, Japan, Korea, China, Colombia, Mexico, Morocco, and India" (Royal Government of Bhutan, 2012, p. 34). Indeed, the UN Council agreed unanimously that a "holistic approach to development" aimed at promoting sustainable development through the utilization of measures other than economic growth are absolutely necessary in order to avoid "potentially catastrophic climate change" (Royal Government of Bhutan, 2012, p. 92).

3.2. Recent work in happiness studies

The academic study of happiness, as well as the closely related terms of life satisfaction, well-being, and subjective well-being (SWB), has been growing in popularity over the past decades (Gilbert, 2006; Helliwell et al., 2012; McMahon, 2006). Numerous literature reviews on this topic have been written in recent years within the discipline of psychology (e.g., Diener et al. 1999; Dolan, Peasgood, & White 2008; Kahneman & Krueger 2006) and economics (e.g., Blanchflower & Oswald 2004; Helliwell & Putnam 2004). The study of happiness or well-being as an outcome variable is now common in both of these domains. Indeed, human well-being has been described as "the ultimate 'dependent variable'," and, in particular, "well-being as defined by the individual herself, or 'subjective well-being'" (Helliwell & Putnam 2004, 1435). The most exciting aspect of this field of research is that it

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[7] Other related measures include the Social Progress Index, the Gallup Global Well-being Poll, the Human Development Index (HDI), the Gender Equality Index, the European Quality of Life Index, the Legatum Prosperity Index, the Happy Planet Index, and the New Economic Foundation's National Account for Well-being (Greve, 2016; Nef, 2009; Smith & Exton, 2013).

unites different kinds of social scientists from around the world (Blanchflower & Oswald, 2004). However, this leads to multiple and often contradictory theories and conceptions of well-being.

Thus, within the literature of well-being there have developed many different conceptual and methodological approaches, due in part to the fact that this topic crosses many disciplinary boundaries. The fields of psychology, economics, political and moral philosophy, sociology, and education have all produced unique streams in the study of well-being. What is more, there are also divergences within each field. For example, the field of the philosophy of well-being has been described as containing five streams: subjective state theories, desire fulfilment theories, life-satisfaction theories, objective list theories, and nature fulfilment theories (Huta & Waterman, 2013). As a result, there is a multiplicity of approaches that hinders attempts at a unified theory (Jayawickreme et al., 2012). However, diverging findings can be understood by analysing the nature of the diverse interpretations of well-being.

Jayawickreme, Forgeard, and Seligman (2012) created the metaphor of the "engine of well-being" to illustrate how these seemingly contradictory approaches can be brought together. In this endeavour they were guided by Sen's (1999) argument that well-being is at its core a plural and not a singular construct. They, following the lead of other researchers, separate the existing scientific theories of well-being into three major groups: Approaches that emphasize desire-fulfilment, approaches that focus on pleasure or "feeling good," and approaches that propose objective lists or models of what people *need* in order to be well (Jayawickreme et al., 2012). These can be summed up succinctly as "wanting," "liking," and "needing" theories (Dolan & White, 2007), and have been classified into similar categories by other researchers (Allardt, 1993; Deci & Ryan, 2006; Parfit, 1984). Most approaches fall into one of these groups, although others attempt to join the three into a holistic approach in theories of 'flourishing' (e.g., Seligman, 2011). These three groups can be further collapsed

under two major headings: hedonic and *eudaimonic* understandings of well-being (Delle Fave, Brdar, et al., 2011; Huta, 2015; Straume & Vittersø, 2012; Waterman, 2007; Waterman, Schwartz, & Conti, 2008), which are summarized below.

3.3. Hedonic approaches

3.3.1. Preference-satisfaction

The first group of theories, hedonic theories of well-being, tend to focus on the satisfaction of individual preferences and individuals' positive evaluations and feelings overall. Within this group, 'desire-fulfilment' theories conceptualize well-being as the satisfaction of preferences and desires. This approach focuses on the objective market behaviour and characteristics of goods possessed by individuals (Sen, 1979, 1987; van de Werfhorst, 2011a). This includes much of the economic research on wage offers and income, as well as people's ability to consume various goods. This basic approach has been modified in many ways, such as by the inclusion of *idealized preferences* to account for the influence of insufficient information on rational choice (Dolan et al., 2008). However, as outlined above, this approach provides a very limited glimpse into how well people are really doing: Assessing life outcomes solely based on material goods is no longer representative of the values professed by most individuals in developed countries (Delhey, 2010; Inglehart & Christian, 2005; Yeganeh, 2017).

3.3.2. Satisfaction with life

Another hedonic approach to evaluating well-being, that of measuring life satisfaction, conceptualizes well-being as the extent to which an individual feels good or satisfied. Researchers working from this approach often focus on individuals' evaluations of their lives

as a whole (Barrington-Leigh, 2013; Diener et al., 1999; Helliwell & Barrington-Leigh, 2010; Helliwell & Putnam, 2004). 'Satisfaction with life' (SWL) is typically measured by an individual's response to a Likert-type scale that asks a question such as, "All things considered, how satisfied are you with your life as a whole nowadays?" Most often, studies use this single item as the dependent variable of interest. Seen as the cognitive component of well-being, this measure is often privileged in research in sociology and political economy.

An important limitation of this general measure is that long-term evaluations might be biased by recent events or framing effects (Kahneman, 2011) and that differences amongst well-being domains are often hidden (Jongbloed & Andres, 2015; Van Praag & Ferrer-i-Carbonell, 2008). Thus, interpretation of results can become difficult. Furthermore, due to cultural differences in response patterns, differences between average country levels of well-being may be exaggerated (Becchetti, Corrado, & Samà, 2016; Bjørnskov, Dreher, & Fischer, 2008, 2010).

However, more complex scales have been also developed within this framework that include specific domains of satisfaction as well as overall life satisfaction, and emphasize the multi-dimensional nature of this construct (Fenouillet, Chainon, Yennek, Masson, & Heutte, 2017). For example, the Multidimensional Students' Life Satisfaction Scale (MSLSS) has been tested internationally and found to have strong psychometric properties across samples (Fenouillet, Heutte, Martin-Krumm, & Boniwell, 2015). These scales are often described in the literature as tapping into 'subjective well-being,' as described below.

3.3.3. 'Subjective well-being'

The most commonly used operationalization of well-being in the psychological literature is 'subjective well-being.' The term "subjective well-being" (SWB) was coined by Ed Diener, and numerous measurement scales have now been extensively tested by his team and others

(Diener et al., 2010). Building on the early psychological work of Bradburn (1969), this approach takes into account "experienced emotion," both positive and negative, and "balance of emotion" (Diener, 2000). Satisfaction with life is also sometimes incorporated in the definition alongside positive and negative affect (Fenouillet et al., 2017).

Indeed, the term is now also defined in numerous ways amongst studies: Some focus on momentary feelings of positive emotion (Kahneman & Krueger, 2006), some focus on domains of satisfaction (Fenouillet et al., 2015; van Praag & Ferrer-i-Carbonell, 2008), while others focus strictly on positive and negative affect as well as the balance between the two (Diener, Wirtz, et al., 2009; Diener, Scollon, & Lucas, 2009; Helliwell & Barrington-Leigh, 2010). Scales have been developed within the 'subjective well-being' framework that emphasize the multi-dimensional nature of this construct (Fenouillet et al., 2017). For example, the Scale of Positive and Negative Experience (SPANE) (Diener et al., 2010) assesses "a broad range of negative and positive experiences and feelings based on how frequently they were felt over the previous four weeks," as well as "other states such as interest, flow, positive engagement, and physical pleasure," and has been validated internationally (Martin-Krumm et al., 2018, pp. 543-544).

The term 'subjective well-being' (SWB) is now often used in a way that is meant to encompass all of these hedonic measures as a blanket term and to emphasize the subjective, or personal, nature of happiness, as it refers to one's "affective and cognitive evaluation of one's life" (Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005, p. 261). Each of these approaches have important limitations; for example, momentary emotion is open to short-term bias caused by mood, while long-run positive emotion in the form of general happiness is more prey to cultural differences in reporting.

Subjective well-being has dominated the study of well-being for the past few decades; however, Sen (1985, 1987, 1999) and others have offered important critiques, bringing

awareness to the fact that this approach is not (typically) sensitive to the distribution of well-being in a society, neglects other valuable outcomes, and is easily influenced by adaptation and mental conditioning (Raibley, 2011; Stewart, 2014). Hedonistic theories can also be critiqued for designating "pleasure" as "the only thing that contributes to the quality of a life" (Scanlon, 1993, p. 189). While it is logical for theories of well-being to posit that pleasant mental states can make life better, this does not mean that they make things more *valuable*. Robert Nozick's (1974) famous example of the "experience machine" offers an illustrative argument for why there should be more to well-being than a positive subjective state (Warnick, 2009).

While there are clear arguments for why there should be more to well-being than simply pleasant experiences, positive emotion has been linked to outcomes beyond 'feeling good' as an end in itself. Fredrickson's (1998) *broaden-and-build* model of positive emotion has shown that hedonic well-being can help in the development of "physical, intellectual, and social resources" (p. 300). Indeed, joy, interest, contentment, and love can "broaden individuals' habitual modes of thinking and build their personal resources for coping" (Fredrickson, 2000, p. 1). Thus, positive and negative emotion might not be two sides of the same coin, but might rather have "distinct and complementary" individual effects of "narrowing" or "expanding" individuals' experiences (Delle Fave, Brdar, et al., 2011; Fredrickson, 2000). This provides an argument for the inclusion of hedonic measures of well-being as at least one part of an overall conceptualization, as "the capacity to experience positive emotions may be a fundamental human strength [that is] central to the study of human flourishing" (Fredrickson, 2001, p. 218).

3.3.4. Limitations of a hedonic approach to well-being

Employing broad self-reported evaluations of overall satisfaction or happiness in life as a measure of well-being has several drawbacks. Firstly, these types of global measures, while useful as a general gauge of overall well-being, provide little information on how well-being can be improved, and thus makes implications for policy difficult to draw. Secondly, they are more prone to reporting biases, both cultural and individual (Becchetti et al., 2016). One way of reducing the potential impacts of these differences in response patterns is to divide item ordinal scales into 'high' or 'low' categories using thresholds; however, this does not completely eliminate biases (Bjørnskov et al., 2010).

Another potential drawback is that fact that any notion of well-being has a normative theory at its core – whether acknowledged or not. Thus, a measure of well-being must be pluralistic, allowing for personal and cultural differences, but should also share some essential 'basics' that can be agreed upon for all people (notably in the areas of health and gender equality). These opposing criteria make any definition of well-being open to criticism and continual change. Furthermore, an emphasis on 'being happy' may in fact provoke feelings of frustration at 'not being happy enough,' leading to stigmatization and self-doubt. This highlights the potential for bi-directionality of causality in studies of well-being.

3.4. Eudaimonic approaches

Those only are happy, I thought, who have their minds fixed on some object other than their own happiness, on the happiness of others, on the improvement of mankind, even on some art or pursuit, followed not as a means, but as itself an ideal end. Aiming thus at something else, they find happiness by the way. (Mill, 1893)

The final grouping includes objective-list or *eudaimonic* theories of well-being, which have a rich history in philosophy. Indeed, the term *eudaimonia* was used by Aristotle to

conceptualize and measure the extent to which an individual reaches the full potential of being human (Aristotle, 350BC/1996; Ryan, Huta, & Deci, 2006). These theories typically include objective lists of attributes needed in order to be well, and often consider the notions of meaning, purpose, and autonomy (Deci & Ryan, 2006; Ryan & Deci, 2000, 2001; Ryff & Singer, 2006).

3.4.1. 'Psychological well-being' and other multi-dimensional measures of eudaimonic well-being

One of the first and perhaps the most well known modern-day psychological operationalizations of *eudaimonic* well-being is that of Carol Ryff. Ryff developed a multi-dimensional model of well-being building on a diverse combination of psychological theories (see *Figure 7*), including:

> Erikson's (1959) psychosocial stages, Buhler's (1935) basic life tendencies, Neugarten's (1973) personality changes… Maslow's (1968) conception of self-actualization, Allport's (1961) formulation of maturity, Rogers' (1961) depiction of the fully functioning person, and Jung's (1933) account of individuation." (Ryff & Keyes, 1995, p. 720)

Compiling this great breadth of psychological research, she outlines six distinct components of positive psychological functioning that include:

> positive evaluations of oneself and one's past life (Self-Acceptance), a sense of continued growth and development as a person (Personal Growth), the belief that one's life is purposeful and meaningful (Purpose in Life), the possession of quality relations with others (Positive Relations With Others), the capacity to manage effectively one's life and surrounding world (Environmental Mastery), and a sense of self-determination (Autonomy)" (Ryff & Keyes, 1995, p. 720).

These theory-driven dimensions have been tested empirically and found to map onto a best-fitting empirical model that consists of six factors correlated together in a single larger higher order factor (Ryff & Keyes, 1995). Furthermore, and importantly for the present study, levels on these six factors were found to differ by educational attainment: Indeed, psychological

well-being was found to be "strongly positively linked" with education, and this association was "especially pronounced for personal growth and purpose in life, the two pillars of eudaimonia" (Ryff & Singer, 2006, p. 29).
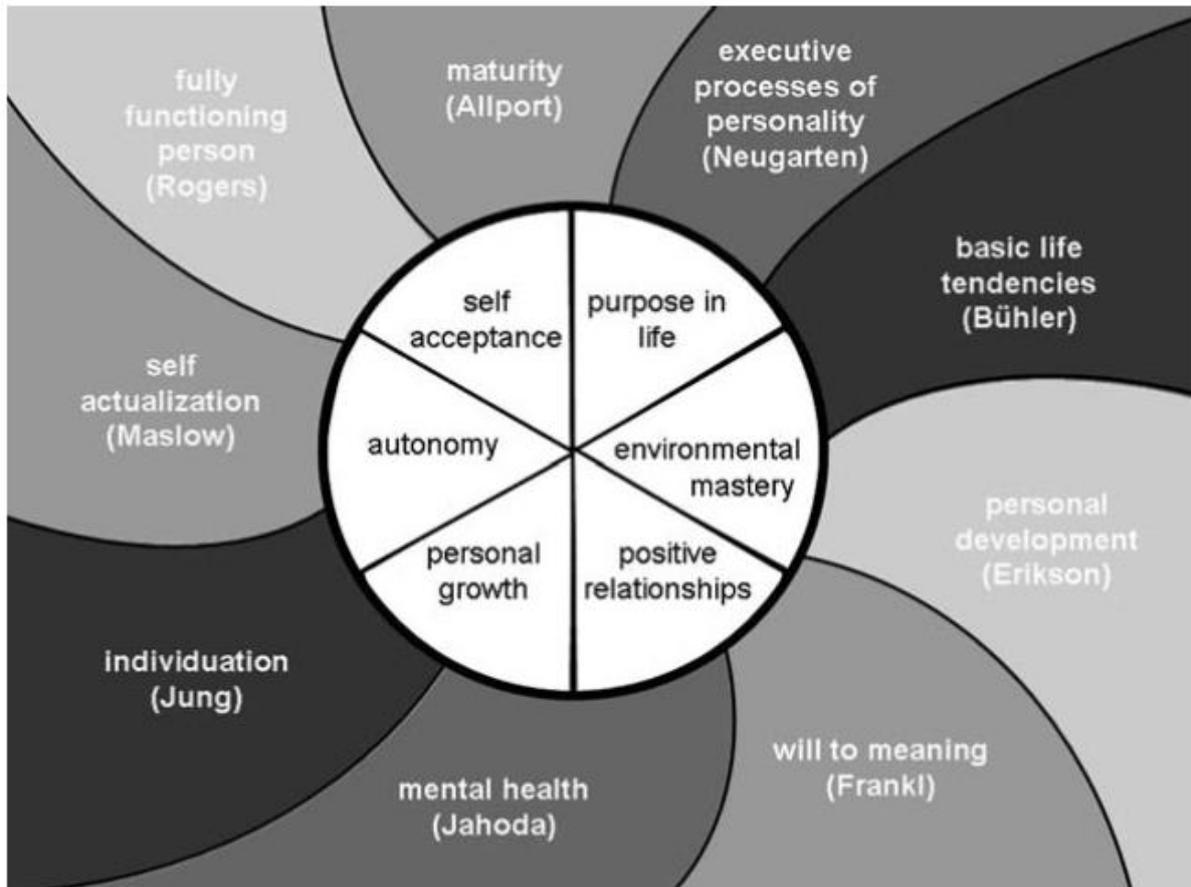
Figure 7. Dimensions of Ryff's psychological well-being (reproduced from Ryff & Singer, 2006, p. 20).

Other researchers, including Ed Diener, have created a psychological instrument mapping onto the construct of psychological well-being (PWB) as a whole. Their eight-item index taps into self-reported functioning in the areas of social relationships, self-esteem, purpose and meaning, and optimism (Diener et al., 2010; Diener, Wirtz, et al., 2009). The scale correlates substantially with other psychological well-being scales, while providing a single overall psychological well-being score rather than scores for various components of

well-being (Diener et al., 2010; Diener, Wirtz, et al., 2009). This research supports the notion of underlying 'higher order factor' comprising psychological well-being and its components.

Beyond Ryff's theory, several other operationalizations of eudaimonic well-being exist in the literature. Waterman developed a theory of eudaimonic well-being comprising of six elements: self-discovery, perceived development of one's best potentials, a sense of purpose and meaning-in-life, investment of significant effort in the pursuit of excellence, intense involvement in activities, and enjoyment of activities as personally expressive (Huta & Waterman, 2013; Waterman, 2007; Waterman et al., 2008).

Steger conceptualizes eudaimonic well-being on the basis of individuals' behaviours that are both aimed at self-expression and yet consistent with their values, autonomy, self-reflection, goals and purpose, social relationships, and self-development (Steger, Kashdan, & Oishi, 2008; Steger, Oishi, & Kashdan, 2009). In an empirical investigation of whether these behaviours, which are representative of many eudaimonic theories of well-being, were associated with greater reported well-being in terms of satisfaction than hedonic behaviors, aimed at 'feeling good' as a primary aim, he found that they showed consistently stronger associations (Steger et al., 2008). (This finding supports the quote from Mill (1893) at the beginning of this section.)

Within the framework of self-determination theory (SDT), Ryan and Deci (2000) outline a list of well-being criteria that are seen as ends in themselves, including: personal growth, social relationships, community contribution, physical health, being autonomously motivated, and behaving in mindful ways. Each of these also satisfies the central human needs for autonomy, competence, and relatedness (Ryan & Deci, 2000; Ryan et al., 2006).

Delle Fave views eudaimonic well-being as constituting two components: first, flow, as theorized by Csikszentmihalyi (1990); and secondly, long-term meaning-making. Both are determined by the forces of 'psychological selection' at work in individuals' lives, whereby

we choose activities that are challenging enough to encourage 'flow,' and therefore personal growth (Bassi, Bacher, Negri, & Delle Fave, 2012; Delle Fave, Brdar, et al., 2011; Delle Fave, Brdar, Wissing, & Vella-Brodrick, 2013; Delle Fave, Massimini, & Bassi, 2011). Delle Fave and her research team use questionnaires such as the Eudaimonic and Hedonic Happiness Investigation, Satisfaction with Life Scale, and Psychological Wellbeing Scales to measure both eudaimonic and hedonic well-being in different regional contexts.

Vittersø (2004) describes a 'eudaimonic orientation,' which he defines as a tendency to seek out challenge and complexity. Through this orientation, eudaimonic well-being is achieved through a preference for complexity, curiosity, engagement/interest and flow, personal growth, competence, meaning/purpose in life, and self-actualization (Straume & Vittersø, 2012; Vittersø, 2004). He uses a battery of tests to measure individual differences in this orientation, including the Basic Emotion Trait and State Tests, the Flox Simplex, and the Personal Growth Complex test.

Bauer defines eudaimonic well-being both as an orientation and as an experience (Bauer, McAdams, & Pals, 2008). He operationalizes 'eudaimonic orientation' as captured through individuals' narratives about personal growth and eudaimonic experience as evidenced in ego development and maturity over time (Bauer et al., 2008). Maturity is defined here as being self-aware, seeing oneself as interdependent, taking others' perspectives, thinking in terms of long-term consequences, and searching more complex and deeper understandings of things (Bauer & McAdams, 2010; Huta & Waterman, 2013).

Finally, Huta defines eudaimonia as a motive: "Striving to use and develop the best in oneself, in ways that are congruent with one's values and true self" (Huta & Waterman, 2013, p. 1446). She uses the Hedonic and Eudaimonic Motives for Activities (HEMA) scale to measure individuals' eudaimonic motivation (Huta, 2012, 2016; Huta & Waterman, 2013). Notably, she calls for researchers to present more clearly the core definitional elements of

their conception of well-being, the categories of analysis they wish to address, and the levels of measurement that they utilize in their research (Huta & Waterman, 2013).

3.4.2. Well-being as overall health

Well-being is also closely linked to the concept of health. The World Health Organization defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946). This definition has not changed in the almost sixty years since its introduction; however, public health research has tended to remain focused on the "absence of disease" portion of health, [8] and the acceptance of subjective measures of well-being have only become widely accepted in the past thirty or so years. In this time, there has been tremendous growth in the study of 'subjective well-being,' but this tends to employ an equally singular focus on the experience of positive emotion. Comprehensive measures of well-being, investigating its physical, mental and social aspects, are much less prevalent in the literature. The OECD 'Better Life' initiative signals a shift towards incorporating a more holistic view (OECD, 2013a; Smith & Exton, 2013).

The 'Better Life' initiative addresses these challenges by defining subjective well-being as: "Good mental states, including all of the various evaluations, positive and negative, that people make of their lives, and the affective reactions of people to their experiences" (Smith & Exton, 2013, p. 29). Thus, their conceptualization of subjective well-being is an 'umbrella term' that includes people's diverse judgments about their lives, bodies, internal and external experiences, and circumstances (consistent with Diener et al., 1999). As such, it includes three sub-components: life evaluation, affect, and *eudaimonia* or psychological

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[8] The impacts of 'un-health' are very real and important avenues of research. Depression touches the lives of increasing proportions of the populations of most industrialized countries, despite advances in living conditions. This growth is difficult to understand; however, researchers working on studies of suicide have in fact found a 'contagious' aspect and argue for more sensitive handling of such cases by the media. The evidence of this spread of unhealthy behaviour suggests that a focus on healthy behaviours and ways to promote greater well-being are the much-needed way forward in research. This is not to say that research into its opposite is not necessary, but to emphasize each alongside the other.

"flourishing." Furthermore, subjective well-being is not theorized as the only indicator of well-being; it is meant to be measured alongside other important "measures of non-subjective outcomes, such as income, health, knowledge and skills, safety, environmental quality and social connections" (Smith & Exton, 2013, p. 29).

3.4.3. The 'good life'

Another concept prominent in the philosophical discussions of well-being is the idea of the 'good life,' which dates back in western philosophy to the ancient Greeks and appears in various forms in the history of philosophy around the world. The 'good life' can be understood as the collection of 'beings' and 'doings' (to use Sen's terms) that make up a life well-lived. Thus, the 'good life' is well-being measured by an entire life, as opposed as measures tapping into well-being for one person at a particular time or period of time. Furthermore, one's idea of the good life depends the values that one holds and an 'examined life' is typically held in higher esteem – just as Sen argues for a life that one '*has reason*' to value. Thus, this '*doing* well' approach almost always defines the 'good life' as depending "on organizing our existence around a plan, choosing all our actions with a view to making possible the overall goal we have set for ourselves" (Larmore, 2009, p. 102).

Aristotle (350 B.C./1996) famously defined the 'good life' as a "complete life comprised of activities devoted to pursuing characteristically human goods… including friendship or belonging, knowledge, good governance, justice, and pleasure" (Fowers, 2012, p. 20). However, the 'good life' is open to limitless interpretations. This is often investigated in empirical research by how people imagine the 'good life' should be (Andres & Wyn, 2010; Jongbloed & Andres, 2015). Such research, which is also implemented in capability approaches, considers "what people value being and doing…in terms of living lives they

regard as good" (Wilson-Strydom & Walker, 2015, p. 316). These accounts can illustrate what people themselves see as important to their well-being.

Brock (1993) classifies three broad theories of a 'good life,' which map onto the 'wanting,' 'liking,' and 'needing' analytical grill described here for well-being more generally. The first of these three types of conceptions of the 'good life' is hedonistic and makes "the ultimate good for persons to be the undergoing of certain kinds of conscious experience," namely happiness or positive emotion (p. 96). The second is preference satisfaction where the good life consists "in the satisfaction of people's desires or preferences… with its underlying idea that ultimately what is good for persons is that they should get what they most want or prefer" (Brock, 1993, p. 97). The third is ideal theories, which may include portions of the first and second theories mentioned, but always argue that there is another part that "consists of the realization of specific, explicitly normative ideals," such as "being a self-determined or autonomous agent" (p. 97). Ideal theories are 'objective' in another sense, insofar as:

> they hold a good life for a person is, at least in part, objectively determined by the correct or justified ideals of the good life, and does not in those respects depend either on what makes that person happy or on what that person's (even corrected) preferences happen to be. (p. 98)

The capability approach, outlined below, fits within this third category.

3.4.4. The capability approach and Nussbaum's list of capabilities

The capability approach, which is the guiding framework for examining well-being in this study, is also widely considered a *eudaimonic* approach to well-being. As explained in the previous chapter, Amartya Sen (1985, 1993, 1999) is the original theorist of this approach, while Martha Nussbaum (1993, 2008, 2011) developed her own extended theories based on Sen's work. However, both make a distinction between *capabilities* and *functionings*. "Functionings" are real states of 'being and doing,' while "capabilities" are valuable

functionings that an individual can effectively access, and thus choose between, in constructing a life that she has reason to value (Nussbaum, 2011).

Sen's (1999) famous example is that of a fasting versus starving person: These two people do not differ in functioning, but obviously differ very much in capability. One person is faced with an environment constraint, which is detrimental to his health, while the other has made a spiritual decision to forgo the food available to her. Thus, capabilities are not simply a person's abilities, but one's freedoms or opportunities to achieve various functionings. This freedom does not only reside in the person; the "political, social, and economic environment" (Nussbaum 2011, p. 20) also shapes these freedoms, either restricting or enhancing individual human agency. This example illustrates the importance of measuring capabilities alongside functionings (Fleurbaey, 2006).

Sen's and Nussbaum's approaches are based in Aristotelian philosophy in that capabilities reflect "the various things a person may value doing or being" (Sen 1999, p. 75). The valued functionings for an individual person "may vary from elementary ones, such as being adequately nourished and being free from avoidable disease, to very complex activities or personal states, such as being able to take part in the life of the community and having self-respect" (Sen 1999, p. 75) . Nussbaum (2011) outlines a list of central human capabilities necessary for all people, while Sen (1999) prefers to rely on societies and groups to decide democratically which capabilities are important to them. However, both agree that human well-being can, at least in theory, be delimited in an objective list. In this way, this approach fits into the eudaimonic approaches to well-being referred to above.

Sen (1993) argues that human beings have goals and strivings related to both well-being and agency. (Here agency is a goal in itself, and not necessarily simply a means to increase one's well-being, although it may also do so.) Thus, both achievements and the freedom to achieve are important to human beings. Sen (1985) further argues that we do not

always act to increase our well-being; it is very important, but "there are clearly other things that are also valuable to do or be" (p. 196). Thus, while 'wanting' and 'liking' measures of well-being may appear in an individual's vector of relevant capabilities, or capability set, these measures are not sufficient to represent an individual's overall well-being.

Accordingly, Sen's account runs counter to a one-dimensional focus on subjective measures of happiness such as those found in utilitarian and welfarist accounts. Sen (1985) asserts that "as a mental state concept, the perspective of happiness may give a very limited view of other mental activities" (p. 188) and argues that happiness and well-being are two separate constructs. He states that although "happiness is of obvious and direct relevance to well-being, it is inadequate as a representation of well-being" (p. 189). Well-being, as Sen (1999) defines it, is a much larger concept that includes multiple facets of a person's functionings and capabilities, only one of which is happiness. One's capability set determines one's well-being by providing one with the ability to live out a meaningful life that one has reason to value.

However, this approach does not completely reject subjective accounts of well-being, rather it posits that a view of well-being that neglects what people can actually do and be in their lives is incomplete. Sen (1985, 1993) aligns well-being more closely with meaning-making opportunities and activities than positive emotion. Therefore, despite the fact that Sen argues against strict utilitarian approaches, some researchers using the capabilities approach have suggested that incorporating subjective dependent variables such as life satisfaction or well-being may be useful because they can be used as a proxy for "the ability to live a life that one has reason to value," which is central in Sen's theorizing, but difficult to incorporate empirically (Schokkaert, 2007). This type of modified approach also allows for plurality in values, which is essential: Without the space for diverging values, these types of approaches could be highly paternalistic.

Martha Nussbaum (2003, 2011), unlike Sen, argues that it is possible – and necessary – to define the central capabilities that make up a human life of quality. She draws on the work of Aristotle, developing a concept of flourishing that is embedded in "a striving to achieve a life that included all the activities to which, on reflection, they [a person] decided to attach intrinsic value" (Nussbaum, 1997, pp. 119-120). This 'virtues approach' relies on individuals choosing, responding, and acting well based on the human virtues necessary for seeking the good life (Nussbaum & Sen, 1993a; Wilson-Strydom & Walker, 2015).

Thus, although she claims that the plurality of human values is respected in her theoretical approach, she outlines a theory "according to which an assessment of a persons well-being involves a substantive judgment about what things make life better, a judgment which may conflict with that of the person whose well-being is in question" (Scanlon, 1993, p. 188). For this reason, some authors suggest that an approach such as this is better termed a 'substantive good theory,' (Scanlon, 1993) rather than an 'objective list' of well-being criteria (Dolan & White, 2007). However, the overall goal of this perspective remains to define central capabilities based on substantive arguments about the ingredients necessary, such as "goods, conditions, and opportunities," to "make life better" (Scanlon, 1993, p. 189).

Nussbaum's approach might thus be better termed a '*capabilities* approach,' due to the fact that she explicitly delimits specific capabilities. Using this approach, she outlines what a life "worthy of human dignity" requires in order to be at least "minimally flourishing" (Nussbaum, 2011, p. 32). This takes the form of a list of ten Central Capabilities (see Table *3*). These central human capabilities include life; bodily health; bodily integrity; senses, imagination, and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment (Nussbaum, 2001, 2003).

Examining Nussbaum's list, we see that although the focus has shifted towards objective circumstances and away from subjective states, as compared to the psychological

theories of *eudaimonic* well-being, commonalities arise in the underlying concepts. For example, 'control over one's environment' is conceptually very similar to the notion of 'environmental mastery' outlined by Ryff and others (Ryff & Singer, 2006), and 'affiliation' clearly maps onto social relationships, which are emphasized in the psychological well-being approaches as well. Corresponding similarities can be found for each of the items, both giving support for the universality of Nussbaum's list, and suggesting that there may be substantial theoretical overlap between these approaches.

Nussbaum's list of central capabilities is a departure from the perspective of Sen, who remains wary of specifying a specific list to apply to all human beings, across cultures and countries. Nussbaum argues that it is necessary to choose "some objects of desire [which] are more central than others for political purposes, more indispensible to a human being's quality of life" (Nussbaum, 2001, p. 68). She avoids the critique of paternalism – easily levied against such an approach – by insisting that the political goal "is *capability*, not actual functioning," and by dwelling on "the central importance of choice as a good" (Nussbaum, 2001, p. 68, *italics added*).

Table 3. *Nussbaum's ten 'Central Human Capabilities'*

Central Capability	Description
1. Life	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. Bodily Health	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
3. Bodily Integrity	Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
4. Senses, Imagination, and Thought	Being able to use the senses, to imagine, think, and reason – and to do these things in a ''truly human'' way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid nonbeneficial pain.
5. Emotions	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
6. Practical Reason	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)
7. Affiliation	A. Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.) B. Having the social bases of self-respect and nonhumiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of nondiscrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin.
8. Other Species	Being able to live with concern for and in relation to animals, plants, and the world of nature.
9. Play	Being able to laugh, to play, to enjoy recreational activities.
10. Control Over One's Environment	A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association. B. Material. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason, and entering into meaningful relationships of mutual recognition with other workers.

Note: Reproduced from Nussbaum (2001, pp. 87-88; 2003, pp. 41-42; 2011, pp. 33-34).

However, perhaps in contradiction, she recognizes that it is functionings, and not just capabilities, that define a flourishing human life more generally, as does Sen (Fleurbaey, 2006). Indeed, most researchers utilizing her approach empirically do just that (Anand et al., 2005), as "mistakes can easily be made about the measurement of capabilities, so that achievements, which are more directly observable, are a useful proxy in order to avoid unfair evaluations" (Fleurbaey, 2006, p. 308). Thus, the theoretical meets the empirical in a dialogical juxtaposition that results in measures that can be described as 'refined' capabilities or functionings, and have been defined in various ways.

3.4.5. Flourishing

Building on the three strains of research outlined above ('wanting,' 'liking,' and 'needing'), several theories of human flourishing have emerged and gained empirical support in the past fifteen years (Diener et al., 2010; Keyes, 2002; Seligman, 2011). 'Flourishing' refers to the achievement of high levels of well-being, and typically includes both hedonic and *eudaimonic* components in its various operationalizations (Hone, Jarden, Schofield, & Duncan, 2014).

Keyes was the first to use this term in regards to mental health (Keyes, 2002). He outlines 14 components of flourishing, including positive relationships, positive affect, purpose in life, self-acceptance, social contribution, personal growth, autonomy, and life satisfaction. These can be sublimated into emotional, psychological, and social well-being (Hone et al., 2014). Keyes determined these 'symptoms' of flourishing by working backwards from the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association's criteria for depression and anxiety disorders.

Another team working with the European Social Survey (ESS) Round 3 supplementary well-being module created a similar measurement scheme (Huppert and So,

2013), again mapping onto mental 'wellness' rather than mental illness. They use "internationally agreed criteria for depression and anxiety" and define the opposite of each symptom, identifying "ten features of positive well-being" including: "competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self esteem, and vitality" (Huppert & So, 2011, p. 837). In doing so, they combine hedonic and eudaimonic approaches into a single, multi-dimensional measure (Huppert et al., 2009; Huppert & So, 2011).

Furthermore, they group these features into components described as 'positive characteristics', 'positive functioning', and 'positive appraisal'. The component of 'positive characteristics' contained emotional stability, vitality, optimism, resilience, and self-esteem, 'positive functioning' included engagement, competence, meaning, and positive relationships, and 'positive appraisal' was defined by life satisfaction and positive emotion (Huppert & So, 2011). They mobilize a 'threshold' approach to defining those who are flourishing from a psychometric approach, finding that the proportion of the population who are flourishing varies significantly across European countries.

Diener and his research team (2010) worked from the opposite approach, expanding their measurement of SWB to include Ryff's dimensions of psychological well-being and other attributes empirically linked to high levels of SWB to create a measure of human flourishing (Diener et al., 2010; Ryff & Singer, 2006). They incorporate positive relationships, engagement, purpose and meaning, self-acceptance and self-esteem, competence, optimism, and social contribution.

Similarly, the New Economic Foundation's conceptualization of personal well-being (Nef, 2009, 2011b) utilizes theoretically driven groupings. They, like Huppert and So (2011), used the 2006 wave of the European Social Survey to empirically test their model. However, they find support for five components of well-being, separating social well-being into a

distinct component (see *Box 4*). They recommend a variety of objective behaviours for each well-being component in their reports, but advocate a subjective measurement approach "because there are many different ways that people can find opportunities to meet their psychological needs – to start defining them would be prescriptive, and a potentially endless task" (Nef, 2011b).

Box 4: Nef's "Five Ways to Well-being"

1) Connect… "With the people around you. With family, friends, colleagues and neighbours. At home, work, school or in your local community. Think of these as the cornerstones of your life and invest time in developing them. Building these connections will support and enrich you every day."

2) Be active… "Go for a walk or run. Step outside. Cycle. Play a game. Garden. Dance. Exercising makes you feel good. Most importantly, discover a physical activity you enjoy and that suits your level of mobility and fitness."

3) Take notice… "Be curious. Catch sight of the beautiful. Remark on the unusual. Notice the changing seasons. Savour the moment, whether you are walking to work, eating lunch or talking to friends. Be aware of the world around you and what you are feeling. Reflecting on your experiences will help you appreciate what matters to you."

4) Keep learning… "Try something new. Rediscover an old interest. Sign up for that course. Take on a different responsibility at work. Fix a bike. Learn to play an instrument or how to cook your favourite food. Set a challenge you will enjoy achieving. Learning new things will make you more confident as well as being fun."

5) Give… "Do something nice for a friend, or a stranger. Thank someone. Smile. Volunteer your time. Join a community group. Look out, as well as in. Seeing yourself, and your happiness, linked to the wider community can be incredibly rewarding and creates connections with the people around you." (Aked, Marks, Cordon, & Thompson, 2008; Nef, 2011a, p. 8)

Finally, Seligman (2011) started from a philosophical approach by considering what things people value for their own sake rather than instrumentally. He narrowed it down to five components, summarized by the acronym PERMA, which include positive emotion, engagement, (positive) relationships, meaning in life, and accomplishments (Forgeard et al., 2011; Seligman, 2011). He and his research team emphasize the "need to combine both objective and subjective indicators" of well-being when operationalizing "flourishing," and

advocate "the use of a dashboard approach to measurement," where various components of flourishing are analysed individually (Forgeard et al., 2011, p. 79)

These approaches to flourishing all tap into both feeling and functioning and include positive relationships, engagement or interest, and meaning and purpose (Hone et al., 2014). Interestingly, only Keyes (2002) original model of flourishing includes satisfaction with life, although this is the most common measure of subjective well-being used in research and public policy today. In regards to measurement, Diener et al (2010) use the approach of summing individual items into a composite variable of "psychological wealth," while Keyes (2002) and Huppert and So (2013) use thresholds to determine those who are (and who are not) flourishing. Those using Seligman's PERMA model advocate averaging the scores of items for each component and reporting them individually as a five variables in a 'dashboard' approach (Forgeard et al., 2011; Hone et al., 2014). These four empirical models of flourishing are summarized in Table *4*.

Table 4. *Features and indicators of the construct of flourishing used in the literature*

Author	Feature	Indicator items
Keyes (2002)	Positive affect	(1) During the past month, how often did you feel happy? (1-6; never to every day); (2) During the past month, how often did you feel interested in life? (1-6; never to every day)
	Life satisfaction	During the past month, how often did you feel satisfied with life? (1-6; never to every day)
	Social contribution	During the past month, how often did you feel you had something important to contribute to society? (1-6; never to every day)
	Social integration	How often did you feel you belonged to a community? (1-6; never to every day)
	Social growth	During the past month, how often did you feel our society is a good place, or is becoming a better place for all people? (1-6; never to every day)
	Social acceptance	During the past month, how often did you feel that people are basically good? (1-6; never to every day)
	Social coherence	During the past month, how often did you feel the way our society works makes sense to you? (1-6; never to every day)
	Self-acceptance	During the past month, how often did you feel that you liked most parts of your personality? (1-6; never to every day)
	Environmental mastery	During the past month, how often did you feel good at managing the responsibilities of your daily life? (1-6; never to every day)
	Positive relationships	During the past month, how often did you feel you had warm and trusting relationships with others? (1-6; never to every day)
	Personal growth	During the past month, how often did you feel you had experiences that challenged you to grow and become a better person? (1-6; never to every day)
	Autonomy	During the past month, how often did you feel confident to think/express your own ideas and opinions? (1-6; never to every day)
	Purpose in life	During the past month, how often did you feel your life has a sense of direction? (1-6; never to every day)
Huppert & So (2013)	Competence	Most days I feel a sense of accomplishment from what I do (1-5; strongly agree-strongly disagree)
	Emotional stability	In the past week, I felt calm and peaceful (1-4; none or almost none of the time-all or almost all of the time)
	Engagement	I love learning new things (1-5; strongly agree-strongly disagree)
	Meaning	I generally feel that what I do in my life is valuable and worthwhile (1-5; strongly agree-strongly disagree)
	Optimism	I am always optimistic about my future (1-5; strongly agree-strongly disagree)
	Positive emotion	Taking all things together, how happy would you say you are? (0-10; extremely unhappy-extremely happy)
	Positive relationships	There are people in my life who really care about me (1-5; strongly agree-strongly disagree)
	Resilience	When things go wrong in my life it generally takes me a long time to get back to normal (1-5; strongly agree-strongly disagree)

	Self-esteem	In general, I feel very positive about myself (1- 5; strongly agree to strongly disagree) (R)
	Vitality	In the past week, I had a lot of energy (1-4;none or almost none of the time-all or almost all of the time)
Diener, Wirtz, Tov, Kim-Prieto, et al. (2010)	Purpose/Meaning	I lead a purposeful and meaningful life (1-7; strongly disagree- strongly agree)
	Positive relationships	My social relationships are supportive and rewarding (1-7; strongly disagree-strongly agree)
	Engagement	I am engaged and interested in my daily activities (1-7; strongly disagree-strongly agree)
	Social contribution	I actively contribute to the happiness and well-being of others (1-7; strongly disagree-strongly agree)
	Competence	I am competent and capable in the activities that are important to me (1-7; strongly disagree-strongly agree)
	Self-respect	I am a good person and live a good life (1-7; strongly disagree- strongly agree)
	Optimism	I am optimistic about my future (1-7; strongly disagree-strongly agree)
	Social relationships	People respect me (1-7; strongly disagree- strongly agree)
Seligman et al. (as reproduced in Hone et al., 2014)	Positive emotion	(1) In general, how often do you feel joyful? (0-10; never-always) (2) In general, how often do you feel positive? (0-10; never-always) (3) In general, to what extent do you feel contented? (0-10; not at all-completely)
	Engagement	(1) How often do you become absorbed in what you are doing? (0- 10; never-always) (2) In general, to what extent do you feel excited and interested in things? (0-10; not at all- completely) (3) How often do you lose track of time while doing something you enjoy? (0-10; never- always)
	Relationships	(1) To what extent do you receive help and support from others when you need it? (0-10; not at all-completely) (2) To what extent have you been feeling loved? (0-10; not at all-completely) (3) How satisfied are you with your personal relationships? (0-10; not at all-completely)
	Meaning in life	(1) In general, to what extent do you lead a purposeful and meaningful life? (0-10; not at all-completely) (2) In general, to what extent do you feel that what you do in your life is valuable and worthwhile? (0-10; never-always) (3) To what extent do you generally feel you have a sense of direction in your life? (0-10; never-always)
	Accomplishment	(1) How much of the time do you feel you are making progress towards accomplishing your goals? (0-10; never-always) (2) How often do you achieve the important goals you have set for yourself? (0-10; never- always) (3) How often are you able to handle your responsibilities? (0-10; never-always)

Note: Items reproduced from the authors and Hone et al., 2014 Appendix A (Diener et al., 2010; Hone et al., 2014; Huppert & So, 2011; Keyes, 2002; Seligman, 2011). "R" stands for reversed, to signify that the item values were coded in the opposing order.

3.4.6. Limitations of a eudaimonic approach to well-being

An important empirical drawback to using eudaimonic measures of well-being, such as 'flourishing,' is that it is difficult to find large-scale datasets that include these multiple measures of well-being collected from the same sample of respondents (Clark & Senik, 2011). However, two recent waves of the European Social Survey (ESS) have incorporated a large selection of relevant well-being variables, making this type of study possible (ESS, 2014; Huppert et al., 2013). It also remains a question whether composite indicators can be examined in their compiled form for substantive interpretation, or if they are best examined in a 'dashboard' approach, one by one (Diener, Wirtz, et al., 2009; Hone et al., 2014; Smith & Exton, 2013).

Furthermore, as outlined above, there are often important differences between measures of well-being that make comparability between studies difficult or impossible. These differences arise in six main areas: scope and focus, values, research instruments, research purpose, research standpoint, and theoretical framework (Gasper, 2010). For example, concerning the difference between well-being and quality of life, Gasper points out:

> The 'well-being' (WB) term is used more when we speak at the level of individuals, and 'quality of life' (QoL) somewhat more when we speak of communities, localities, and societies. Similarly, 'well- being' is used somewhat more to refer to actual experience, and 'quality of life' more to refer to context and environments. But in both cases the terms are

used with a broad range of meanings, and the ranges *almost completely overlap*. (Gasper, 2010, p. 351, *italics added*)

Thus, it is difficult to accurately assess the results of multiple studies together, as they usually differ in important ways; however, due to the (usually) strong correlations between various operationalizations of well-being, some conclusions can be drawn (Huta & Waterman, 2013).

3.5. *Choosing a capability-informed measure of well-being*

Those working with the capability approach have critiqued all four strains of theories of well-being outlined above. Sen directly juxtaposes his approach with that of the desire-fulfilment and hedonic approaches. Nussbaum aligns her approach with an Aristotelian focus on objective criteria for being and doing well, in line with *eudaimonic* approaches, but without a utilitarian method of empirical quantitative comparison.

The fourth approach, 'flourishing,' which is typically seen as a marriage between hedonic and *eudaimonic* approaches, has been criticized by some researchers using the capability approach as rooted in a moral standpoint incoherent with the normative theory inherent in the capability approach. Researchers point to the problematic nature of reducing a theory of well-being to those things (and only those things) which are associated with subjective feelings of satisfaction or happiness. For example, Wison-Strydom and Walker point to the fact that:

> [T]he normative basis for assessing the value of what a person can be or do is quite different and this raises caution from a moral point of view. In Seligman's writings, positive relationships and accomplishments are elements of how a person achieves their own well-being (a further example of ontological individualism), rather than a consideration of what this might mean for well-being beyond the personal or for wider human development. (Wilson-Strydom & Walker, 2015, p. 314)

Although these two approaches, the capability approach and 'flourishing,' may in fact measure many of the same variables in comparing the well-being of individuals, they are based upon very different viewpoints on the ultimate outcome of the exercise. Those working from a capability approach are concerned with the ability of all individuals to live a life that they have reason to value, which may or may not result in enhanced levels of reported subjective feelings of happiness, while those working from an approach of 'flourishing' typically find the ultimate value of 'flourishing' itself in its tendency to increase personal hedonic emotion.

Sen strongly criticizes a purely hedonistic approach, although he suggests that subjective happiness may form a *part* of well-being, as considered from a capability approach (Sen, 1985, 1993). In particular, the fact that most people value happiness as an important life outcome, for both themselves and those close to them, suggests that this indeed deserves to form in part at least the definition of living a life that one has reason to value (De Ruyter, 2004). However, from a capability perspective, this cannot be the sole indicator.

From an ontological perspective, although the capability approach is ethically individualist, in that the subjects to whom the ultimate outcomes are attached are individuals, social contexts and groups remain integrally important when measuring the well-being of individuals. For example, within a family unit, the well-being of all four individuals cannot be captured by the head of the household or an average of the members, each individual within the unit must be able to individually live a life that they have reason to value (this may be especially important, for example, in countries where the rights of girls and women are not recognized as equal to those of boys and men). However, the relationships of power, the distribution of resources within the family, as well as the larger context of the village or region, is seen to have important influences on well-being and needs to be evaluated in terms of this impact.

3.5.1. Capabilities versus functionings

Sen (1999) conceptualizes well-being as the real freedoms that individuals have to attain a life that they have reason to value: The unit of measurement is both *functionings*, or "the various things a person may value doing or being," and *capability*, or "the alternative combinations of functionings that are feasible for her to achieve" (Sen, 1999, p. 75). There is some contestation amongst researchers mobilizing the capability approach as to whether capabilities, functionings, or 'refined' functionings are best measured when considering individuals' outcomes. Capabilities are extremely difficult to measure empirically (Schokkaert, 2007). Thus, many argue that the best (empirical) way forward is to measure individuals' functionings ("what they choose and can be and do"), which "provides a window on to their achieved well-being" (Wilson-Strydom & Walker, 2015, p. 314).

Indeed, examining *only* capabilities has been attacked as just as untenable as solely examining resources:

> [L]ooking exclusively at opportunities is perfectionist in the sense that it does not correspond to people's evaluation of their own situation. A policy-maker concerned with opportunities might choose a configuration of opportunities that is more satisfactory as such, although individuals, looking also at the options that they eventually end up with, would prefer otherwise (Fleurbaey, 2006, p. 307).

Thus, researchers have found theoretical justifications for examining achievements, and not just opportunities, when looking at quality of life. This position is explored in more depth in the next section.

3.5.2. Subjectivity and values

The division between 'objective' and 'subjective' in well-being research is extremely difficult to draw. So-called objective measures will always be guided by (acknowledged or unacknowledged) normative principles, which add subjectivity – in this case of the researcher

and not the respondents – to all measures. This partiality may even be more dangerous than self-proclaimed 'subjective' measures because the opinions of the people measured are not taken into account. General subjective measures, such as an individual's satisfaction with life, however, may fall prey to other dangers: The twin problems of *adaptive preferences* and *expensive tastes* raise ethical issues. Indeed,

> Research shows that people adapt (or deform) their preferences by learning to want only what is possible… Thus, subjective measures of well-being are insufficient to create more just and fair societies. We should then ask not is this student happy, but does she have genuine opportunities to choose to do and to be what she has reason to value. (Wilson-Strydom & Walker, 2015, p. 313)

This potential bias in self-reported subjective measures of well-being needs to kept in mind, particularly when examining the impact of education on well-being, as 'broadening horizons' – both internal and external – is often a purported goal of education (Gouthro, 2010).

This study focuses on how education expands individuals' chances to build a life that they have reason to value. In doing so, there is an effort to balance 'objective' measures of capabilities as well as on individuals' subjective evaluations of specific aspects of their own lives. Other researchers have also opted this type of 'multi-pronged' approach (Jaoul-Grammare & Lemistre, 2015). Subjective evaluations may be shaped, or indeed indoctrinated, by adaptive preferences learned within the family or even at school; however, recognizing this possibility, the present research accepts these potential limitations. Furthermore, while these frames of reference are likely important in this process, they are more important to individual-level explanations of why these relationships exist than *whether* these relationships exist and in what contexts (Tuijnman, 1990).

When doing so, it is necessary to keep the inherent dangers and limitations of this approach in mind. As Robeyns argues, looking at preference satisfaction may cover up existing inequalities:

> A utilitarian evaluation will only assess her satisfaction and will not differentiate between a happy, healthy, well-sheltered person, and an equally happy, but unhealthy and badly sheltered person who has mentally adapted to her situation. (Robeyns, 2003, p. 63)

However, theories focusing on primary goods are also inadequate because:

> Resource-based theories do not acknowledge that people differ in their abilities to convert these resources into capabilities, due to personal, social or environmental factors, such as physical and mental handicaps, talents, traditions, social norms and customs, legal rules, a country's public infrastructure, public goods, climate, and so on. (Robeyns, 2003, p. 63)

Thus, neither examining the goods at people's disposal, nor their utility, will give a full picture of how well a person is doing in life. Because this is the case, it is necessary to choose amongst imperfect measures, combining them to best reflect the phenomenon of interest.

Indeed, almost all researchers acknowledge the need to accept how people feel about their own lives. While an objective measure, such as income or longevity, might be appealing, it misrepresents the outcomes of those people who, for example, choose to earn less and spend more time with family or on an enjoyable hobby, or who choose to engage in potentially dangerous activities that they find fulfilling – perhaps giving them access to a sense of *flow* (Csikszentmihalyi, 1990, 1997) – and more important than a longer life (for example, extreme sports). Within a multitude of such 'special cases,' subjective indicators show the complexity of human lives and values, while also simplifying them into indicators that can be examined statistically.

Box 6: 'Subjective' indicators of capabilities

Schokkaert (2007) argues that 'subjective well-being' measures should play a role in research using the capability approach. He asserts that if we think it justified that one should consider the opinions of individuals when evaluating different dimensions of well-being, then measures of individual's satisfaction are clearly relevant. He maintains that the historic critique that individual welfare cannot be measured and compared has now been more or less laid to rest. Furthermore, he sees this in this literature the potential to solve the "indexing problem" in the capability approach, which is "the challenge of bringing together the different functionings in one overall measure of individual well-being" (Schokkaert, 2007, p. 416).

This view is not necessarily new: Almost all authors working from a capability approach agree that some form of emotional well-being or happiness should be included in the plural vector of an individual's functionings and/or capabilities. However, Schokkaert's (2007) argument that the very subjectivity of satisfaction measures, which reflects both emotions and cognitive processes, is its key attribute for a capability approach because it also captures individuals' unique ways of valuing their lives, is novel. Indeed, he sees this as entirely consistent with the capability approach's focus on individual freedom.

These arguments are supported by empirical evidence from the capabilities literature, which shows considerable overlap in key findings with those for life satisfaction. What is more, capabilities measures show a strong statistical association with overall life satisfaction (Anand, Krishnakumar, & Tran, 2011; Anand & van Hees, 2006).

3.5.3. The importance of freedom

What remains integrally important in differentiating the capability approach from hedonistic and even 'flourishing' measures is the dual evaluative space of well-being and agency. Sen takes "a moral approach that sees persons from two different perspectives: well-being and agency" (Sen, 1985, p. 169), where having agency is illustrated by "someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives" (Sen, 1999, p. 19). He provides a non-exhaustive list of instrumental freedoms that shape individuals' capabilities, including political freedoms, economic facilities, social opportunities, transparency guarantees, and protective security (Sen, 1999, pp. 38-40). Indeed, the concept of *capability* is inseparable from this notion of free choice.

Thus, freedom is valued as equal in importance to well-being, even when this freedom does necessarily directly serve the well-being of the individual (or even when it may hinder the subjective well-being of the individual). This is what strongly differentiates Sen's approach from Seligman's. However, the concepts of agency, freedom, and capability within the capability approach are used sometimes inconsistently, necessitating a clear stance in terms of measurement. What is more, freedom as a construct is clearly impossible to directly measure, in particular because of the influence of 'adaptive preferences' (as discussed above), which are difficult to uncover.

This focus on freedom may or may not extend to the choice of capabilities themselves, which is a point of departure between the work of Sen and Nussbaum. The fact that Sen places a strong value on individual freedom – and cultural difference – prevents him from compiling an exact list of capabilities, while Nussbaum, working from an Aristotelian approach of ethics, believes that a broad list of capabilities is necessary to ensure that all human beings (and perhaps other beings as well) are treated with appropriate dignity. Thus, autonomy is a central, but contested, construct in a capability approach: Sen argues that freedom is an outcome valued equally with well-being, while Nussbaum includes freedom of choice in *functioning* throughout her list of ten central capabilities.

The present research follows the example of Nussbaum, and uses a broad definition of autonomy, similar to that of Roessler (2012):

> 'Autonomy' should be understood as personal autonomy: being able to reflect about how one wants to live on the basis of reasons, beliefs, motives, and desires which are one's own—not imposed by others for personal or political reasons—and to live one's own life accordingly. (Roessler, 2012, p. 73)

Others working from the capability approach agree with this definition. Wilson-Strydom and Walker (2015) summarize agency as "being able to make one's own choices and to act on them" and "having opportunities and choices as well as the autonomy to be able to make one's own decisions" (Wilson-Strydom & Walker, 2015, p. 314).

Furthermore, this central place for autonomy bridges individuals' working and personal lives, because it does not comprise "a number of separate areas of one's life," but rather "a process of integrating one's personality" in "all one's pursuits" (Schwartz, 1982, p. 638). This returns full circle to the notion that individuals' outcomes in terms of work and 'the rest of their lives' are not easily separated. There are porous boundaries between these domains in terms of both skill development and well-being outcomes (Jongbloed & Andres, 2015).

3.5.4. 'Flourishing *through* education'

Based on these theoretical considerations, the current study develops a novel measure of well-being based on the work focused on human flourishing and informed by the capability approach. Other authors have also conceptualized flourishing using the capability approach, arguing that education plays a central role in enabling "flourishing in other aspects of life," outside of school, "and in the lives of others, beyond education" (Wilson-Strydom & Walker, 2015, p. 311).

A *capability* approach to flourishing, particularly concerning education, goes beyond psychological approaches to this construct by working "with an ethical individualism which recognises the social grounds for individual choice and un/happiness" and investigates both individuals' well-being and their agency when "when seeking to understand how well a person's life is going or to what extent a person is flourishing" (Wilson-Strydom & Walker, 2015, p. 314). This social nature of well-being is further stressed by Wilson-Strydom and Walker (2015):

> [C]urriculum and pedagogy are also deeply shaped by structures of race, class and gender, of personal biographies and cultural environments. Through the nurturing of practical reason and affiliation, these potentially dividing structural differences might be transformed. In this way we foreground relationships and a more social conception of well-being, given that learning is deeply social and relational... Individual flourishing in and through HE [higher education] is thus social and relational as is the formation of moral principles. (Wilson-Strydom & Walker, 2015, p. 315)

Thus, a capability approach to education is based on "an ethic of the social human being, in which individual freedoms are constituted by social arrangements that enable us to live well together" (Deneulin & McGregor, 2010, p. 510). This understanding of well-being is more useful than other conceptualizations of happiness or life satisfaction, because it allows us to capture experiential complexities inherent to life that are impossible to explore with other

measures. Through this broader conceptualization of well-being, the capability approach can be used as a conceptual framework to understand the outcomes of higher education.

This approach also necessitates accepting certain utilitarian and welfarist approaches to analyzing well-being in a quantitative and comparative manner, as is done in the 'flourishing' literature. As described above, education is internalized into the individual and later determines his or her ability to convert a plethora of different external resources into personal well-being. The "black box" of education thus generates not only productive skills, but also "multiple dimensions of skill that, in turn, may affect central aspects of individual's lives both in and outside the labor market" (Oreopoulos & Salvanes, 2011, p. 159).

Education does not only add to one's well-being through increases in income, but potentially also by "enriching their internal world," enlarging their understandings of the natural world, or encouraging them to "lead a socially active lifestyle" (Chiappero-Martinetti & Sabadash, 2012, p. 24). More specifically, this might take the form of finding more enjoyment from work, making "better decisions about health, marriage, and parenting style," and changing individuals' preferences "in a way that makes individuals more patient, more goal-oriented, and less likely to engage in risky behavior" (Oreopoulos & Salvanes, 2011, p. 159). These non-pecuniary returns then add to their well-being in specific domains of life and also to their well-being overall. This relationship is discussed in more depth in the following section.

4. The association between education and well-being

Education is a pivotal institution in all European countries, touted as the key to individual and societal success. While education is most often assumed to have significant non-market effects for both individuals and societies, empirical research tends to focus mainly on the link between education and future earnings and prosperity (McMahon & Oketch, 2013;

Nussbaum, 1997). Indeed, the influence of education on quality of life (Gouthro, 2010) or other non-material factors (Seeberg, 2011) are often ignored. Recent research mobilizing measures of 'subjective well-being' (SWB) has enhanced human capital approaches to educational studies (Forgeard et al., 2011; Zepke, 2013). This approach has been able to examine individual welfare in non-monetary terms and examine directly what income examines indirectly: how well is this person doing in life? This is a relevant question in contemporary Europe, as ever-increasing credential levels become more expensive for individuals and governments (McMahon, 2009; van de Werfhorst, 2009). Looking forward, studying the impact of education on well-being offers a new way to measure the efficacy of educational systems, a core value of the European Union.[9]

Educational practitioners, researchers, and policy-makers nearly always assume, explicitly or implicitly, that education [10] leads to better lives and increased well-being (Cockerill, 2014). For example, the 2009 "Inquiry into the Future of Lifelong Learning in the UK" focuses explicitly on well-being as an outcome of lifelong learning. It acknowledges that while education is generally assumed to have a positive impact on individual well-being, only recently has it become a topic of research (Gouthro, 2010). The relationship between education and well-being is indeed unclear. There is a significant direct statistical relationship between well-being, as measured by satisfaction with life, and highest educational credential (Blanchflower & Oswald, 2004; Dolan & White, 2007; Salinas-Jiménez et al., 2013). However, this link is contested as the effect of education alters or loses statistical significance with changing model specifications (Helliwell et al., 2012; Helliwell & Putnam, 2004). Indeed, a "World Happiness Report" claims that education has no clear direct effect on

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[9] Article 3 of the 2007 Treaty of Lisbon declares, "The Union's aim is to promote peace, its values and the well-being of its peoples" (EU, 2007, p. 15).

[10] Various terms referring to education are used in this literature. Here, 'higher education' and 'post-secondary education' are used interchangeably to refer to all types of further education after secondary school. 'Vocational education' refers to practically-based education that is occupationally-specific. 'Tertiary education' refers to post-secondary education that has more advanced educational content, including academic and/or professional knowledge, skills and competencies. When used alone, 'education' refers to all of the aforementioned types of education, as well as primary and secondary education.

happiness (Helliwell et al., 2012). The authors posit that education mainly impacts well-being indirectly through income, job possibilities, and job security. Thus, they argue for indirect mediating effects, like those described at the end of Chapter 1, rather than direct effects, in the association between education and well-being. They describe the positive direct effect as non-existent or "smaller than is often claimed by educationalists" (p. 78). Indeed, the claims outlined above have sometimes been described as "anecdotal" or "frankly aspirational" (Field, 2009, p. 179).

Veenhoven (2010), for his part, argues that there is no evidence that those who are more educated are happier. He claims that no such individual-level relationship exists; however, he does find convincing evidence that "there is a positive correlation between the level of school education in nations and average happiness of citizens" (Veenhoven, 2010, p. 348). He goes on to ask:

> How can it be that education adds to happiness at the nation level, but not at the individual level? The answer seems to be that an educated populace is required for the functioning of a modern society and that people flourish well in such societies… while education as such is not does not add to individual happiness, probably because its benefits are balanced by costs. (Veenhoven, 2010, p. 348)

This supposition provides preliminary evidence for the next chapter, where the hypothesis that overall levels of education and other educational characteristics of countries impact well-being will be more fully developed.

Veenhoven's (2010) findings alert us to the possibility that education may have a *negative* association with individual well-being. Indeed, in certain contexts, higher educational levels decrease job satisfaction (Mora & Ferrer-i-Carbonell, 2009) or can be a source of regret (Roese & Summerville, 2005). Those with higher levels of education also report less free time to do things that they enjoy (Nikolaev, 2018). Research suggests demographic differences: For example, highly educated men are more likely to report being depressed (Chevalier & Feinstein, 2006). Furthermore, studies have shown that education

changes an individual's subjective evaluation of their objective conditions and expectations (Huppert, 2009; NSSDS, 2013). Indeed, education may have little effect on life satisfaction even when it is subjectively rated as very important (Camfield & Esposito, 2014).

Despite these contradictory findings, education most often has a small but significant positive effect on individual well-being (Blanchflower & Oswald, 2004; Buryi & Gilbert, 2014; Nikolaev, 2018; Witter et al., 1984). However, how these findings should be interpreted and used in public policy is unclear. Some claim to unveil "'a loss of happiness' in the educational system" and call for "caution against pleas for life-long-learning" (Veenhoven, 2010, p. 350). Others underscore learning and education as the key to 'flourishing' in life (Cockerill, 2014; DeNicola, 2012). What appears to distinguish these findings and views is the definition of well-being employed.

4.1. *Hedonic versus eudaimonic well-being*

4.1.1. The impact of operationalizations of well-being

Encompassing these debates from a wider perspective, contradictory findings regarding the impact of education on well-being also result from the diverse ways in which well-being is measured (Elwick & Cannizzaro, 2017; Michalos, 2008; Ryan & Deci, 2001). Indeed, correlation coefficients between eudaimonic and hedonic well-being measures have been found to vary between 0.0 and 0.6 (Huta & Waterman, 2013). In a call for further insight into the education-well-being link, Michalos (2007) emphasizes the need for more sophisticated measures of all or part of this relationship. Heeding this advice, a more complex measure of eudaimonic well-being conceptualized from a capability perspective offers a novel way to examine this association.

As outlined in the previous chapter, a traditional economic approach typically examines the financial returns from education in a human capital earnings model (Becker,

1964; Becker & Tomes, 1979; Mincer, 1974). The higher income associated with further schooling is assumed to increase consumption, which in turn causes an increase in well-being defined as individual utility. [11] For example, a large body of research has illustrated a significant association between income and satisfaction with life (Becchetti, Corrado, & Rossetti, 2010; Boyce, Brown, & Moore, 2010; Lamu & Olsen, 2016). Furthermore, the arguments relating to the non-market benefits of education outline how education impacts individuals' choices and therefore multiple areas of individuals' lives. This line of reasoning suggests that education should have a positive impact on well-being: Each of these domains in turn has the potential to impact a person's well-being and satisfaction with life.

In the research on satisfaction with life, as mentioned above, the predominant conclusion in the literature has been somewhat dubious, suggesting that "educational attainment is not strongly or consistently related to life satisfaction" (Fahey & Smyth, 2004, p. 17). Indeed, higher educational attainments and more years of schooling have been found to be insignificant predictors, or even significant *negative* predictors, of later life satisfaction (Nikolaev, 2018). However, due to the indirect pathway through income described above, these results may be biased; indeed, once indirect effects are accounted for, the magnitude and even the sign of the education coefficient may change (Powdthavee et al., 2015).

Indeed, both life satisfaction and personal happiness have been linked to education within the literature (Woessmann & Schuetz, 2006). These effects may operate through other well-being indicators, such as social trust (Helliwell & Putnam, 2004), but have been shown to operate independently of the effects of income (Blanchflower & Oswald, 2004). Education shows a small independent, positive effect on the life satisfaction of individuals in some countries, such as the US and Great Britain (Blanchflower & Oswald, 2004; Witter et al., 1984), and on an international scale (Salinas-Jiménez et al., 2013). However, most typically,

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[11] However, this link is never tantamount to a perfect correlation. Indeed, it has often been contested (Becchetti, Corrado, & Rossetti, 2010; Becchetti & Pelloni, 2013). The indirect pathway from education to well-being as mediated by income was also tested in supplementary analyses that are referred to in Chapter 6.

education is included as a control variable in research into life satisfaction and not discussed in depth (Barrington-Leigh, 2013; Bonikowska, Helliwell, & Hou, 2013; Hou, 2014b).

Empirical (quantitative) research investigating the effects of education on eudaimonic conceptions of happiness is much more rare (Jongbloed, 2018; Nikolaev, 2018). Preliminary findings suggest that those with higher educational attainments report higher eudaimonic well-being, more meaning in their lives, and more positive emotion and less negative emotion (Nikolaev, 2018). What is more, these findings differ by level of higher education, with significant differences between vocational and tertiary education being found (Jongbloed, 2018). However, this research also suggests that there are significant differences amongst the domains of well-being, with some, such as engagement and resilience, showing stronger and more positive effects than others, such as free time to enjoy life (Jongbloed, 2018; Nikolaev, 2018).

Research examining education's effects on specific life domains can also provide insight into how education affects these various sub-components of eudaimonic well-being. Education has been linked to better job opportunities, more adaptability on the job market, lower rates of unemployment, more prestigious occupational status, higher autonomy and task discretion at work, and an enhanced sense of accomplishment from work (Furnée, Groot, & van den Brink, 2008; Gallie, Felstead, & Green, 2003; Green, 2013; Guardiola & Guillen-Royo, 2014; Oreopoulos & Salvanes, 2011; Pullman & Jongbloed, 2017). It has also been linked to improved "cognitive, social and emotional skills" (Desjardins & Schuller, 2006; Miyamoto, 2013; Miyamoto et al., 2010).

Indeed, some of the effect of post-secondary education on adult well-being likely operates through job satisfaction; however, early research into this question showed that this does not account for all of the association. Tuijnman (1990) found that adult education was a significant predictor of well-being as measured by the extent to which men find their lives

"full," "interesting," "rewarding," "worthwhile," and "fascinating." This was the case even in path models where career prospects and job satisfaction were included in the model, both exhibiting significant associations with adult education and well-being (Tuijnman, 1990). He took this as evidence that "the purpose of adult education is not restricted to one of conferring knowledge and skills for career mobility" (p. 296). What is more, more recent research has suggested that those with more education may be less satisfied with their jobs, most likely due to higher expectations of what work entails and provides to individuals (F. Green, 2013; Pallas, 2000).

Beyond the labour market, education has also been linked to positive outcomes in other areas of life, as well as higher efficiency in non-work-related domains. Grossman (2005) developed two models of enhanced efficiency from education: productive and allocative. The first is linked to managing time and resources – he argues that students learn to do more with less resources – while the other is linked to choosing amongst options – he asserts that education teaches people to make better choices (also with the same level of resources). As one example of how this might contribute to well-being, those with higher levels of education report better physical and mental health (Amin, Behrman, & Spector, 2013; Furnée et al., 2008; Groot & Maassen van den Brink, 2007; Grossman, 2005).

Various measures of social capital have been found to be associated with education. Enhanced social trust, social competences, civic engagement, and social networks have all been linked to higher levels of education (Calvo, Zheng, Kumar, Olgiati, & Berkman, 2012; Field, 2009; Helliwell & Putnam, 2007; Huang et al., 2009; Kingston, Hubbard, Lapp, Schroeder, & Wilson, 2003). This in turn has been linked to greater well-being. For example, a one-third-standard-deviation increase in trust in one's manager at work has been associated with an income increase of more than one-third, or as much as an additional $200,000 (Helliwell & Huang, 2010).

Education is also linked with a better position in the 'marriage market,' fewer children but with better outcomes in terms of child development, more equitable sharing of household tasks, more civic engagement, and more social capital (Becker & Tomes, 1976; Guardiola & Guillen-Royo, 2014; Huang et al., 2009; Musick, England, Edgington, & Kangas, 2009; O'Shea, 1999; Vila, 2000). These may thus be seen as potential mediating factors in the education-well-being relationship; however, even models accounting for these variables, as well as others such as cognitive ability and socio-economic status, do not explain away all education effects (Cheng, Powdthavee, & Oswald, 2017; Kingston et al., 2003).

Personal attributes such as self-efficacy, autonomy, a sense of agency or control over one's life and important life choices, mental health, and confidence have all been shown to be positively associated with education (for example, Chevalier & Feinstein, 2006; Field, 2009; Galton & Page, 2015). Those with more schooling tend to report enhanced psychological health: In particular, individuals with more education report greater purpose in life, lower psychological distress, increased emotional health, and lower rates of depression, anxiety, anger, and malaise than those with less education (Pallas, 2000). These studies lend support to the contention that educational experiences influence "preferences, expectations, feelings, and emotional states" that shape not only "personality characteristics," but also "social psychological traits such as self-esteem," "life chances," and "perceptions of self and society" (Tuijnman, 1990, p. 286). Through these multiple pathways, education can thus be interpreted as influencing "the way people assess their own global life situation and evaluate their personal well-being" (p. 286).

Qualitative and theoretical research into flourishing as a primary goal of education also supports the existence of this education-well-being association. Many philosophers of education have espoused 'flourishing' as the ideal aim of education (Curren, 2013; De Ruyter, 2004; DeNicola, 2012; Grant, 2012; Kristjánsson, 2016; Warnick, 2009). This

research often describes flourishing through the lens of the 'good life,' describing the goal of education as "the articulation of a compelling vision of a good life, along with the preparation for and the cultivation of such a life" (DeNicola, 2012, p. 37). This research also often centers on notions of justice and on what basis equality in education can be judged, as discussed in the section dealing with inequalities in well-being (Curren, 2013).

4.1.1.1. 'Emotional capital'

Education may also impact well-being through the creation of a unique form of capital: 'emotional capital' (see *Box 7*). Emotional capital is the set of emotional competencies developed by individuals through their "cognitive, personal, social and economic development" (Gendron, 2005, p. 9). These emotional competencies are "learnt capabilities" that go beyond theoretical and practical knowledge ("*savoirs*" and "*savoir-faire*") to existential knowledge ("*savoir-être*" or "knowing how to be"), such as knowing "the rules of socialising and how to behave in social situations, … how to communicate effectively, how to handle a conflict" (Gendron, Kouremenou, & Rusu, 2016, p. 64). This concept approaches that of Goleman's (1995) 'emotional intelligence,' which emphasizes one's ability to recognize and master one's own emotions and those of others (Gendron, 2011). These non-cognitive skills are not often taken into account in the human capital literature (Gendron, 2011); however, emotional capital can be conceptualized as a "booster" capital that interacts with human capital, enhancing other forms of capital as an essential, but "not sufficient" condition for positive outcomes (Gendron, 2005, p. 18).

Emotional capital is argued to be a product of "diverse educational contexts and situations," acquired through learning, in a "human capital constitution triangle" (Gendron, 2005, pp. 11-12). This triangle operates at the individual level, in "the development of trainer or teacher-learner and learner-learner relationships, learners coming to know or think about

the subject in new ways… and learners discovering new aspects of themselves," but also at the macro-level, impacted by "social and cultural forces influencing what happens in the classroom" (p. 12). The concept of 'emotional capital' taps into the diversity of competencies that are imparted through schooling, providing an explanation for why higher levels of educational attainment are associated with attributes such as self-efficacy, autonomy, mental health, and confidence.

Box 7: 'Emotional capital'

Developed by Bénédicte Gendron (2005), the concept of 'emotional capital' is defined as an individual's "set of resources (emotional competencies)… useful for his or her cognitive, personal, social and economic development" (p. 9). This capital is developed from childhood into adulthood through both formal and informal education: within the "family, neighbourhoods, peers, communities, sports clubs, religions, societies and school contexts" (p. 10). She views emotional capital as essential to utilizing "human, social and cultural capitals," critical to enabling "human capital formation, accumulation and its optimal use for individuals," and crucial to "knowledge management in today's increasingly complex and competitive global workplace" (Gendron, 2005, p. 1).

     Regarding its societal importance, Gendron (2005) argues that "emotional behaviour has to be taken into account in economic theory as it can have major returns and impacts" and that emotional capital investments, like other forms of capital, have implications for "the population's ability to engage in productive activities" (p. 2). Because she views emotional competencies as a product of diverse educational contexts, Gendron (2005) argues that policy-makers, educational institutions, and societies can – and should – invest in emotional capital. She asserts that this form of capital is linked to positive returns on investment in terms of sustainable personal development through lifelong learning for individuals, and enhanced social cohesion, as well as increased productivity, within societies.

4.1.1.2. Student well-being

As argued in the previous chapter, this purpose of this research is not to investigate student well-being as such, but rather the longer-term impacts of education on the development of capabilities in adulthood. This view is tied to the *eudaimonic*, as opposed to hedonic, conception of well-being espoused here, and to the literature linking education to a 'flourishing' life (De Ruyter, 2004; Gibbs, 2014). As Gendron and coauthors (2016) argue,

the outcomes of education go beyond theoretical ("*savoirs*") and practical knowledge ("*savoir-faire*") to knowledge about how to live one's life ("*savoir-être*"). In this study, these outcomes are measured as the ability to construct a life that one has reason to value through the development of important capabilities.

Some background, however, on the study of the well-being of pupils and students is helpful in understanding why these two understandings of well-being differ and where some similarities can be found.[12] While a large literature has evolved concerning the well-being of adults (Diener et al., 1999; Jayawickreme et al., 2012; Kahneman & Krueger, 2006), the experienced well-being of children has been the subject of a more limited focus in recent years (McLellan & Steward, 2015; Tomyn, Tamir, Stokes, & Dias, 2015). One of the most important early conclusions, reflecting similar findings in early developmental psychology research, is that children's well-being cannot be assumed to directly reflect adult's well-being, and "research into adult well-being cannot be extended uncritically to children… children themselves need to say what issues affect their well-being directly" (McLellan & Steward, 2015, p. 312). This goes beyond the simple necessity of adapting questions to children's lower literacy skills, as is commonly done in psychological research (Tomyn, Fuller, Tyszkiewicz, & Cummins, 2013). The first step, therefore, in investigating the well-being of children, requires defining the well-being of children.

As part of a recent large-scale survey project in the UK, researchers have developed a questionnaire based on the experiences of pupils at school aiming to capture their well-being within this context. Entitled the '*How I Feel About Myself and School*' questionnaire, it is "designed to capture children and young people's perceptions of their well-being in the school context that is based on sound psychological (and other) theory" (McLellan &

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[12] This section is adapted from a co-authored article, "Examining the well-being and creativity of schoolchildren in France," published in the *Cambridge Journal of Education* (Fanchini, Jongbloed, & Dirani, 2018). The literature review, research questions and hypotheses, and structural analyses concerning well-being were all written and conducted by Janine Jongbloed.

Steward, 2015, p. 308). The researchers aim to capture pupils' well-being by asking about their feelings regarding various aspects of their experience at school, such as if they feel good about themselves, valued, cared for, miserable, bored, noticed, happy, etc. The items reflect children's own ideas about what defines a positive experience in the schooling context, and are much more specific than questions used in previous large-scale survey studies. For example, the '*Health Behaviour in School-aged Children*' (HBSC) study, a project conducted for the World Health Organization, used a more global measures based on life satisfaction.

Another international survey project, the '*Personal Well-being Index – School Children*' (PWB), also examines children's (and adults') well-being in a multi-faceted approach. Researchers working with this questionnaire have outlined eight domains, including "standard of living, health, achieving in life, relationships, safety, community-connectedness, future security, and religion/spirituality" which they argue represents "the first level deconstruction of the global question, 'How satisfied are you with your life as a whole?'" (Tomyn et al., 2013, p. 914). The questions designed for children were adapted in terms of language abilities, but the substance of the items from the adult survey were retained. The researchers concluded that the questionnaires were equivalent among both child and adult populations, as well as across national contexts (Tomyn et al., 2015). These researchers posit that a single construct underlies these domains: namely, well-being.

As part of an on-going comprehensive study in Australia, a team of researchers has focused explicitly on conceptualising children's well-being at school. While recognizing key findings from the literature on the determinants of well-being, such as the importance of "positive adult-child relationships, a sense of belonging, positive self-esteem and opportunities to be given responsibility and be involved in decision-making," they emphasize the need to find out how pupils themselves understand their well-being in the school context (Graham, Powell, Thomas, & Anderson, 2017, p. 441). Using recognition theory, the

researchers theoretically derive self-confidence ('cared for'), self-respect ('respected'), and self-esteem ('valued') as potential core dimensions of well-being, which they then tested empirically. They found that the relational aspects of well-being were most central for pupils, and that their definitions of well-being closely mirrored the three theoretical modes of recognition (Graham et al., 2017).

Other measures of children's well-being at school have also been proposed, such as the '*School Children's Happiness Inventory*' (SCHI) (Ivens, 2007), the '*Multidimensional Students' Life Satisfaction Scale*' (MDSSS) (Fenouillet et al., 2015), the '*Scale of Positive and Negative Experience*' (SPANE) (Martin-Krumm et al., 2018) and the '*Children's Overall Satisfaction with Schooling Scale*' (COSSS) (Randolph, Kangas, & Ruokamo, 2009). These existing survey instruments differ in important ways, for example, some focus on self-esteem, depression, and affect, while others focus on general satisfaction. Other recent research has focused on the subjective well-being (SWB) of children (Fenouillet et al., 2017), as defined by Diener (2000). While there is a "lack of consensus regarding the nature and structure of youth's school-specific subjective well-being" (Renshaw, Long, & Cook, 2015, p. 536), all approaches incorporate multiple sub-components of well-being that comprise a larger meta-construct, typically centred upon positive and negative emotion as well as satisfaction with life (SWL).

Thus, children's well-being within schooling and learning contexts has been conceptually defined in the literature in diverse manners. Some examine children's realization of their unique potential through social- and self-development (Gordon & O'Toole, 2015), while others focus on a positive state of mind involving children's whole life experience (Tomyn et al., 2015). Still others define children's well-being as consisting of various components, such as a multi-dimensional construct "with physical, psychological, social, spiritual and cultural aspects all interdependent" (Priest, MacKean, Davis, Briggs, &

Waters, 2012) or a trio of "general happiness, relationships with teachers and intellectual stimulation" (Gibbons & Silva, 2011). More generally, some investigate "an abstract construct that includes both feeling good and functioning well" (Kern et al., 2014, p. 263). Almost all these definitions portray well-being as a multidimensional metric, citing both theoretical and practical reasons for doing so. In particular, the utilization of subcomponents allows researchers to investigate the impact of individual dimensions of well-being and to "identify groups with specific strengths and weaknesses" (Kern et al., 2014, p. 263).

The focus on specific subcomponents within the study of the well-being of children also draws from the diverse theoretical streams which are typically subsumed under the categorization of *eudaimonic* or objective-list accounts of well-being as discussed above (Jayawickreme et al., 2012). Through in-depth qualitative investigation, these approaches have been found to extend in many ways to children as well, with autonomy and self-efficacy playing a central role for all individuals regardless of their age (Galton & Page, 2015; Kern et al., 2014; Unterhalter, 2003). Indeed, a significant body of research has now found that well-being at school comprises multiple, distinct components that load onto a broader meta-construct (Fenouillet et al., 2017, 2015; Martin-Krumm et al., 2018; Renshaw et al., 2015). Consequently, while the focus of the present research is *not* on student well-being, due to its focus on the longer-term impacts of education on adult lives, many commonalities in the conceptual and methodological approaches can be found in the literature.[13]

4.1.2. Limitations and critiques

The approaches outlined thus far clearly assume that education impacts well-being through a process of socialization in which students and their capacities are transformed "in lasting ways" (Kingston et al., 2003, p. 54). However, there are others, such as those espousing

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[13] Extending the present approach to student well-being is an important avenue of future research, already underway in a recent article (Fanchini et al., 2018) and further described in the conclusion.

'selection effects' in the previous chapter, who would argue that these effects are due to 'allocation' rather than 'socialization': that is, educational systems "identify, select, process, classify, and assign individuals according to externally imposed criteria" (Kerckhoff, 1976, p. 369). While both assume social environments shape individuals, the first ('socialization approach') assigns more freedom to the individual to choose what to do and how to do it (Kerckhoff, 1976). Researchers espousing an 'allocation' view of education may indeed argue that those with higher well-being, due to various other pre-existing factors, such as socio-economic status, for example, are more likely to be chosen to continue within the educational system. This is an argument of reverse causation, and is difficult to refute in cross-sectional research. Indeed, issues of endogeneity are not formally addressed in this study; that is, individuals may have 'self-selected' themselves into different higher education and labour market trajectories (Triventi, 2013). This critique can be levied at most cross-sectional educational research; however, this limitation will be further discussed in the conclusion.

4.1.3. Other potentially influential variables

Well-being has also been shown to vary with occupation, income, and socio-economic status in studies looking at individual-level well-being. Typically higher income and more prestigious occupations are linked to greater well-being, and unemployment exhibits a clear negative relationship with well-being at both the individual and national levels (Bockerman & Ilmakunnas, 2006; Boyce et al., 2010; Di Tella, MacCulloch, & Oswald, 2006; Michalos & Orlando, 2006). These findings are considered to be similar internationally (W.-H. Chen & Hou, 2018).

Another element that is strongly associated with well-being is social relationships, both close personal relationships and social capital as defined by social networks,

involvement, and trust (Aknin et al., 2013; Helliwell & Putnam, 2004; Sarracino, 2012). Once again, this is often viewed as one component of well-being itself, as seen in the literature on 'flourishing' outlined above, as well as in most *eudaimonic* theories of well-being (for both adults and children).

Health exhibits a robust impact on all measures of well-being, including satisfaction with life. Indeed, it is often argued to be one component of well-being (Michalos, Ramsey, Eberts, & Kahlke, 2012; Perneger, Hudelson, & Bovier, 2012). For example, Nussbaum (2011) includes physical health in two of her ten central capabilities, and laypeople often mention health as an important part of their well-being (Anand et al., 2005; Collomb et al., 2012; Jongbloed & Andres, 2015). Health is strongly linked to education as well (Furnée et al., 2008). Some have even argued that controlling for health may overcorrect associations, such as between income and life satisfaction, because of its high correlation with well-being (Hou, 2014b).[14]

4.1.4. Commonalities between the two measurement approaches

Although the findings outlined above suggest that there are important divergences in the education-well-being association when using hedonic or *eudaimonic* measures of well-being, commonalities were also suggested. We find these in the broader well-being literature as well. For example, Clark and Senik (2011) find that "someone with high standard 'hedonic' well-being (happiness or life satisfaction) is likely to have high eudaimonic well-being as well (flourishing, vitality, resilience and functioning)" (Clark & Senik, 2011, p. 18). More specifically related to education, they conclude that higher levels "are associated with greater

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[14] Some researchers use health as an independent control variable, some view it as too correlated with well-being to be included because it overcorrects the estimates, and still others view it as a part of well-being, the dependent variable (Anand et al., 2005; Hou, 2014b; van Praag & Ferrer-i-Carbonell, 2008). Subjective health is potentially an endogenous variable in the literature presented here: it is correlated to both education and the measures of well-being (Gana, Bailly, Hervé, & Alaphilippe, 2013; Groot & Maassen van den Brink, 2007).

satisfaction, but also with higher levels of flourishing, vitality, resilience and functioning"
(Clark & Senik, 2011, p. 26). These findings are confirmed by those of Jongbloed (2018) and
Nikolaev (2018) as well. Thus, the literature can be interpreted as suggesting that a positive
association exists between education and both conceptualizations of well-being, but that
eudaimonic well-being may be a more sensitive instrument when identifying these effects,
due to the small effect sizes in studies examining the life satisfaction-education relationship
alone.

4.2. *The social context of individual well-being*

Well-being, and more particularly well-being conceptualized from a *eudaimonic* standpoint,
"is profoundly influenced by the surrounding contexts of people's lives, and as such, that the
opportunities for self-realization are not equally distributed" (Ryff & Singer, 2006, p. 14).
These inequalities in distribution may result from socio-demographic factors, as described
above, or from national contexts, amongst which opportunities also differ systematically, as
discussed below.

These might also result from the juxtaposition of these two factors. For example,
cross-nationally, satisfaction with life has been found to be 18 percentage points higher in
adults with higher education than those with low levels (Miyamoto, 2013). However, in some
countries, such as the Nordic countries, these educational gaps are smaller, while in others,
such as in the Central and Eastern European countries, these gaps are larger. This has been
suggested to be due to "cross-regional differences in the welfare regimes which could affect
the well-being of the disadvantaged population" (Miyamoto, 2013, p. 2). This highlights the
importance of considering the intersection between national contexts and individual
characteristics in the study of well-being.

4.2.1. National differences in measured well-being

Haller and Hadler (2006) explore the antecedents of happiness and satisfaction with life from a sociological perspective. They base their hypotheses on the argument:

> the classical theories of happiness were fully right in their assumption that individual happiness is contingent upon (while certainly not fully determined by) the social order… happiness must be seen as the outcome of an interaction process between individual aspirations and expectations on one side, and more or less favourable micro and macrosocial conditions on the other side." (p. 171)

They assert that "happiness and life satisfaction cannot be realized or arise outside of social relations and outside of society" (Haller and Hadler, 2006, p. 177). This argument dates back to Aristotle and other ancient Greek philosophers, as discussed briefly earlier in this chapter (Aristotle, 1996). It also forms the basis of structure-agency interaction models, as explored in the next chapter, which assume that broad structural conditions, such as the nature of welfare state policies, can affect individuals' outcomes (Rubenson & Desjardins, 2009). From a psychosocial approach, the case for the influence of the larger social sphere on individual well-being is summarized in the notion that "all subjectivity is experienced and 'enacted' in the context of social relations" (Taylor, 2011, p. 782).

The role of the social order in determining individual well-being is also intuitively appealing: We all must live out our daily lives in some interaction with a surrounding social context, both through direct human contact and indirect organizational influences. With the development of industrialized modern nation states, the role of organizations has taken on more and more importance (Rothstein, 2010). Notably, the welfare state "was the main societal institution developed in order to cope with the dissolution of traditional, family and community-based forms of social provision and security" (Haller and Hadler, 2006, p. 181-182). These contexts create the backdrop to our daily lives, molding not only our objective experiences, but also our subjective interpretations of these experiences. These so-called 'cultural differences' have been argued to influence individuals' perceptions of their well-

being (Jagodzinski, 2010; Oishi, Schimmack, Diener, & Scollon, 2007). This social order is taught, reinforced, and sometimes questioned through the process of education (see *Box 8*; Senik, 2014).

Box 8: 'Cultural' approaches to well-being differences

Differences in well-being can also be conceptualized as 'cultural differences,' notably in response patterns to survey items. Claudia Senik (2014) has explored the particularity of the French case, finding that " French natives are less happy than other Europeans, whether they live in France or outside… but immigrants are not less happy in France than they are elsewhere in Europe" (p. 379). She attributes this difference in part to real disparities in emotional experience, but also in part to different life perspectives, finding that the French have "a general pessimism concerning their perspectives" (Senik, 2014, p. 393). These effects are not due to language effects on scales or macro-economic factors specific to France; however, she asserts that might in fact be due to early socialization and "qualitative aspects of the education system" (Senik, 2014, p. 396).

Haller and Hadler (2006) find support for the fact that while social indicators, such as age, gender, and health at the individual level; marital status, presence of children, and religiousity at the socio-cultural level; and occupational achievements (but not educational level or income level) at the social status level affect well-being; there are also significant macro-social level effects of national wealth, equality, and degree of political freedom (see *Figure 8*). Each of these variables influences happiness and life satisfaction significantly to varying degrees in empirical regression models.

Thus, country differences in subjective well-being are also related to differences in objective circumstances. Countries differ in wealth, security, and many other indicators important to daily life, even amongst European and OECD nations. Furthermore, this diversity in objective circumstances will change the impact of other variables on well-being at the individual level. To cite one example, the objective health outcomes for men in Central and Eastern Europe differ significantly by level of education: "A 30-year-old tertiary-

educated man in the Czech Republic can expect to live 17 years longer than a 30-year-old

man who has not completed upper secondary education" (Miyamoto, 2013, p. 1).
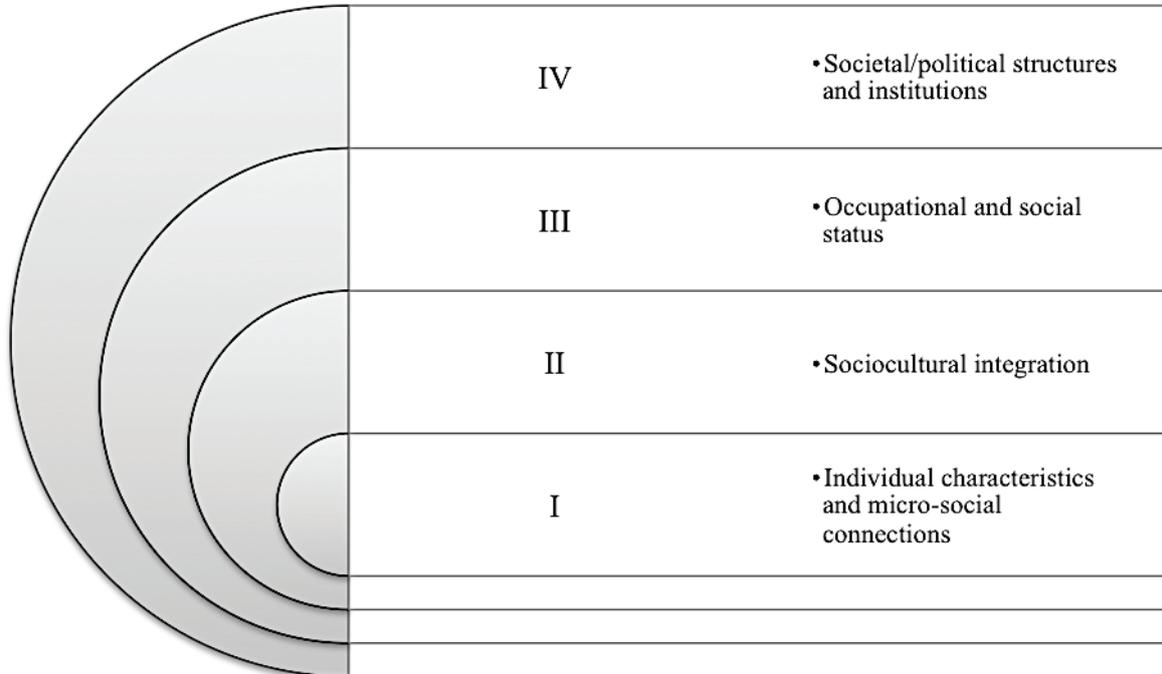
Figure 8. Analytical levels of the micro- and macro-social conditions affecting well-being.
Note: Adapted from Haller and Hadler's (2006) theorization of "how social relations, structures and institutions produce, facilitate and inhibit the emergence of happiness and life satisfaction" (p. 178).

'Active' policy approaches to welfare, rather than 'passive support,' may also shape

the impact of social context on individual well-being. Indeed, education may even become an

overt strategy for increasing welfare: fast-changing labour market conditions in the

knowledge economy often require individuals to be "entrepreneurs of the self," "endlessly

flexible, mobile and resilient," as well as continuously adapting and learning (Field, 2009, p.

179). This is more likely to be the case in contexts where traditional social support

mechanisms have become more limited, and individual initiative is seen as key to ensuring

one's own welfare. However, education is often argued to impact not only individual

outcomes, but also societal ones, as is explored in the next section.

4.2.2. External benefits of education to society

Education is argued not only to benefit individuals within a society, and thus overall levels of educational participation their sum averages of individual well-being, but also to have benefits for society as a whole beyond individual effects. Indeed, both "individuals and groups change as they receive more schooling" and "more educated individuals and groups differ from those with less education" (Vila, 2000, p. 23). For example, in terms of health, the rapid increase in post-compulsory education in the UK during the 1980s and 90s resulted in a reduction in body mass index, waist circumference and weight for the society as a whole (James, 2015), across the education distribution. This can be argued to be due to the fact that "more educated people have the knowledge, skill, and training required to search for, process, and use information more efficiently in decision-making processes than those who have received less education" (Vila, 2000, p. 24). However, these effects appear to 'spill over' into the general population as well.

In the same way, education has been argued to contribute to general well-being by encouraging economic growth, reducing inequality, stabilizing social structures through more active citizenship, and developing awareness about the environment (Vila, 2000, 2005). More education within a society at both the secondary and higher educational levels has been found to be linked to democratization and voter turn-out, more financial contributions to non-profit associations and participation in volunteering activities, lower per capita poverty, improved human rights, increased longevity, better health, lower crime, political stability, and decreased environmental pollution (McMahon, 2009). Beyond these effects, educational institutions may also benefit communities and regions in pecuniary terms through job creation, research and development, and money spent by students who move to the area for their studies and who would not otherwise live there (McMahon, 2009). Of course, all of these are simply additional effects alongside the central goals of educational institutions:

Creating and disseminating knowledge. The development of new technologies, ways of understanding society, and works of art benefit a society as a whole, as well as the individuals who either develop them or learn about them in order to put them to use in their own lives (McMahon, 2009; Vila, 2005).

Finally, education at the population level has also been directly linked to well-being. As mentioned earlier, Veenhoven argues that education contributes to well-being *only* at an aggregated level based on his own studies: While "school intelligence" does not add to individual happiness, "an educated populace is required for the functioning of a modern society and that people flourish well in such societies" (Veenhoven, 2010a, p. 348; 2010b). Similarly, other researchers have found through correlational analyses that there is a significant positive association between national performances on PISA tests and overall happiness scores (Kirkcaldy, Furnham, & Siefen, 2004).

4.2.3. Inequality from a well-being perspective

The notion of measuring inequalities in happiness has received comparatively little attention in the literature, with some notable exceptions (Clark, Fleche, & Senik, 2016; Delhey & Kohler, 2012; Ono & Lee, 2013; Veenhoven, 2005a, 2005b; Yang, 2008). These approaches tend to measure 'happiness inequality' in terms of dispersion in happiness scores, as measured by the variance or standard deviations of scores. However, some approaches also take into consideration the differences between various socio-demographic groups and between the highest and lowest scoring individuals within countries (Smith & Exton, 2013).

Generally, it has been found that countries with the highest average levels of happiness also report the smallest deviations in happiness scores (Ott, 2005; Ovaska & Takashima, 2010). Thus, the aims of increasing overall well-being and inequalities in well-being do not appear to be incompatible (Gainer, 2013). Most often, these policy aims may

involve redistributing happiness from those least at risk within a society to those most at risk (Ono & Lee, 2013).

A related empirical approach to measuring inequality on subjective measures has been applied in the field of health economics, where several groups of prominent researchers have developed median-based measures of inequality. The problem for 'qualitative,' or 'subjective' (the terminology differs between the two fields), variables and inequality is that these variables are typically measured on an ordinal scale. Thus, the mean, and statistical techniques and measures such as the Gini and the Lorenz curve, are not always appropriate, although oftentimes used (Kalmijn & Veenhoven, 2005; Ram, 2017). However, these subjective ordinal measures are useful because they allow individuals to decide for themselves which aspects of their health or well-being are more or less important (Allison & Foster, 2004).

A variety of techniques have been proposed to deal with inequalities in ordinal data. Allison and Foster (2004) recommend using the median as the measure of central tendency because it does not change with changes of scale and is measured in 'people space' rather than against an arbitrary ideal. Furthermore, this measure is not sensitive to scale. However, attempts to uniquely rank countries on ordinal scales have the disadvantage of requiring "that inequality comparisons remain limited to distributions for which the median values are identical" (Balestra & Ruiz, 2014, p. 21). Thus, comparing medians and interquartile or 10th to 90th percentile ('90/10') ranges in well-being scores may be more appropriate across more widely varying ordinal responses. Despite these empirical options appropriate under ordinal assumptions, the most common approach is still to examine differences in average levels of happiness amongst countries and groups within countries (Clark et al., 2016; Gainer, 2013).

A final consideration is the measure of well-being compared: The inequality research has thus far focused almost exclusively on hedonic measures of well-being. Nevertheless,

some research has begun to suggest that *eudaimonic* well-being "is profoundly influenced by the surrounding contexts of people's lives" and how, therefore, "the opportunities for self-realization are not equally distributed" (Ryff & Singer, 2006, p. 15). However, this remains a rarely explored avenue of research. What is more, a focus on the education gradient in *eudaimonic* well-being across country contexts does not exist in the literature.

5. Conclusion

5.1. *Understanding well-being*

This review of the scientific literature related to well-being shows that well-being has been measured in a diversity of ways, but that there is substantial overlap in definitions of both hedonic and *eudaimonic* well-being. Researchers have taken advantage of this theoretical harmony in proposing models of 'human flourishing.' The criteria for 'flourishing' typically include positive relationships, engagement or interest in life, a sense of purpose or meaning, and feelings competence or accomplishment. Furthermore, Nussbaum's list of central human capabilities also shows many commonalities with this list. This provides a strong theoretical basis for combining these approaches when constructing an empirical indicator of well-being.

When examining the link between well-being and education at the individual level, it is evident that this association is inconsistent and contested. The empirical results in the literature suggest that findings likely depend on the measurement of well-being used. On the other hand, the relationship at the country level is overwhelmingly accepted: Countries with higher levels of education also tend to have higher levels of social well-being as measured by multiple indicators, such as social trust, health, and satisfaction with life. However, the differences in findings between the micro and macro-levels are not explained, or even often explored, in the literature. The present study will attempt to shed light on this puzzling divergence.

5.2. *Hypotheses*

A substantial body of research suggests that post-secondary educational credentials are not significantly associated with individual-level hedonic well-being, as measured by general satisfaction with life. This hypothesis (H_5) will be tested alongside the corresponding hypothesis that post-secondary educational credentials are significantly associated with individual-level *eudaimonic* well-being (H_4). Thus, the effect of post-secondary education on hedonic operationalizations of well-being is expected to be small or insignificant, while these effects on *eudaimonic* well-being are expected to be both statistically and substantively significant. Similar findings at the country level are also tentatively expected, although prior empirical research is lacking in this area.

In regards to the measurement of well-being in this study, the flourishing literature suggests that multiple indicators of *eudaimonic* well-being can be operationalized as a single construct (H_6). Furthermore, strands within the capabilities literature suggest that a list of 'central capabilities,' as described by Nussbaum, can be measured through survey items (Anand et al., 2005). It remains to be determined if these capabilities can be meaningfully combined into a single measure, as has been done with 'flourishing' measures. The present study will attempt to do exactly this, following pertinent examples in the empirical literature (Huppert & So, 2011; Michaelson, Abdallah, Steuer, Thompson, & Marks, 2009).

Part II
Post-secondary education in international comparative perspective

Chapter 3. Educational welfare regimes

1. *Résumé en français*

L'éducation façonne le développement des connaissances, les systèmes de croyances, et les arrangements sociaux dès lors qu'elle minimise et crée simultanément des nouvelles formes d'inégalité. Ce chapitre explore les typologies existantes de régimes de protection sociale d'états-providence et de systèmes éducatifs dans l'objectif d'encadrer la relation entre l'éducation post-secondaire et le bien-être dans un contexte comparatif international. Tout d'abord, la typologie originale « idéale-typique » d'Esping-Andersen (1990a, 1990b), les « Trois Mondes » de l'état-providence, est décrite, car elle informe ouvertement presque toutes les autres études résumées dans ce chapitre. Ce sommaire est suivi par des descriptions des adaptations empiriques et théoriques de son approche.

On se focalise ensuite sur l'objectif principal de cette étude : les groupements de systèmes éducatifs. De nombreuses classifications des systèmes éducatifs sont examinées et les interrelations avec des régimes de protection sociale sont discutées. Plusieurs chercheurs se sont inspirées de la typologie d'Esping-Andersen (1990a, 1990b) en examinant les systèmes d'éducation, mais les approches diverses de la classification des systèmes d'éducation post-secondaire sont explorées. Des approches variées prises ces derniers 25 ans sont considérées, au vu des liens forts entre systèmes d'éducation et marchés du travail. Puis, l'argument, basé sur la littérature actuelle de l'« économie politique du bonheur », est présenté et montre comment les politiques éducatives – comme un élément dans les systèmes complexes des états-providences – peuvent avoir un effet sur le bien-être global d'un pays et, plus spécifiquement, la distribution du bien-être par le niveau de scolarité atteint.

Sur le plan théorique, une méthode qui permet une vue de ces systèmes d'une perspective des capabilités est explorée, fondée sur les travaux scientifiques de plusieurs chercheurs en France (Mons, 2007b; Verdier, 2008). Cette typologie nous permet d'interpréter des systèmes éducatifs par leurs principaux aspects « capacitants » et leurs principales défaillances « capacitaires » (Olympio, 2012). Cette grille de lecture, en combinaison avec des explications théoriques de multi-niveaux de « *bounded agency* » de Rubenson et Desjardins (2009), est proposée comme une synthèse potentielle des approches diverses décrites dans ce chapitre. Ensuite, un groupement théorique de pays est suggéré, accompagné des justifications préliminaires descriptives et qualitatives. Cette classification rejoint les trois groupements des « Trois Mondes » de l'état-providence, soutenu dans la littérature de l'éducation comparative, avec une classe des pays « Méditerranéens » et de l'« Europe Centrale et Orientale » par rapport à leurs dispositifs et politiques éducatives. Le chapitre conclut avec les hypothèses centrales (énumérées en français dans l'introduction). La typologie des « régimes éducatifs du bien-être social » qui servira dans les analyses de cette étude est créée et testée empiriquement dans le prochain chapitre, à partir de la recherche présentée jusqu'ici.

2.   Summary

Education shapes social arrangements, belief systems, and knowledge, whilst simultaneously minimizing and creating forms of social inequality. This chapter explores existing typologies of welfare state regimes and educational systems to frame the relationship between education and well-being in international comparative context. First, Esping-Andersen's (1990a, 1990b) original ideal-typical welfare regime typology, the 'Three Worlds' of welfare states, is briefly outlined, as it is a touchstone in comparative research. This is followed by a description of empirical and theoretical adaptations and revisions of his approach. Next the focus turns to

the principal objective of this study: educational system groupings. Educational system classifications are reviewed and the interrelations with welfare regime approaches are discussed. Various approaches taken over the past 25 years are outlined and considered in relation to the welfare regime approaches, as these are necessarily linked by the close connection between education and labour market systems. The argument is then presented, based on an existing, although limited, literature on the 'political economy of happiness,' for why educational policies – as part of the overall welfare state complex – might shape both societal well-being overall and the distribution of well-being by educational attainments more specifically.

A potential lens for viewing these systems from a capability approach is explored, based on the recent work of several researchers in France (Mons, 2007b; Olympio, 2012; Verdier, 2008). This typology of 'capability-building' and 'capability-inhibiting' educational systems is suggested as a potential synthesis of the numerous approaches outlined in this chapter. Finally, a theoretically based set of country groupings is suggested, along with preliminary descriptive and qualitative justifications. The chapter concludes with the central hypotheses of this study. The educational regime typology to be used in the rest of the thesis is then created and tested empirically in the next chapter, drawing on the literature presented thus far.

3. Education in international comparative perspective

The role of education in society has been described as a 'special' case of welfare state policies (Wilensky, 1975). Although education is clearly a realm of social policy at the national level, it has often been excluded from comparative welfare state research due to its status of being 'different' (Busemeyer, 2015; Iversen & Stephens, 2008). However, there is a recent push, particularly in political economy, to reintegrate education into welfare research.

Researchers leading this movement argue that "skills and education are at the core of the welfare state" (Iversen & Stephens, 2008, p. 602), but that "existing scholarship in comparative welfare state research has underestimated the importance of education as an integral part of welfare state regimes" (Busemeyer, 2015, p. 5). Indeed, there are "multiple linkages and connections between education and other parts of the welfare state" (Busemeyer, 2015, p. 1), including " both social protection and economic performance, and educational spending is not only a partisan issue but also one with profound implications for the distribution of income (Iversen & Stephens, 2008, p. 602).

By focusing on the link between education and well-being at both the individual and country levels, as well as the impact of national contexts on this link, the present study is necessarily concerned with national characteristics of educational systems and labour markets. As described in the previous chapter, education has the potential to impact well-being not only directly through cognitive capabilities, socialization and values, and identity formation, but also more indirectly through its influence on occupational and economic outcomes, as well as non-market effects (NME), such as physical health, social connections, and family formation. These contentions are supported theoretically by both capability and human capital approaches, as outlined in Chapter 1.

To examine the impact of education on well-being in international comparative perspective, it is useful to group countries in order to make sense of the data from a large set of countries. This can be done deductively or inductively. The first approach, moving from established theoretical perspectives, necessitates the mobilization of existing theories concerning the impact of education on well-being in different national contexts. There is no firmly established theory in this emerging area; however, there exist applicable empirical approaches in political economy, sociology of education, and economics of education. Thus,

an inductive approach, whereby relevant empirical data analysis is used to create country groupings, is necessary in order to address these research questions.

The two relevant aspects of national context – educational systems and labour markets – require empirical and theoretical analysis to organize characteristics into country groupings, which brings parsimony and allow relationships to be hypothesized beyond specific country settings. Country groupings for international comparative purposes in the social sciences have been greatly influenced by Esping-Andersen's (1990a, 1990b) 'Three Worlds' typology of forms of welfare capitalism, which originally focused on stratification and decommodification in pension provisions, but has also been applied to sick leave, employment and unemployment benefits, health care provisions, family allowances, overall welfare state expenditures, and other welfare state benefits (Bambra, 2007).

Post-secondary educational system groupings, on the other hand, have been researched mainly in regards to skill formation (Busemeyer, 2015), but also by level of tracking (stratification), inequality of outcomes, funding mechanisms, and centralization or diffusion of control (Pechar & Andres, 2011; Willemse & de Beer, 2012). Researchers have recently begun to combine education–welfare state groupings into a unified approach, although some have suggested a "trade-off" between these later-life provisions and investment in educational systems (Hega & Hokenmaier, 2002; Heidenheimer, 1981). First, the literature related to welfare regimes is reviewed, then education system classifications, and finally typologies combining both these approaches.

3.1. *Welfare regimes as a comparative approach: Welfare state and production regime typologies*

In 1974, Richard Titmuss outlined three contrasting models or functions of social policy, which foreshadow later theoretical comparative country groupings. Titmuss understood

'social policy' as "the principles that govern action directed towards given ends" (Titmuss, 1974, p. 23) in particular *change*, on the part of governments, which directly impacts the welfare of the citizens and is "seen to be beneficent, redistributive and concerned with economic as well as non-economic objectives" (p. 26). From this definition, education clearly forms a realm of social policy.

Importantly, the choices made in the ordering of social change may or may not be "beneficent or welfare-oriented in the sense of providing more welfare and more benefits for the poor" (Titmuss, 1974, p. 26). His three (hypothetical, or ideal-typical) models of social policy include:

A. *The residual welfare model*, where the private market and the family are the primary channels through which an individual's needs should be met, and social institutions should only temporarily meet these needs when these two channels fail;

B. *The industrial achievement-performance model*, where social welfare institutions work as a 'handmaiden' to the economy, and social needs are met "on the basis of merit, work performance and productivity" (Titmuss, 1974, p. 31); and

C. *The institutional redistributive model*, where social welfare institutions are integrated universally in society, and provide services on the principle of need alone in a redistributive system based on social equality.

This categorization foreshadows both Esping-Andersen's and the Varieties of Capitalism (VoC) approaches, which have dominated the academic literature in recent years (outlined below), although based on more philosophical grounds. In particular, Titmuss (1974) emphasizes the value-laden nature of social policy, which necessarily relies on moral and political values, which are not necessarily unquestionably regarded as benevolent or welfare-oriented, and may even redistribute resources from the poor to the rich or away from particular ethnic groups, for example. These cautions are important to keep in mind when

analyzing and evaluating the predominately empirical groupings of welfare states, often based on expenditures by governments.

Contemporary comparative welfare state research almost always positions itself in relation to Gøsta Esping-Andersen's theory of the "Three Worlds of Welfare Capitalism," which took the field of international comparative analysis in sociology by storm in 1990 (Esping-Andersen, 1990b). It has inspired dozens of further studies and reiterations of a framework for the role of the welfare state in capitalist economies. Even when this approach is not directly used in a study, the alternative framework is typically compared to this reference point (Busemeyer & Nikolai, 2010; Huber & Stephens, 2001; Iversen & Stephens, 2008).

Esping-Andersen defines a welfare-state complex as "institutions predominantly preoccupied with the production and distribution of social well-being" (1990, p. 1). Beyond simply examining state-provided social services and income transfers, Esping-Andersen considers the qualitatively different forms of social protection that order social relations across industrialized countries. A welfare state is not understood as simply a nation's social policy repertoire, but rather includes the complex array of social, legal, historical, and economic organizations, including varying levels and types of decommodification, social stratification, and inequality, as well as the relative roles of state, family, and market in providing social protection (Esping-Andersen, 1990b, 2009, 2014).

Two central concepts are key to this approach: 'decommodification' and 'stratification'. Decommodification is understood as "the degree to which individuals, or families, can uphold a socially acceptable standard of living" independent of market forces (Esping-Andersen, 1990b, p. 37). This occurs when "a service is rendered as a matter of right, and when a person can maintain a livelihood without reliance on the market" (Esping-Andersen, 1990b, p. 21). Stratification is defined in a broad way as "an active force" that

orders social relations (Esping-Andersen, 1990b, p. 23). This ordering is the result of the functioning of the welfare state institutions themselves, which creates groups or classes through the definition of policies distributing social benefits. Although Esping-Andersen does not focus on education in his typology, he does highlight the role that education plays as a stratifying force in society:

> What, then, constitute salient dimensions of welfare-state stratification? Apart from its purely income-distributive role, the welfare state shapes class and status in a variety of ways. The educational system is an obvious and much studied instance, in which individuals' mobility chances not only are affected, but from which entire class structures evolve. (Esping-Andersen, 1990b, p. 58)

Thus, education is understood to play a central role in social stratification more generally. Furthermore, as will be explored in this chapter, these two concepts can be more directly adapted and applied to comparative educational research.

3.1.1. The 'three-world' typology

As illustrated in Table *5*, Esping-Anderson's (1990b) 'Three-World' typology contrasts three ideal-typical conceptions of the welfare state, more or less exemplified by real-world examples. Within liberal welfare regimes, such as the United Kingdom, there is an emphasis on commodification and market mechanisms for the production of welfare locates the role of the state primarily in residual support (Hega & Hokenmaier, 2002; Pechar & Andres, 2011). Within social-democratic welfare regimes, such as Denmark, a universalist approach – albeit, in principle – optimizes equality of opportunity for all. Welfare coverage is understood to be highly decommodified, as individuals and families are provided a high standard of living by the state with a strong emphasis on promoting equality (Pechar & Andres, 2011). Within conservative welfare regimes, such as Germany, social policy is understood to be highly

influenced by a strong corporatist and/or religious legacy working to preserve social hierarchies (Pechar & Andres, 2011).

3.1.2. Critiques and adaptations

The original framework provided by Esping Anderson (1990) has been critiqued on the grounds that it provides limited and misclassified welfare state groupings (Arts & Gelissen, 2010). Furthermore, this perspective has been critiqued for its negligence of country-specific welfare services (Buhr & Stoy, 2015). However, subsequent research has examined varying components of social protection – such as the organization of caretaking (Woods, 2009) and healthcare (Bambra, 2005) – highlighting how welfare-state institutions produce and distribute social well-being to varying degrees. Additional welfare-regimes, such as Mediterranean and Post-Soviet ideal types, have been formulated (Bambra, 2007; Eikemo, Huisman, Bambra, & Kunst, 2008; Ferrera, 1996, 2010).

Additionally, many subsequent studies reclassify or include countries not found within the original theoretical formulation. Indeed, when we examine various early adaptations of the welfare regime approach, we see that the southern European countries often form a distinct group, termed 'Latin Rim,' 'Late Female Mobilization,' and 'Southern.' Ferrera (1996, 2010) indicates that a more volatile and fragmented welfare system is found in Mediterranean states, with a mix of public and private expenditure, a familial ethos, and high levels of inequality concerning beneficiaries. Indeed, economic volatility is understood to have increasing implications for Mediterranean welfare provisions (Marí-Klose & Moreno-Fuentes, 2013). Furthermore, the Commonwealth countries of Australia and New Zealand also form a distinct cluster in many studies, with names such as 'Radical' and 'Targeted' for their means-tested entitlements and provisions (Castles & Obinger, 2008; Obinger & Wagschal, 2001).

Despite these revisions of the 'Three Worlds', overwhelmingly, these early studies confirm the fundamental findings of Esping-Andersen (1990b): There exist *at least* three qualitatively different governmental approaches to providing social welfare in developed countries. In most cases, Esping-Andersen's original three groups are confirmed, with the addition of one to two further clusters, depending on the sample of countries included in the analyses. These adaptations of the 'Three Worlds' of welfare states are summarized in Table *5*, along with more recent research focusing on various social services (e.g., Bambra, 2005a, 2007). Overall, a great deal of commonality is seen across these groupings of countries, despite the differences in grouping criteria or measures.

Table 5. *Adaptations of welfare regime groupings*

Author	Regime groupings	Characteristics	Countries	Measures
Gosta Esping-Andersen (1990)	Liberal	Low decommodification; market differentiation of welfare	Australia; Canada; Ireland; New Zealand; UK; <u>USA</u>	(1) Decommodification (2) Stratification (3) Private-public mix (the state-market relationship)
	Conservative or 'Corporatist' (or 'continental' or 'Catholic-authoritarian')	Moderate decommodification; benefits dependent on contributions	Austria; [Finland]; France; <u>Germany</u>; Japan; Italy; Switzerland	
	Social Democratic or 'Socialist'	High decommodification; universal benefits	[Austria]; Belgium; Denmark; Finland; Netherlands; <u>Norway</u>; Sweden	
Leibfried (1992)	Anglo-Saxon (Residual)	Right to income transfers; welfare state as last resort; enforcer of market place	Australia; New Zealand; UK; <u>USA</u>	(1) Poverty (2) Social insurance policy (3) Poverty policy (4) Rights (5) Basic income
	Bismarck (Institutional)	Right to social security; welfare state as compensator	Austria; <u>Germany</u>	
	Scandinavian (Modern)	Right to work for everyone; universalism; welfare state as employer	Denmark; Finland; <u>Norway</u>; Sweden	
	Latin Rim (Rudimentary)	Right to work and welfare proclaimed; welfare state as semi-institutionalized promise	France; <u>Greece</u>; <u>Italy</u>; <u>Portugal</u>; <u>Spain</u>	
Castles & Mitchell (1993)	Liberal	Low social spending; no equalizing instruments	Ireland; Japan; Switzerland; <u>USA</u>	(1) Level of welfare expenditure (household transfers as % of GDP) (2) Average benefit equality (3) Income and profit taxes as % of GDP
	Conservative	High social expenditures; little use of equalizing instruments	<u>(West-) Germany</u>; Italy; Netherlands	
	Non-Right Hegemony	High social expenditures; use of equalizing instruments	Belgium; Denmark; <u>Norway</u>; Sweden	
	Radical	Income equality with equalizing instruments; little social spending	<u>Australia</u>; New Zealand; UK	
Kangas (1994)	Liberal	Heavier reliance on private-sector solutions; lower level of redistributive effort	Canada; USA	Additive index of quality of health insurance: (1) Income loss replacement ratio (net benefit as % of net wage) (2) Coverage rates (3) Number of waiting days (4) Length of the contribution period required for access to benefits
	Conservative	Medium-to-high income-loss compensations; coverage limited to employees	Austria; Germany; Italy; Japan; Netherlands	
	Social Democratic	High replacement rates; high coverage among the population age 15-64	Denmark; Finland; Norway; Sweden; Switzerland	
	Radical (Antipodean)	Means-tested and tax-financed	Australia; Ireland; New Zealand; UK	

Ragin (1994)	Liberal	High private sector share of pension expenditures; low expenditure on pensions for public employees; low number of occupationally specific pension programs	Australia; Canada; Switzerland; USA	(1a) Private sector's share of total pension expenditures (Esping-Andersen, 1990) (1b) Expenditure on pensions for public employees as % of GDP (1c) Number of occupationally specific pension programs (1d) Esping-Andersen's measure of pension decommodification (2) GDP per capita (3) Left cabinet strength (4) Religious party strength (5) Date public pension system enacted (6) Natural log of population (7) Percent Catholic (8) Ethnic diversity
	Corporatist (leaning toward Social Democratic)	Low private sector share of pension expenditures; medium expenditure on pensions for public employees; medium number of occupationally specific pension programs	Austria; Belgium; Finland; France; Italy	
	Social Democratic	Low private sector share of pension expenditures; low expenditure on pensions for public employees; low number of occupationally specific pension programs	Denmark; Sweden; Norway	
	Undefined (or Corporatist leaning toward Liberal)	Medium-high private sector share of pension expenditures; medium-high expenditure on pensions for public employees; medium-high number of occupationally specific pension programs	Germany; Ireland; Japan; Netherlands; [New Zealand]; UK	
Siaroff (1994)	Protestant Liberal	Minimal family welfare; relatively egalitarian gender situation in labour market; family benefits paid to mother, but low/inadequate	Australia; Canada; New Zealand; UK; USA	(1) Family welfare orientation (2) Female work desirability (3) Extent of family benefits being paid to women
	Advanced Christian-democratic	No strong incentives for women to work, strong incentives to stay at home	Austria; Belgium; France; West-Germany; Luxembourg; Netherlands	
	Protestant Social-democratic	True work-welfare choice for women; family benefits high and paid to mother; importance of Protestantism	Denmark; Finland; Norway; Sweden	
	Late Female Mobilization	Absence of Protestantism; family benefits usually paid to father; universal female suffrage is relatively new	Greece; Ireland; Italy; Japan; Portugal; Spain; Switzerland	
Ferrera (1996)	Anglo-Saxon	High welfare state cover; means-tested assistance; mixed financing; public administration	Ireland; UK	(1) Rules of access (eligibility rules) (2) Conditions under which benefits are granted (3) Regulations to finance social protection (4) Organizational-managerial arrangements to administrate the various social security schemes
	Bismarckian	Work position and social entitlements linked; benefits proportional to income; financed through contributions; insurance through unions and employer organizations	Austria; Belgium; France; Germany; Luxembourg; Netherlands; Switzerland	
	Scandinavian	Social protection as citizenship right; universal coverage; generous fixed benefits; financed through fiscal revenues	Denmark; Finland; Norway; Sweden	
	Southern	Fragmented system of income guarantees linked to work position; generous benefits without articulated net of minimum social protection; health care as right of	Greece; Italy; Portugal; Spain	

		citizenship; financing through contributions and fiscal revenues		
Bonoli (1997)	British	Low percentage of social expenditure financed through contributions; social expenditure is low (percentage of GDP)	Ireland; UK	(1) Bismarck and Beveridge models
	Continental	High percentage of social expenditure financed through contributions; social expenditure is high (percentage of GDP)	Belgium; France; Germany; Luxembourg; Netherlands	(2) Quantity of welfare state expenditure (social expenditure as % GDP)
	Nordic	Low percentage of social expenditure financed through contributions; social expenditure is high (percentage of GDP)	Denmark; Finland; Norway; Sweden	(3) Percentage of social expenditure financed via contributions
	Southern	High percentage of social expenditure financed through contributions; social expenditure is low (percentage of GDP)	Greece; Italy; Portugal; Spain; Switzerland	
Korpi & Palme (1998)	Basic Security	Entitlements based on citizenship *or* contributions; flat-rate benefit principle	Canada; Denmark; Ireland; Netherlands; New Zealand; Switzerland; UK; USA	(1) Bases of entitlement for old age pensions
	Corporatist	Entitlements based on occupational category *and* labour force participation; earnings-related benefit principle	Austria; Belgium; France; Germany; Italy; Japan	(2) Bases of entitlements for sickness cash benefits
	Encompassing	Entitlement based on citizenship *and* labour force participation; flat-rate and earnings-related benefit principle	Finland; Norway; Sweden	(3) Principles applied to determine benefit levels
	Targeted	Eligibility based on proven need; minimum benefit principle	Australia	(4) Governance of social insurance programs
	Voluntary State Subsidized	Eligibility based on membership or contributions; flat-rate or earnings-related principle		
Bambra (2005a)	Liberal	Low decommodification	Australia; Japan; USA	Health care decommodification index measured by:
	Conservative	Medium decommodification	Austria; Belgium; Canada; Denmark; France; Italy	1) Public/private mix of health provision
	Social Democratic	High decommodification	Finland; Norway; Sweden	2) Ease of access to public provision, and
	Conservative subgroup	Medium decommodification	Germany; Switzerland; Netherlands	3) Coverage provided by the health system
	Liberal subgroup	Medium decommodification	Ireland; UK; New Zealand	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular welfare state regime.

3.1.3. Political economy approaches

Aligning with the 'welfare regime' perspective is another related theoretical perspective concerning comparative institutional advantage in political economy: The 'varieties of capitalism' (VoC) approach argues that different welfare states, or systems of social protection, are better suited to certain modes of capitalist production, or welfare production regimes (WPR), which are the ways in which employers organize within a country and their relationship with the laws and financial institutions of that country (P. A. Hall & Soskice, 2001). This approach rooted in political economy asserts that "many of the most important institutional structures – notably systems of labor market regulation, of education and training, and of corporate governance – depend on the presence of regulatory regimes that are the preserve of the nation-state" and thus differ in systematic ways across countries (Hall & Soskice, 2001, p. 4).

These recent applications of the tools of political science to investigate national welfare complexes are outlined in Table *6*. On examination of these typologies, we see that once again, these studies find three or more qualitatively different governmental approaches to providing social welfare in developed countries. This is despite the fact that the units of analysis are broader: These approaches examine both "private and public enterprises (industrial and financial), associations of capital interests (business associations and employer organizations) and of labor, labor market institutions, and government agencies involved in economic policy-making" (Huber & Stephens, 2001, p. 2). Indeed, these typologies all share striking similarities with the results of Esping-Andersen's (1990b) 'Three World' ideal-typical approach, as noted by the researchers themselves (Huber & Stephens, 2001).

Emerging from the field of political science, these typologies often have their roots in power resource theory (PRT), which asserts that "the size and structure of the welfare state is a function of the historical strength of the political left, mediated by alliances with the middle

classes" (Iversen & Stephens, 2008, p. 600). They, for the most part, focus on interventions by public or private bodies "intended to relieve households and individuals of the burden of a defined set of risks and needs" (Kautto, 2002, p. 56). They have also been applied to education through the analysis of human capital and skill production within different types of regimes, resulting in slightly different country groupings (Huber & Stephens, 2001; Iversen & Stephens, 2008). These adapted typologies are discussed in a later section of this chapter.

Table 6. *Existing welfare state groupings in political economy*

Author	Regime groupings	Characteristics	Countries	Measures
Huber & Stephens (2001)	Social democratic	High social democratic governance, 'service heavy' generous welfare state, higher public funding and delivery of social services (public health, education, welfare employment), 'women-friendly,' investment in human capital	Sweden; Norway; Denmark; Finland	1) Welfare state regime characteristics: Left cabinet years, Christian democratic cabinet years, social security expenditure, transfer payments, total taxes, public HEW employment, health expenditure % public, health employment % public, pension expenditure % public, spending on non-aged, decommodification index, support for mothers employment (circa 1980) 2) Production regime characteristics: Female labour force participation, union density %, union coverage, corporatism index, centralization of wage setting, wage dispersion, active labour market policy spending/unemployment (circa 1980)
	Christian democratic (1)	Very strong influence of social democracy and 'transfer heavy' fairly generous welfare state	Austria	
	Christian democratic (2)	Strong influence of social democracy, generous social expenditure, high transfer spending	Belgium; Netherlands; Germany	
	Christian democratic (3)	Less influence of social democracy and less generous welfare state	France; Italy; Switzerland	
	Liberal	Absence of Christian democratic government and less generous welfare state	Canada; Ireland; UK; USA	
	'Wage earner'	Strong labour parties and unions and highly regulated labour markets	Australia; New Zealand	
	Japan	Group-coordinated market economy, with private programs through large corporations, and family support	Japan	
Wildeboer Schut, Vrooman, & de Beer (2001)	Liberal	Relatively low level of provisions; high thresholds for take-up of provisions; means tests; little 'activating' labour market policy	USA; Canada; Australia; UK	58 characteristics of labour market, tax regime and social protection system
	Corporatist	Wide range of provisions; relationship between earlier occupation and entitlement to provisions (esp. civil servants); relatively high child benefits; very high coverage of collective labour agreements	France; Germany; Belgium	
	Social-democratic	Comprehensive system of social protection; 'active integration' labour market policies; long duration earnings-related maternity and parental leave; high direct taxation and social security contributions; high labour market participation of women	Sweden; Denmark; Norway	
	Undefined/hybrid	Mix of corporatist and social-democratic characteristics (e.g. high direct taxation; high	Netherlands	

		level of social protection previsions; high child benefits; tax advantage for having a non-working partner)		
Kautto (2002)	Transfer approach	Characterized by high transfer effort, average or low service effort and low service emphasis.	Belgium; Netherlands; Austria; Italy	Social protection expenditures and transfers – cash benefits and benefits in kind – including: 1) Sickness and health care,
	Service approach	Characterized by high service effort, and average or high transfer effort	Sweden; Norway; Finland; France; Denmark; Germany; UK	2) Disability, 3) Old age, 4) Survivors, 5) Family and children,
	Low approach	Characterized by low service effort, and low transfer effort	Ireland; Greece; Portugal; Spain	6) Unemployment, 7) Housing, and 8) Social exclusion not elsewhere classified
Castles & Obinger (2008); Obinger & Wagschal (2001)	English-speaking (Market)	Characterised by strong secular conservative parties, strong counter-majoritarian barriers (for instance a federalist power-sharing), the absence of a Catholic-cultural impact, and lack of corporatist and consociational arrangements	USA; Canada; Japan; Switzerland	Hierarchical cluster analyses of measures of socio-economic, political-institutional, and outcome variables: 1) Size of government, 2) Distinct spending priorities of governments (e.g. spending on education, industrial subsidies, welfare and defence),
	Continental European (hybrid)	Characterised by a strong position of Christian democratic parties conducive to a prominent role of the state at least in the field of social policy	Belgium; Germany; Finland; Ireland; UK; Netherlands	3) Mode of public expenditure financing, 4) Economic and labour market performance, and 5) Gender-related outcomes (e.g. female labour force as % of female population)
	Conservative	Characterised by a strong but declining Catholic influence	France; Italy; Austria	
	Scandinavian (State)	Characterised by strong labour parties and a lack of both strong counter-majoritarian barriers and Catholic-cultural impact	Denmark; Norway; Sweden	
	Radical	British settler colonies form unique cluster	Australia; New Zealand	
	Periphery	Strong Catholic cultural impact, weak economy, 'Southern' geographical location	Spain; Greece; Portugal	
Mandel & Shalev (1996; 2009)	Conservative/Continental	More generous maternity leave than daycare services (with the exception of France and Belgium), highest proportion of women in highest paying jobs (in large part because of selection effects due to lack of child care options), women less likely to be in the lowest paying jobs, but middle level of overall income	Italy; Spain; France; Belgium; Netherlands; Germany; [Austria]	1) Decommodification (size of the public welfare system) 2) Defamilialization (childcare services and maternity leave) 3) Welfare state as employer 4) Gender wage gap 5) Women's representation in the top and bottom

		inequality.		earnings quintiles
	Liberal	Limited daycare services and maternity leave, middle proportion of women in highest paying jobs (in part due to selection effects), women moderately likely to be in the lowest paying jobs, and middle to high levels of overall inequality.	Australia; Canada; USA; [Switzerland]; UK	6) "90/10 ratio" between median earnings at the 90th and 10th percentiles of all workers 7) Selectivity of the female labour force
	Social Democratic	Extensive daycare services, generous maternity leave, lowest proportion of women in highest paying jobs, women more likely to be in lowest paying jobs, but low overall income inequality.	Sweden; Denmark; Finland; Norway	
	Undefined		[Ireland]	
van Oorschot & Finsveen (2009)	Scandinavian/Social-democratic	*Found no significant differences in social capital inequality*	Denmark; Norway; Sweden	1) Total public social expenditure 2) Social capital inequality (passive participation, active participation, interpersonal trust, institutional trust, social norms)
	Bismarckian/Continental		Belgium; France; West Germany; Netherlands	
	Anglo-Saxon/Liberal		Canada; Great Britain; Ireland; USA	
	Southern/Mediterranean		Italy; Spain	
Kammer, Niehues, & Peichl (2012)	Social-democratic	Lowest income inequality; highest overall redistribution; high benefits	Sweden; Denmark; Finland	Effective redistributive outcomes of welfare states' tax and transfer policies
	Conservative	Highest contributions and public pensions	Austria; France; Luxembourg; Germany	
	Hybrid	Lower inequalities in post-government incomes; high contributions	Belgium; Netherlands	
	Liberal	Highest income inequality; lowest overall redistribution; high market inequalities; targeted redistribution	Ireland; UK	
	Southern	Lowest overall redistribution; high market inequalities; high public pensions	Spain; Italy; Greece; Portugal	
Danforth (2014)	Nordic	High decommodification; high public provision of social services; universal population coverage; high income redistribution; low post-tax/transfer poverty; high defamilialization; high activation	Denmark; Finland; Norway; Sweden	1) Decommodification, 2) Public provision of social services, 3) Population coverage, 4) Income redistribution, 5) Post-tax/transfer poverty,

	Anglosphere	Low decommodification; low public provision of social services; selective population coverage; low income redistribution; high post-tax/transfer poverty; low defamilialization; medium activation	Canada; USA; Japan; Switzerland; Ireland; UK; Australia; New Zealand	6) Defamilialization, and 7) Activation
	Continental European	Medium decommodification; low public provision of social services; occupational population coverage; low income redistribution; medium post-tax/transfer poverty; low defamilialization; low activation	Italy; Austria; Germany; France; Belgium; Netherlands	
Ferragina, Seeleib-Kaiser, & Spreckelsen (2015)	Conservative	Low unemployed and old age poverty; higher levels of inequality	Belgium; Ireland; France; Austria	1) 'Old risks' (replacement rate, unemployment rate) 2) 'New risks' (youth in education, female employment)
	Social democratic	Low youth and old age poverty; high youth and female employment	Denmark; Sweden; Finland; Netherlands	
	Liberal	High levels of poverty among the unemployed; high youth and female employment	Germany; UK	
	Mediterranean	Lower replacement rates and higher levels of inequality	Greece; Spain; Italy; Portugal	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular welfare state regime.

3.2. Educational systems in comparative perspective: Typologies of educational systems

Education is an integral component of welfare policy, largely considered an evolving and transforming state-provided or partially subsidized entitlement within industrialized countries (Kwiek, 2014). However, public education predates even the oldest pillars of the welfare state and thus is often considered simply "different" from other social policy and excluded from many comparative welfare state studies (Iversen & Stephens, 2008, p. 602). This 'special' status that excludes education from the welfare regime typologies outlined above, is assumed despite the fact that the welfare state is commonly defined as "government-protected minimum standards of income, nutrition, health, housing and education for every citizen, assured to every citizen as a political right, not as charity" (Wilensky, 1975, p. 1).

Indeed, education can be conceptualized as an 'alternative' strategy to reducing social inequalities (Heidenheimer, 1981) rather than simply as a social right, the 'right to being educated.' This is part of a policy focus on 'activation,' which moves policy focus from 'passive' strategies providing aid to 'active' strategies promoting participation in the labour market (Busemeyer & Nikolai, 2010). Through this lens, education is *prospective* social redistribution in that it (hypothetically, at least) shapes later incomes. In this way, education can be seen as encouraging 'equality of opportunities,' while social insurance policies promote 'equality of outcomes' (Wilensky, 1975).

Only recently have researchers begun to incorporate education within welfare regime approaches. Through the use of both theoretical and empirical methods, groupings of countries by educational system characteristics have been tested and found to map broadly onto Esping-Andersen's original regimes types (J. Allmendinger & Leibfried, 2003; Beblavý, Thum, & Veselkova, 2013; Estevez-Abe et al., 2001a; A. Green, Preston, & Janmaat, 2008; Peter et al., 2010). Although the distinctions and specific country group compositions

between these three systems are debated, as discussed below, what is generally agreed upon is that the systems of capitalism that dialogically interact with education cannot be understood as universal.

As part of an overall welfare complex, education is frequently constituted as a direct and indirect strategy for securing social protection via employment, a tactic commodifying welfare through employer mediated protection (Hega & Hokenmaier, 2002). However, other competing aims of state-specific education policy, such as reducing inequality and increasing social mobility, are understood to result in 'trade-offs' between programs, services, and system development (Pechar & Andres, 2011). Generally, though, there are many similarities between the functioning of national educational systems and other welfare state institutions (Busemeyer, 2015).

In an examination of education systems from an international comparative perspective, several main components are typically considered: 1) *stratification*, understood as the level of access to different types and higher levels of education; 2) the extent of state *standardization* and centralization, resulting in more or less variation between educational institutions; 3) *vocational specificity*, which promotes general and/or occupational specific knowledge and skills; and 4) *decommodification*, resulting in varying levels of public and private educational expenditure (Kerckhoff, 2001; Willemse & de Beer, 2012). However, what has still been left unexamined until the present is how the relationship between education and social well-being differs between welfare regimes, a vital component to understanding how welfare institutions vary in their ability to not only provide social protection but also support a thriving population.

3.2.1. Adaptations of welfare regime models

Educational systems within Europe differ by both their modes of human capital formation and their educational system characteristics. Esping-Anderson's (1990) 'Three World' typology can also be used to compare educational systems within liberal, conservative, and social-democratic welfare states. In particular, Esping-Andersen's central concepts of decommodification and stratification can be adapted to be applied more specifically to education. Stratification, as measured by both social inequalities and mobility, are clearly impacted by educational system characteristics. In terms of decommodification, education can be understood as either as a social right or as an individual investment in human capital: The former assumes that the welfare state should take a central role in providing and financing education, while the latter justifies a significant private share of education funding, mainly in the form of tuition (Busemeyer, 2015).

Thus, within liberal welfare regimes, exemplified by the Anglophone countries, an emphasis on commodification and market mechanisms for the production of welfare locates the role of the state primarily in residual support (Hega & Hokenmaier, 2002; Pechar & Andres, 2011). Although state intervention is largely understood to be limited, an emphasis on educational spending is found, as policy intervention targets inequality and social mobility while still maintaining meritocracy. As Willemse and De Beer argue, education systems within liberal welfare regimes are characterized by low levels of decommodification, including elements such as "means-tested social assistance, modest flat-rate universal transfers, benefits targeted on low income groups and primacy of the market" (2012, p. 110). Wider public support through tax credits may limit the role of governmental involvement and influence, as emphasis is placed on individual, family, and community-level decisions (Gustafsson & Stafford, 1994). Nevertheless, Willemse and De Beer (2012) find that liberal

welfare states have comparatively low levels of education stratification, a finding that the authors link to a less differentiated vocational system and low levels of vocational specificity.

In contrast, within social-democratic welfare regimes, education systems are characterized as having moderate to high levels of standardization and vocational specificity, depending on the national context, but comparatively lower levels of education tracking compared to conservative welfare states. State policy largely maintains low or no educational fees, accessible and generous grants and loans, and high public/low private expenditure, resulting in high educational enrollment rates compared to conservative welfare states (Willemse & de Beer, 2012). Nevertheless, Willemse and De Beer (2012) do find moderate levels of education stratification in Denmark and Norway, challenging the assumption that social-democratic welfare states are able to curtail all elements of educational inequality. However, recent analysis by Esping-Andersen (2014), counters this claim, illustrating that social-democratic welfare regimes have been the most successful in equalizing educational outcomes and opportunity structures.

Finally, within conservative welfare regimes, where social policy is understood to be highly influenced by a strong corporatist and/or religious legacy working to preserve educational and social hierarchies, decommodification is argued to be low to moderate, depending on the country, with lower levels of public expenditure and levels of post-secondary education enrollment compared to social-democratic welfare states (Willemse & De Beer, 2012). Conservative welfare policies are argued to maintain hierarchical educational outcomes through educational tracking resulting in social differentiation. As Willemse and De Beer (2012) and Pechar and Andres (2011) illustrate, conservative welfare states have low educational fees compared to liberal welfare states, but high levels of vocational specificity, a distinguishing feature of their education system. Further, occupational and class status is

argued to have a high impact on systems of education, resulting in high levels of stratification.

Studies focused on education often reclassify or include countries not found within the original framework provided by Esping Anderson (1990b). For example, in examining education expenditure and equality, West and Nikolai (2013) chart a Mediterranean welfare regime, clustering France – originally classified by Esping-Anderson as conservative – with Greece, Italy, Portugal, and Spain. Within these countries public expenditure is understood to be moderate, stratification low in early education and high within later education, and standardization and vocational specificity relatively moderate depending on the country (West & Nikolai, 2013). Although West and Nikolai (2013) do not examine levels of decommodification or private expenditure, they do examine overall public expenditures as well as equality in educational opportunities and outcomes (see Table 7).

Table 7. *Existing 'welfare regime' educational groupings*

Author	Regime groupings	Characteristics	Countries	Measures
Busemeyer & Nikolai (2010)	Northern European/Scandinavian countries	High levels of public education spending, low levels of private spending, and a high share of the population with at least upper secondary education	Denmark; Sweden; Finland; Norway	1) The division of labour between the state and private actors in the financing, administration, and provision of education. 2) The extent of public investment in education (across educational sectors as well as in relation to other public policies). 3) The organization of vocational training in schools and firms. 4) The distribution of students across and levels of enrolment in different educational sectors. 5) The degree of decentralization and the distribution of policy-making powers across levels of government. 6) The extent and forms of segregation of educational tracks (i.e. differentiation between separate academic and vocational tracks). 7) The degree of variation between schools and school forms with regard to curricula, exams, and quality of learning opportunities.
	Germany and Austria	Low share of private spending on primary, secondary and tertiary education, above average levels of the population with at least upper secondary education, low levels of public education spending on primary and secondary as well as on tertiary education, and a strong emphasis on vocational training	Germany; Austria	
	Continental European countries	Above average levels of public spending on primary and secondary education, low private and public spending on tertiary education, and the share of the population with at least upper secondary education is below average	France; Netherlands; Belgium; Ireland	
	Mediterranean countries	Low levels of public and private spending on all levels of education, but especially on tertiary education, and shares of the population with at least an upper secondary or tertiary degree well below the OECD average	Italy; Spain; Portugal	
	English-speaking countries (except Ireland)	Medium levels of public spending and high levels of private spending on education, low public share in education financing, but high share of the population with tertiary education	Canada; USA; Australia; New Zealand; UK	
Peter, Edgerton, & Roberts (2010)	Liberal	Moderate within- and between-school inequality; equality of opportunity	Australia; Canada; New Zealand; UK; USA	1 & 2) Between-school and within-school educational inequality (socio-economic gradients) in student achievement (PISA mathematics, reading, and science scores)
	Conservative	High between-school inequality, low within-school inequality; preserves status differentials	Austria; Belgium; France; Germany; Italy	
	Social-democratic	Low inequality between- and within-schools; equality of condition	Denmark; Finland; Iceland; Norway; Sweden	
Pechar & Andres	Liberal	Trade-off: High level of tuition fees and well developed student support systems	Canada; USA; Australia; New	Higher education: 1) Participation in tertiary education

			Zealand; UK	2) Pre-tertiary indicators for entry into tertiary education
(2011)	Conservative	Trade-off: Low level of tuition fees and less developed student support systems	Austria; France; Germany; Netherlands; Italy; Switzerland; Belgium	3) Funding of tertiary education 4) Patterns of tuition and student aid
	Social Democratic	No trade-off: No or low tuition fees but quite generous student support systems	Sweden; Denmark; Norway; Finland	
Willemse & de Beer (2012)	Liberal	Low decommodification & low stratification; Moderate number of tracks; no specific vocational training system; mixed standardization	Australia; Canada; [France]; Ireland; [Italy]; New Zealand; [Portugal]; UK; US	Higher education: 1) Differentiation (number of tracks) 2) Vocational specificity 3) Standardization 4) Stratification index
	Conservative	Moderate decommodification & high stratification; High number of tracks; more likely to have specific vocational (binary); mixed levels of standardization	Austria; Germany; Netherlands; Spain; Switzerland	
	Social Democratic	High decommodification & mixed stratification; Low number of tracks; vocational systems in place; mixed levels of standardization	Denmark; Finland; Norway; Sweden	
	Hybrid	Moderate decommodification & moderate stratification	Belgium	
West & Nikolai (2013)	Nordic	Non-selective, publicly funded comprehensive school systems, covering the entire period of compulsory education; vocational education is fully integrated into the general education system ('integrationist skill regime'); equality of opportunity is high	Sweden; Denmark; Finland	1-3) Equality of opportunity: access (early education enrolment), schooling (tracking, private enrolment, etc.), and outcomes (difference between 5th and 95th percentiles on reading ability, percentage with tertiary education, etc.) 4) Expenditures on education (total expenditure, percentage of GDP, ratio education expenditure versus public social expenditure, ratio of pupils to teachers, etc.)
	Continental	Highly tracked and stratified, with selection taking place between the ages of ten and twelve ('differentiated skill regime'); large effect of social background on outcomes; reproduces social stratification via the education system	Germany; Austria; Belgium; Netherlands	
	Mediterranean	Stratified education systems with the first academic selection taking place between thirteen and fifteen; public expenditure on education slightly below average; pre-primary enrolment is high; later academic selection than in the Continental countries	Italy; France; Greece; Portugal; Spain	
	English-speaking	Public expenditure on primary and secondary education is above average; proportion of twenty-five- to thirty-four-year olds with tertiary education is high; quasi-market model of schooling; more inegalitarian than the Nordic cluster	UK; Ireland; USA	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular welfare state regime.

3.2.2. Educational system characteristics groupings

Moving away from research incorporating education as a component of the overall welfare state complex of social policy into the realm of comparative educational research proper, a review of the literature shows that numerous studies have focused on education system characteristics to compare groups of countries (see Table *8*). The studies described here, in keeping with the objectives of the present research, are mainly – although not only – rather large-scale and quantitative in nature, and thus represent a sub-sample of the available research in comparative education (Malet, 2005; Mons, 2008b).

An early typology of educational systems by Furth (1985) divided educational systems into three classes: those with an integrated schooling model, including Canada, Japan, and the US; those with a dual schooling model, including Austria, West Germany, and Switzerland; and those with a mixed schooling model, such as the UK. He based these groupings on the post-compulsory vocational training provisions in each country. Thus, this classification captures the qualitative differences in policies related to vocational education and training (VET).

Green (1991) extended this line of research by examining links between vocational training arrangements and labour markets. Based on this relationship, he created five groups of countries, each based around an exemplar country. The first is the German model, which is relatively decentralized and relies on employers in a work-based system of training. This system is characterized by streaming, or tracking, at the secondary school level, based on academic ability. Austria, Switzerland, and the Netherlands also fit within this group.

In contrast, the French model is strongly centralized, and vocational training is education-led, that is, vocational training tends to take place within educational institutions; however, these institutions are separated from those with an academic focus. The Swedish model is similar to the French, but integrates vocational and academic studies in the same

institutions, with a focus on equality and personalization without failure or grade repeats. The English model differs from these models by the limited extent of state control: Institutions have a large amount of autonomy, and vocational and academic studies are separate after compulsory education. The final model is the Japanese model, also called 'state developmentalist,' which is highly centralized and focused on social cohesion and citizenship. South Korea, Taiwan, and Singapore also fall into this group.

Allmendinger and Leibfried (2003) took quite a different approach by dividing countries according to skill differentiation and overall levels of educational attainments, defined by the extent of differentiation and the absolute level of competences and years of schooling or degree attained, respectively. Differentiating between educational preventative policy and compensatory social policy, they outline four worlds of competence production. Their analysis of educational quality through a focus on educational outcomes in the form of Programme for International Student Assessment (PISA) scores taps into both skills and skill distributions within countries, which can be viewed as a measure of 'educational quality.' Their four worlds are fairly similar to Castles' 'Families of Nations' described above, as well as Esping-Andersen's 'Three Worlds,' and differ not only in levels of 'educational poverty,' but also along linguistic and cultural lines (J. Allmendinger & Leibfried, 2003; West & Nikolai, 2013). Indeed, we find Nordic, Anglo-Saxon, and Germanic/core European groupings clearly delimited in this study as well.

Table 8. *Early educational system characteristics groupings*

Author	Regime groupings	Characteristics	Countries	Measures
Furth (1985)	Integrated schooling model	Integrates most forms of provision within the formal education system	Canada; Japan; US	Post-compulsory vocational training provisions
	Dual schooling model	Strong and highly developed apprenticeship sector	Austria; West Germany; Switzerland	
	Mixed schooling model	Schools are complemented by less formal sector of mainly work-based education	UK	
Green (1991)	German model	Work-based system of training; employer-led; relatively decentralized; streaming at secondary level by academic ability	Germany; Austria; Switzerland; Netherlands	Post-compulsory vocational training arrangements and links to labour markets
	French model	Education-led, college-based model; both general and vocational training in different institutions; strong central control; comprehensive compulsory schooling; school-based system of upper secondary; standardized national education	France; [Italy]	
	Swedish model	Education-led, college-based model; both general and vocational training within the same institutions; unstreamed classes with automatic grade promotion; comprehensive high school; strong central control; emphasis on equality and social solidarity	Sweden	
	English model	Limited state control; institutional autonomy; post-compulsory divided into school-based and work-based types	UK	
	Japanese model ('state developmentalist')	Highly centralized; emphasis on group cohesion and personal skills; cohesive and orderly citizenship; disciplined and cooperative labour; broad/general programs	Japan; South Korea; Taiwan; Singapore	
Kerckhoff (2000)	Type One: Orderly and stable	High standardization and high stratification with a focus on vocational credentials in the secondary educational system; low returns to full-time schooling, medium increases in educational credentials, low number of early job changes, and low early occupational mobility; high "capacity to structure"	Germany	1) Degree of stratification of the education system, 2) Degree of standardization of educational programs, 3) Degree to which the educational credentials awarded are general academic ones or specialized vocationally relevant ones, 4) Strength of the association between levels of educational attainment and occupational levels of first jobs,
	Type Two	Relatively unstandardized and unstratified educational system with a focus on general credentials; high returns to full-time schooling, high increases in educational credentials, high number of early job changes, and high early occupational mobility; weak education-occupation linkage	USA	
	Mixed type	High standardization (and centralization) and medium stratification with a focus on both general and vocational	France	

		credentials; low returns to full-time schooling, low increases in educational credentials, high number of early job changes, and high early occupational mobility		5) Extent to which workers return to school and change their levels of educational attainment during their early labour force careers,
	Mixed type	Medium stratification and standardization with a focus on both general and vocational credentials; low returns to full-time schooling, high increases in educational credentials, medium number of early job changes, and high early occupational mobility	UK	6a) Amount of job changing and b) occupational mobility during workers' early careers in the labour force
Allmendinger & Leibfried (2003)	Central	Low differentiation, high level of competences	Finland; Iceland; Sweden; Denmark; Norway	Human competence formation: 1) Level of competences (median value, PISA) 2) Differentiation of competences (point difference between the 5th and the 95th percentile point, PISA) 3) Educational inequalities and educational poverty (competences versus certificates)
	Centripetal	High differentiation, high level of competences	UK; Ireland; Australia; New Zealand; USA; Canada	
	Peripheral	Low differentiation, low level of competences	Brazil; Portugal; Mexico; Greece; Hungary	
	Centrifugal	High differentiation, low level of competences	Germany; Switzerland; Austria	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular educational regime.

3.2.3. Specific levels of education

Various researchers have also grouped educational system characteristics with foci on distinct levels of education. In classifying compulsory educational systems, Mons (see *Box 9*) is a point of reference in international comparisons of educational systems. Her research has illustrated that the OECD countries can be meaningfully grouped by differences in primary and secondary educational policies and pupils' pathways through education. Relevant to present study, the countries found within her groupings broadly mirror those of the welfare regime approaches outlined above, with the addition of a 'uniform integration' model that typifies the Southern European countries (see Table *9*, Mons, 2007b). Her approach has informed studies of country groupings within Europe on diverse aspects of educational characteristics and beliefs, such as meritocracy, social trust, and capability development (Dubet, Duru-Bellat, & Vérétout, 2010; Duru-Bellat & Tenret, 2012, 2009; Olympio, 2012).

Examining post-compulsory education, Verdier (2008) developed an influential system of grouping countries by lifelong learning, or further adult education and training systems, within Europe (see *Box 10*). He incorporates factors often foreign to the political economy or quantitative educational characteristic approaches (Verdier, 2008). For example, he considers principles of justice inherent in educational systems, the goals of professional training, the central objectives of continuing education, as well as the financing of continuing education, which are variables not typically examined in the rest of the literature (see Table *9*). Despite these differing criteria, his comparative country analysis in many ways resembles those found in the other studies: An equality-driven group described as 'universalist' embodied by Sweden, a group with a strong professional focus represented by Germany, an academically-driven group exemplified by France, and a market-driven group typified by Great Britain. Notably, these groupings coincide with those of Mons (2007b), suggesting similarities in educational policy approaches across compulsory and post-secondary levels.

> **_Box 9: Compulsory education system characteristics and policies_**
>
> Nathalie Mons (2007a, 2007b, 2008a, 2008b) developed an influential system of grouping countries by educational characteristics. Her research, which focuses on compulsory schooling, takes into account diverse aspects of education and student pathways, such as the length of the common core curriculum, the rhythm at which pupils progress, the organization of classes, the availability of individualized assistance, drop-out rates, and policy targeting of either students or classes and cohorts. Using a comparative methodology to synthesize national differences, she outlines four models of educational policies:
>
> *(1) The "separation" model* where there is a short common curriculum and early tracking, a high incidence of grade repetition, classes based on student ability, a low dropout rate, and policy targeting of classes and cohorts.
>
> *(2) The "individualized integration" model* where the common curriculum is long, pupils do not repeat grades, classes are of mixed-ability, individualized assistance is offered to all pupils, the dropout rate is low, and pupils are targeted in educational policies.
>
> *(3) The "mixed integration" model* where there is a long common curriculum, low rate of grade repetition and dropout, some ability-sorting for classes in secondary education, access to individualized assistance, and a policy focus on individual pupils rather than cohorts.
>
> *(4) The "uniform integration" model* where there is a long common curriculum but high rate of grade repetition and dropout, some ability-sorting for classes in secondary education, little or no access to individualized assistance, and a policy focus on classes and cohorts rather than individual pupils.
>
> This schema examines compulsory educational systems as a whole across the OECD countries, but she also examines differing policies related to school choice (again developing models to describe groups of countries, such as "almost-centralized," "federal," "integrated differentiation," and "disarticulated differentiation"). These groupings broadly mirror those of the more general educational policies, with some exceptions. Importantly for the purposes of the present study, Mons finds that the Nordic countries group together in terms of educational policies, as do the central European countries of Germany, Austria, Switzerland, and Belgium, that the Anglophone countries group together, and so do the Mediterranean countries of France, Italy, Spain, and Greece.

Looking at formal tertiary higher education in comparative perspective in the OECD countries, Ansell (2008) argues that this policy arena is driven by partisan politics in three different domains: the level of enrollment, the degree of subsidization, and the overall public cost of higher education. He asserts that governments must make trade-offs in these domains, because they can at most accomplish two of three possible goals of higher education systems, namely, mass enrollment, full subsidization, or low total public cost (Ansell, 2008). Thus,

countries must choose either high enrollment and low subsidization or high subsidization but low enrollment for the same (low) public cost. They also must choose between low subsidization and low public cost and high subsidization and high public cost in order to attain a mass level of enrollment. Finally, countries must choose either low enrollment at low public cost or high enrollment at high public cost if they would like a fully subsidized system (Ansell, 2008). As described in Table *9*, he outlines three models of higher education policies: the partially private model, which is a "mass, partially private, inexpensive higher education system"; mass public model, which is a "mass, fully public, expensive higher education system"; and the elite model, which is an "inexpensive, publicly funded, elite higher education system" (Ansell, 2008, p. 190).

Box 10: Lifelong learning systems in comparative perspective

Eric Verdier (Buechtemann & Verdier, 1998; Verdier, 2001, 2008, 2010) has developed comparative categorizations of 'education and training regimes' (ETR), ideal-typical regimes based on differing conceptions of equality and efficiency in education, and different models of lifelong learning (LLL). Although the groupings differ, three broad strains emerge:

(1) Meritocratic approaches to education and training, where certifications take the form of nationally recognized diplomas, academic norms determine program characteristics, and level of study is used to judge competence.

(2) Professional approaches, where recognized qualifications play the role of certification, rules are negotiated between professional and educational spheres, and the focus is on learning an occupation.

(3) Market approaches, where multiple certifications may represent the same skill set, these skills are viewed as individual human capital, and employers determine the value of education and training.

Country 'education and training regimes' (ETRs) can be determined by analyzing five key dimensions: the degree of centralization, standardization, internal stratification, institutionalization of links to the labour market, and the relative status of general versus vocational education (Buechtemann & Verdier, 1998).

Influenced by the welfare regime approaches outlined earlier, Rubenson and Desjardins (2009) explore how individuals' choices to participate in adult education vary between countries. They outline a "Bounded Agency Model," which is based on the

argument that "the nature of welfare state regimes can affect a person's capability to participate" in adult education (Rubenson & Desjardins, 2009, p. 187). More specifically, they argue that "the state can foster broad structural conditions relevant to participation and construct targeted policy measures that are aimed at overcoming both structurally and individually based barriers" (Rubenson & Desjardins, 2009, p. 187). Thus, individuals make lifelong educational choices "within parameters that are set by both structural conditions (such as the nature of learning opportunities available) and individual dispositions (as expressed, for example, in willingness to overcome 'barriers to participation' of various kinds" (Rees, 2013, p. 208).

Through this analytical framework, Rubenson and Desjardins (2009) cluster countries into four groups. The first group has adult education participation rates around 50% and comprises the Nordic countries (including Iceland). The second group includes the Anglo-Saxon countries as well as the Netherlands and Switzerland and have participation rates between 35% and 50%. The third group has adult education participation rates between 20% and 35% and comprises Germany, the Czech Republic, Slovenia, France, Italy, and Spain. Finally, the fourth group has very low participation rates, below 20%, and comprises Greece, Portugal, Hungary, and Poland (Rubenson & Desjardins, 2009). They argue that the "broad structural conditions and targeted policy measures" of these welfare state contexts "directly affect the extent and impact of institutional and situational, or job- and family-related, barriers" (Rubenson & Desjardins, 2009, p. 196).

Also relevant to the current study, a recent study compares countries by their systems of financial support for post-secondary students and patterns of post-secondary participation. Moulin (2015) finds that in the social-democratic countries, such as Sweden, student loans and support for student independence are common and cover cost of living rather than tuition fees, while other sources of financial support for students are rare. The proportion of students

attending higher education is relatively high in these countries and the proportion of students completing higher education is also relatively high. In these countries, students are viewed as future wage earners, but they are also viewed as individuals in the process of finding independence and their life path towards a fulfilling future (which is sometimes explicitly linked to an idea of *flourishing*).

In liberal countries, such as the UK, bursaries are often awarded on the basis of academic performance based on a strongly meritocratic vision of equality and student loans are very common and operate within a market context (both private and public student loans, depending on the country). Once again, there are few other sources of financial support for students, but the proportion of students attending and completing higher education is also relatively high (L. Moulin, 2014).

Finally, in conservative countries, such as France, bursaries are given based on low income or academic performance, but student loans are almost non-existent. However, there are multiple other sources of financial support for students, such as family allowances and tax reductions. Despite this support, the proportion of students attending higher education is relatively low and the proportion of students completing higher education is also relatively low. Within this type of educational system, students are viewed as learners with limited independence, reliant on their family to support them. Moulin (2015) views this regime as falling *between* the other two and less coherent as an approach. This analysis of the financing of higher education is explicitly based on Esping-Andersen's (1990b, 1990a) 'Three Worlds' and finds support for the utility of the typology in this policy area.

Table 9. *Educational system characteristics groupings focused by level of education*

Author	Regime groupings	Characteristics	Countries	Measures
Hoffmeyer-Zlotnik & Warner (2007)	Type I	Short number of years of primary schooling; differentiated lower and upper secondary sector; parallel schools in tertiary sector (vocational, applied, academic, universities); levels are clearly separated	Germany; Belgium; Netherlands; Hungary; Czech Republic	Educational arrangements at all levels of education
	Type II	Greater number of years of primary schooling; limited number of school types at lower secondary level; different types of general and vocational schools at the upper secondary level; academic vocational education and universities at tertiary level	Luxembourg; Austria; Slovakia	
	Type III	Integrated primary and secondary schooling systems (comprehensive school); upper secondary split into types of general schools and one vocational type; little difference between vocational and university education at tertiary level	Denmark; Finland; Sweden; Portugal; Estonia; Lithuania; Poland; Slovenia	
	Type IV	Greater pre-primary enrolment; integrated primary and lower secondary levels; low vertical differentiation in upper secondary; highly differentiated tertiary sector	France; Greece; Ireland; Italy; Spain; UK; Cyprus; Malta; Australia	
Mons (2007, 2008)	Separation model (« Modèle de séparation »)	Early separation through (fairly rigid) streaming, maintaining homogeneous groups of students	Germanic countries (Germany; Austria; Switzerland)	PISA and OECD documents and data, including: 1) Length of common core curriculum, 2) Rate of grade repeats, 3) Importance of individualized teaching, and 4) Type of class groupings (ability, tracking)
	Mixed integration model (« Modèle d'intégration à la carte »)	Long common curriculum until secondary school, with "streaming" (or ability sorting) of students into different classes within schools	Anglo-Saxon countries (UK; US; Canada)	
	Uniform integration model (« Modèle d'intégration uniforme »)	Long common curriculum until secondary school, but with high rate of repeats and drop-outs	Southern Europe (France; Italy; Spain; Greece)	
	Individualized integration model (« Modèle d'intégration individualisée »)	Long and comprehensive common curriculum, without tracking and with individualized help for students in difficulty	Northern Europe (Denmark; Norway; Finland)	
Ansell (2008)	Partially-private model	Low public cost; high enrollment; low level of	Australia; New	1) Level of enrolment

		subsidization	Zealand; USA	2) Degree of subsidization
	Mass public model	High levels of subsidization; high public cost; high enrollment	Denmark; Finland; Norway; Sweden	3) Overall public cost of higher education
	Elite model	High subsidization; low enrollment	Austria; Belgium; France; Germany	
Verdier (2008)	Professional (« Professionnel »)	Recognized qualifications teach rules of the profession and give access to a professional community spread across firms	Germany	Lifelong learning, including: 1) Principles of justice 2) Conception of skills in initial training
	Academic (« Académique »)	Educational attainments and credentials are key in this system based on the idea of meritocracy and disciplinary norms	France	3) Mode of certification 4) Types of programs 5) Recognition
	Universalist (« Universaliste »)	Principles of "solidarity" and social cohesion shape a system overseen by the government and focused on citizenship	Sweden	6) Key actors in initial training 7) Goals of professional training 8) Principal failure risks
	Competitive market (« Marché »)	Pure market model based on utility and human capital where individuals pay for educational programs that meet a need in the labour market and compete freely amongst each other		9) Key actors in institutional regulation 10) Central objective of continuing education 11) Political responsibility for "employability" 12) Financing of continuing education
	Organized market (« Marché organisé »)	Public-private partnership-type model where the government controls educational quality through accreditation and helps guide individuals into appropriate programs	Great Britain	
Desjardins, Rubenson, & Milana (2006); Rubenson & Desjardins (2009)	Group 1	High adult education participation rates (close to or exceeding 50%)	Denmark; Finland; Iceland; Norway; Sweden	1) Participation in adult education 2) Situational and institutional barriers to adult education
	Group 2	High-moderate participation rates (35-50%)	Australia; Canada; New Zealand; UK; USA; Luxembourg; Netherlands; Switzerland	
	Group 3	Low-moderate participation rates (20-35%)	Austria; Belgium (Flanders); Germany; Czech Republic; Slovenia; France; Italy; Spain	
	Group 4	Low participation rates (below 20%)	Greece; Portugal; Hungary; Poland	
Desjardins	Market-dominated	Liberalized market approach to adult learning and	Australia; Canada;	Measures of the incidence, volume and

(2013)	regime	outcomes;	USA; New Zealand; Ireland; UK; [Japan]	distribution of adult learning, including "formal and non-formal types of organized learning undertaken by adults between the ages of 25 and 64" [Formal adult learning involved "organized learning activities that typically lead to recognized qualifications," whereas non-formal adult learning involved "organized learning activities that do not necessarily lead to recognized qualifications" (Desjardins, 2013, p. 197)]
	State-dominated regime	Strong state involvement and intervention in the coordination of economic, social, cultural and political activity; skills-related policies coordinated by the state to meet centrally defined objectives	China	
	Stakeholder-dominated regime	Non-market-based institutional relations between employers, employees, and the state designed to *coordinate* labour market functioning including education and training	[Italy]; Japan; France; Germany; [Finland]; Switzerland; Austria; Belgium; Luxembourg	
	Balanced regime	State-led with high degree of stakeholder involvement; high and widely distributed levels of investment in lifelong learning; high volume of organized learning activities in adulthood; more evenly distributed across population	[Austria]; [Belgium]; Netherlands; Denmark; Norway; Sweden; Finland	
	Southern regime	Stakeholder coordination and promise of state involvement in spending; semi-institutionalized, fragmented arrangements with lack of execution of stated strategies and policies	[France]; Spain; Portugal; Greece; Italy	
Moulin (2014)	Social-democratic	Ratio of public to private expenditures (as percent of GDP) on education is high; tuition is more or less non-existent; there are universal bursaries; student loans and support for student independence are common	Denmark; Finland; Norway; Sweden	1) Public versus private financing of education; 2) Tuition fees; 3) Availability of bursaries and loans; 4) Other student aid mechanisms; 5) Percentage of the population with access to higher education; and 6) Percentage who have successfully completed a credential.
	Liberal	Ratio of public to private exp. is low, and education is seen as a private human capital investment; tuition is high; bursaries are given based on academic performance because of a strongly meritocratic vision of equality; student loans are very common and operate within a market context	Australia; Canada; Chile; Japan; New Zealand; UK; USA	
	Conservative	Ratio of public to private exp. is moderate; tuition is moderate or low (those with low incomes are often exempt from paying tuition); bursaries are given based on (low) income or academic performance and student loans are almost non-existent	France; Germany; Greece; Italy; Spain	

Saar, Täht, & Roosalu (2014)	Liberal Anglo-Celtic	Lowest barriers to participation, high diversification, least formal access restrictions, moderate tuition fees, and highest public support	England, Scotland, Ireland	1) Diversification in higher education (choice of institutions) 2) Access to higher education (diploma requirements and/or test) 3) Flexibility in higher education (distance learning opportunities, 'nonstandard' hours, prior learning assessments) 4) Affordability (tuition, financial assistance through grants and loans)
	Northern European	Highest participation, medium diversification, and highest public (financial) support	Norway	
	Continental European	Moderate participation, low flexibility, and low to medium affordability	Austria, Belgium	
	Post-socialist new market economies in Central Europe (CE)	Lowest participation, highest barriers to participation, low diversification, most strict access, high tuition fees, and lowest public support	Bulgaria, the Czech Republic, Hungary, Slovenia	
	Post-Soviet new market economies in Eastern Europe	Lowest participation, highest barriers to participation, low diversification, most strict access, and lowest public support	Estonia, Lithuania, Russia	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular educational regime.

3.3. Education as part of the welfare state: Interactions between educational systems, labour markets, and welfare states

As researchers have begun incorporating education within welfare regime approaches, they have found that social insurance, competence and skill formation, spending on public education, and stratification are intricately linked with one another. Indeed, education can been seen as a preemptive form of compensation, ensuring individuals "against the prospect of income loss" (Busemeyer, 2015, p. 30). Thus, while there are also 'trade-offs' between programs, services, and system development within the welfare complex (Heidenheimer, 1981; Pechar & Andres, 2011), there is now a strong body of research supporting the fact that education operates as part of an overall welfare complex (Busemeyer, 2015; Busemeyer & Nikolai, 2010; Hega & Hokenmaier, 2002; Iversen & Stephens, 2008).

While labour market outcomes are not the focus of the present research, they are strongly related to both education and well-being outcomes. This role also likely differs between countries, as van de Werfhorst (2011) has argued, the role of education is more related to determining positions within the workforce in some countries than others. He argues that, in countries with a strong vocational system, education operates "along the lines of human capital theory," while in countries with a general skills focus, education plays the role of a positional good, signifying "trainability" rather than absolute competencies (van de Werfhorst, 2011, p. 342). He also argues that:

> [I]n countries with a large public sector, and/or with much coordination of employment relations, formal qualification demands may advance the applicability of the social closure mechanism for the education effect. (van de Werfhorst, 2011, p.543)

Thus, it is possible that educational attainments operate differently through the labour market in countries with strong vocational and on-the-job training mechanisms in place, such as in the Germanic countries, than in countries with more flexible systems, such as those in the

Anglo-Saxon countries, while those with large public-sector employment with tight regulation, such as the Southern European countries, will show different patterns still.

These arguments, which are implicitly linked to levels of educational stratification, have also been made more overtly in terms of educational decommodification. Busemeyer (2015) argues that in countries with a strong market focus, education operates in line with "the cost-benefit calculus depicted in human-capital theory," while in countries with high public educational funding, education operates as a "social right and entitlement" for all (Busemeyer, 2015, p. 31). These theoretical hypotheses, supported by empirical evidence, suggest that human capital theories of the effects of education operate under certain conditions, relatively high levels of equality can be found in specific circumstances, while sociological theories of selection are more prone to occur in yet another context (Pechar & Andres, 2011; van de Werfhorst, 2011b). The labour market structures underscored here potentially impact the distribution of non-employment outcomes – namely, well-being – across countries as well.

3.3.1. Typologies of 'human capital formation'

Estevez-Abe, Iversen, and Soskice (2001) extend the typologies outlined above to more structural educational system and labour market characteristics by including two system profiles: skill formation and social protection, including employment protection legislation, unemployment benefits, and protection specific to women. Thus, their typology is at the crossroads between typical welfare state typologies in the tradition of Esping-Andersen (1990a, 1990b) and educational characteristics typologies.

They divide OECD countries into two major groups: Anglo-Saxon and Continental European. However, they divide the latter into four subgroups, for a total of five clusters. They define the Anglo-Saxon countries as general skill regimes, where social protection is

low and skill formation is biased heavily towards general skills. This system provides the largest returns to advanced post-compulsory degrees and includes Australia, Canada, Ireland, New Zealand, UK, and USA.

The Continental European countries, on the other hand, provide moderate social protection and emphasize both general and industry-specific skills, as exemplified by Norway, France, and Finland. Within this group, a first subgroup emerges for those with firm-specific vocational and skill training, such as Italy and Japan. Here employment protection is high, but unemployment protection is fairly low. This is contrasted by the second subgroup, including Denmark, the Netherlands, and Switzerland, which are characterized by industry-specific vocational and skill training. These countries also exhibit high unemployment protection and only moderate employment protection, in contrast to the previous group. The final subgroup utilizes both high unemployment and high employment protections, mixing firm- and industry-level skills, as illustrated by Austria, Belgium, Germany and Sweden.

Hega and Hokenmaier (2002) also refocus the analysis of the educational system-social protection nexus by looking at the relationship between spending on education and spending on social insurance programs. Specifically, they analyze social insurance spending as a percentage of GDP and the ratio of educational expenditures as a percentage of total public spending and as a proportion of GDP. They find three groups that closely resemble Esping-Andersen's (1990b) original welfare state regime groupings, with a few exceptions.

The Liberal countries exhibit a trade-off, as suggested by Heidenheimer (1981), where expenditures on social insurance are relatively low in comparison with other OECD countries, but expenditure on education is relatively high and participation in education is the highest of all groups, due to an overt focus on human capital formation. This Liberal group includes Australia, Canada, Ireland, Japan, New Zealand, Switzerland, UK, and USA. The

second group, which consists of the Conservative countries, also exhibits a trade-off, whereby expenditure on social insurance is greater than that on education. This group includes Austria, Belgium, France, Italy, and Germany. The final group of Social-Democratic countries does not exhibit a trade-off: Rather, spending on social protection and education are both high. This group includes Denmark, Finland, Norway, and Sweden, but also the Netherlands in this analysis.

Finally, Iversen and Stephens (2008) conceptualize "three distinct worlds of human capital formation" that mirror typical WPR and 'Three World' groupings:

> one characterized by redistribution and heavy investment in public education and industry-specific and occupation-specific vocational skills; one characterized by high social insurance and vocational training in firm-specific and industry-specific skills but less spending on public education; and one characterized by heavy private investment in general skills but modest spending on public education and redistribution (p. 600).

Thus, we see that these approaches complement rather than radically dislodge the ideal-typical theories of welfare regime typologies outlined earlier in this chapter.

Table 10. *Typologies of 'human capital formation' linking education and the labour market*

Author	Regime groupings	Characteristics	Countries	Measures
Estevez-Abe, Iversen, & Soskice (2001)	Anglo-Saxon: General skill regimes	Low unemployment and employment protection; general skill focus (largest returns to advanced degrees)	Australia; Canada; Ireland; New Zealand; UK; USA	1) Skill formation profile 2) Social protection profile: a) Employment protection (e.g. OECD employment protection legislation [EPL] measures, prevalence of unions), and b) Unemployment protection c) Protection specific to women (e.g. protection against dismissal and income maintenance during leaves)
	Continental Europe	Moderate unemployment protection; high-moderate employment protection; Firm-, industry-, and general-skills	Norway; France; Finland	
	Subgroup: Firm-specific skill regimes	Low unemployment protection; high employment protection; firm-specific skill focus	Italy; Japan	
	Subgroup: Industry-specific skill regimes	High unemployment protection; moderate employment protection; industry-specific skill focus	Denmark; Netherlands; Switzerland	
	Subgroup: Firm- and industry-specific skill mix	High unemployment and employment protection; firm- and industry-skill mix	Belgium; Austria; Germany; Sweden	
Hega & Hokenmaier (2002)	Liberal	Trade-off: Expenditure on social insurance is smaller than other regimes, but expenditure on education is greater than conservative regimes; highest general education participation (human capital focus)	Australia; Canada; Ireland; Japan; New Zealand; Switzerland; UK; USA	Relationship between spending on education and spending on social insurance programs: 1) Social insurance spending as % of GDP 2) Ratio of educational expenditures as % of total public spending and as a portion of GDP
	Conservative	Trade-off: Expenditure on social insurance exceeds expenditure on education	Germany; Austria; Belgium; France; Italy	
	Social-democratic	No trade-off: High expenditure on both social insurance and education	Denmark; Finland; Netherlands; Norway; Sweden	
Iversen & Stephens (2008)	Social Democratic	Coordinated market economy (CME) with proportional representation (PR) electoral institutions and the absence of a strong Christian Democratic (CD) party; high spending on all levels of education; public provision of daycare; well-developed vocational training systems; paid parental leave	Denmark; Finland; Norway; Sweden	Human capital formation: 1) Day care or preschool 2) Primary and secondary 3) Higher education 4) Active labour market policy 5) Vocational training
	Christian Democratic	CME with PR electoral institutions and a strong CD party; well-functioning vocational training and collective bargaining systems; moderate spending on primary education; emphasis on traditional male breadwinner family; oppose part-time work; lowest women's labour force participation	Austria; Germany; Switzerland; Belgium; Netherlands	
	Mixed economies	Similar to CD, but less well-functioning vocational systems	France; Italy	
	Liberal	Liberal market economy (LME) with majoritarian electoral	Australia; Canada;	

		institutions; low government spending on primary education; high government spending on higher education; general skill focus; transition from school to work weakly institutionalized	Ireland; New Zealand; UK; USA	
	Group coordinated	Focus on firm-specific skills and training	Japan	
Beblavý, Thum, & Veselkova, (2011, 2013)	Pension & education stratification	Stratification reproduced in both public education and pension systems, but role of state provision is limited (family/market oriented)	Austria; Germany; Hungary; Slovenia	1) Pension stratification and education stratification (in scores, between and within schools on PISA). 2) Measures of early childhood education, hours spent at school per year, and extracurricular activity in hours and variance.
		Stratification is reproduced both in education and pensions, and state plays an important role (interventionist)	Italy; Netherlands	
	Stratification in education & equalisation in pensions	Trade-off between education and pension stratification in favour of intervention in pensions	Belgium; Czech Republic; [Japan]	
	Equalisation in education & stratification in pensions	Trade-off between education and pension stratification in favour of educational intervention but a strong role for state (interventionist)	Denmark; Greece; Iceland; Luxembourg; Spain	
		Trade-off between education and pension stratification in favour of educational intervention and more family/market-oriented	Estonia; Finland; Norway; Poland; Portugal; Sweden	
	Equalisation in education & pensions	Education and pension policy intervene in stratification, but role of state provision is limited in both (family/market-oriented)	Ireland; UK	

Note: Partially reproduced and adapted from the authors referenced in the table. Underlined countries indicate a prototype or exemplar for a particular welfare state regime.

3.3.2. Limitations

Researchers in the field have called for research clarifying "the relationships between educational investment, educational institutions, and the distribution of life chances in different welfare state and education regimes" (Busemeyer & Nikolai, 2010, p. 509). Although the human capital approach prevalent in the literature on the link between educational systems and welfare regimes provides a sound approach to studying the impact of welfare state institutions on macro-economic outcomes, it often simplifies the role of education at both the individual and societal levels in terms of non-economic outcomes. Notably, studies often assume that education impacts only individuals' productivity and income, ignoring the other roles of education outlined in Chapter 1. Thus, the distribution of life chances in terms of quality of life or well-being is seldom addressed in the literature.

Furthermore, almost all the studies summarized here share a common limitation: They do not include Central and Eastern European countries. Czarnecki (2014) provides preliminary research conceptualizing the education systems within Post-Soviet, Eastern European states, arguing that a distinct welfare regime type is *not* found, as countries exhibit features found within both conservative and liberal welfare regimes. However, as Kwiek (2014) asserts, "the lack of the inclusion of Central Europe" in existing typologies of both higher education governance and welfare state regimes "is a serious theoretical drawback in comparative social research" (p. 48). Busemeyer and Nikolai (2010) concur, calling for researchers' analytical perspectives to be "broadened beyond the 'usual' suspects and include Eastern European countries" (p. 510). A few studies have begun to answer this call (Andersen & van de Werfhorst, 2010). The present study will attempt to further address this gap in the research by including countries from this region in the analyses.

3.4. The influence of education on individual life outcomes in diverse contexts

3.4.1. Well-being in the welfare state

Although the study of welfare states has always considered social well-being more broadly, only recently have researchers begun looking at the impact of welfare-state regimes on individual-level non-market well-being measures. This research, dubbed the "political economy of happiness," relies on the assumption that while well-being is an individual outcome, it is also shaped by society-level variables (Ono & Lee, 2013). Thus, studies on this topic examine "how macro-level forces affect micro-level outcomes" (Ono & Lee, 2013, p. 790). As alluded to above, existing research focuses on two competing hypotheses: on one hand, welfare states may benefit citizens by reducing the need to rely on market-mechanisms in certain areas of social life, especially by providing entitlements to a basic standard of living; on the other hand, welfare states may inhibit citizens from achieving high levels of well-being by replacing other voluntary collective organizations and delivering social protection in less efficient and less individualized ways (Pacek & Radcliff, 2008).

Supporting the latter view, Veenhoven (2000) finds that there is no link between the size of the welfare state and the average happiness and health of its citizens or the levels of inequalities within the population. However, more recent studies find evidence for a relationship between the type of welfare state and these outcomes (Bjørnskov et al., 2010). In particular, Pacek and Radcliff (2008) conclude that life satisfaction varies "directly with the level of decommodification, the social wage, and the left-dominance of government" and, more broadly, that the "welfare state is an agent of human well-being" (pp. 271- 273), a finding that is supported by both Rothstein (2010) and Haller and Hadler (2006). Rothstein (2010) contends that universal welfare states encourage well-being by promoting economic and social equality, social cohesion, and perceptions of equal treatment and opportunity. Likewise, Helliwell and Huang (2008) found that "the effects of good government remain as

the single most important variable explaining international differences in life satisfaction in the full global sample, while international differences in per capita incomes are frequently insignificant" (Helliwell & Huang, 2008, p. 617).

In a trans-disciplinary critical psychosocial perspective, Taylor (2011) finds that well-being is a relational and contextual process that is embedded in the social welfare state provisions. As such, it is a "product of the social conditions which enable a positive experience of self" and relies on "the context of supportive social circumstances" (Taylor, 2011, p. 780). In line with research into well-being in developing countries, he views well-being as a dynamic process that is "continually produced in the interplay within the social, political, economic and cultural processes of human social being" (Gough, McGregor, & Camfield, 2007, p. 5). As this research emphasizes,

> [A]ll needs are satisfied through relationships… whether these are satisfied through interactions with close relatives and friends, through personal or impersonal contacts with representatives of the state, or intermediaries in the market, or other relationships. (McGregor, 2007, p. 322)

Thus, individual welfare simply *cannot* exist in a social vacuum.

However, not all components of the welfare state have an entirely redistributive function. As discussed above, systems of education may stratify segments of a population in ways that unequally distribute well-being. As Ono and Lee find, social-democratic welfare states increase the happiness of some people at the expense of others. Importantly, the authors find that overall life satisfaction is not necessarily higher, but rather "mirrors the redistribution of resources and income" (2013, p. 809), as resources are redistributed to counter inequality, resulting in a "leveling" effect for overall well-being. As the authors write, "by providing a generous safety net against social risk, the welfare states have made the 'pursuit of happiness' more accessible for high-risk groups" (2013, p. 810).

Examining the impact of welfare state regimes on individual happiness, Deeming and Hayes (2012) find that individuals in conservative welfare regimes are more than two times

more likely to report being unhappy than those in social-democratic regimes, after controlling for GDP per capita and unemployment rate. When looking at a four-regime model based on Castell's 'Families of Nations,' they found that those in liberal and radical welfare regimes were also more likely to report being unhappy, but this negative effect remained strongest for the conservative regimes.

Both Haller and Hadler (2006) and Deeming and Hayes (2012) emphasize the importance of considering equality when looking at the influence of these macro-contexts. Deeming and Hayes (2012) note,

> Interestingly, the Social-Democratic World does lose some of its predictive power for happiness against the other worlds when inequality at the country level is controlled for in the model (we use the Gini coefficient which is the standard measure of income inequality in a society). This is not altogether surprising given the primary function of the welfare state can be seen as ensuring socio-economic security and socio-economic equality. (Deeming & Hayes, 2012, p. 821)

These findings suggest that the redistributive function of the social-democratic welfare state may *reduce* the association between education and well-being, as those with less education are typically an at-risk group in today's developed countries. Additionally, alongside education provisions, a more extensive welfare state may also be associated with other characteristics that promote well-being, such as social trust and public health (Rostila, 2007; Taylor, 2011). However, the more specific nature of this relationship between education and well-being within different welfare-state regimes remains uninvestigated to date.

3.4.2. What role for the capability approach?

Both the welfare regime approaches and educational system characteristics approaches listed earlier in this chapter dealt with systemic impacts on individual lives in strongly economic terms, compatible with a human capital approach. However, these different national contexts and regime types have strong implications from a capability approach as well. The previous

chapters argued that education impacts peoples' outcomes in life outside of the labour market, in particular their social and psychological well-being through relevant skills, knowledge, and behaviours. Pertinent to the current study, this may also be combined with a view to how these systemic characteristics may be capability-enhancing or reducing for individuals within these contexts (Olympio, 2012).

3.4.2.1. A typology of capability-building educational systems in Europe

Relevant to the present project is the recent attempt by Noémie Olympio to fuse some of the approaches above with the capability approach. She refers to the work of Mons (2007, 2008) and Verdier (2008) in outlining an interpretation of the groupings common to these various approaches from a capability approach. She shows that each of the four groupings common to the previous approaches maps onto various facets of the capability approach, and that each may enhance or hinder capability development by the individuals living in these contexts through the impact of these educational system characteristics on individual lives (see Table *11*).

She highlights the advantages of the 'pure comprehensive model' of the Nordic countries, which provides access to higher education for all, universal student loans, a lack of tracking, and reversible educational trajectories. These policies promote educational equality in terms of both opportunities and outcomes (West & Nikolai, 2013), providing capability-building opportunities to the entire spectrum of the population.

The market-comprehensive model modeled by the Anglo-Saxon countries also provides a common core curriculum with limited tracking and individualized assistance, but fails to attain real equality of access through universal financial assistance for students. The large number of choices available in these systems allows for both personal freedom of choice and the perpetuation of inequalities, notably through differences in the information

available to individuals to make these choices (Watts, 2013). Thus, the risk of adaptive preferences is the danger lurking behind this market-based system.

The 'formal comprehensive model' found in the Southern European countries combines a long common curriculum with standardized teacher training and educational content according to this framework. Thus, equality of treatment is assured; however, these systems also tend to promote informal tracking, a high percentage of grade repetitions, and more or less irreversible student pathways. These negative conversion factors may offset the potential equality benefits of the high level of standardization.

Finally, the 'separated model' common to Germany, Austria, and Switzerland places a high value on vocational education, promoting multiple types of knowledge and ways of learning. However, in reality, the early tracking that occurs in these countries often perpetuates pre-existing class or ethnic inequalities, limiting the common socialization that happens within the society and promoting inequalities in general knowledge within the society. Furthermore, movement between vocational and academic programs may be difficult or impossible.

This framework shows commonalities in country groupings with both the welfare state and educational system typologies presented above. The resources and conversion factors outlined overlap strikingly with the concepts of 'stratification' (tracking, grade repetition, universal access) and 'decommodification' (availability of student loans and bursaries). Moreover, it shows explicitly how educational system characteristics can impact individual lives in both "capability-building" and "capability-inhibiting" ways.

Table 11. *Olympio's (2012) grouping of models of education by their characteristics related to capabilities*

Educational model	Countries	Positive characteristics	Negative characteristics
Pure comprehensive model	Norway, Sweden, Finland, Denmark	*Resources:* - An extended common core of universal schooling - Access to higher education for all - Reversible educational trajectories *Conversion factors:* - Fewer choices in regards to schooling - Individualized curriculum - Absence of educational streaming - Universal student loans or bursaries	*Lack of resources:* - More experienced teachers in particular schools - More resources devoted to more prestigious schools *Lack of conversion factors:* - Polarization of schools along social and ethnic lines *Negative conversion factors:* - Implicit hierarchy of different types of knowledge
Market-comprehensive model	Anglo-Saxon countries, UK	*Resources:* - An extended common core of universal schooling - Encouragement to invest in higher education - High quality higher education *Conversion factors:* - Basic universal education for all - Individualized curriculum for students in need	*Lack of resources:* - Lack of a highly developed vocational training system *Lack of conversion factors:* - Employers or firms are rarely involved in vocational education - Few bursaries *Negative conversion factors:* - Many choices in regards to schooling - Tracking, or ability sorting, in schools
Formal comprehensive model	France, Italy, Spain, Greece	*Resources:* - An extended common core of universal schooling - Important role for vocational education *Conversion factors:* - Homogeneous teacher training and teaching approaches - Vocational training is articulated with economic development projects	*Lack of conversion factors:* - Weak recognition of practical knowledge and vocational training credentials *Negative conversion factors:* - Informal tracking in schools - Grade failures and repeats common - Failure has lasting impact on student trajectories - Educational trajectories are more or less

			irreversible
Separated model	Germany, Austria, Switzerland	*Resources:* - Active pedagogy - High-quality vocational education *Conversion factors:* - Many types of knowledge possible in basic education - Vocational education and later social status within the trades is highly valued	*Lack of resources:* - Early selection in streaming results in little common socialization across groups - Barriers in access to higher education after vocational training (Germany) *Lack of conversion factors:* - Lack of general/common core knowledge in vocational education *Negative conversion factors:* - Ethnic discrimination in streaming students into vocational training - Little democratization of higher education

Note: Reproduced in translation by the present author (Olympio, 2012, pp. 116-117).

However, a limitation of this approach is that the focus on resources and conversion factors risks overshadowing their implications for individual human well-being and agency, the key outcomes of the capability approach. Furthermore, the question of inequalities due to unofficial barriers to participation is not addressed (Rubenson & Desjardins, 2009). Nussbaum (2011) emphasizes that individuals may voice preferences that are shaped not only by their own desires but also by what they *are capable of imagining*. This is clearly applicable to the difference between having access to and being able to participate in post-secondary education versus choosing to do so or not. Nussbaum (2002) argues that "preferences are endogenous, the creation of laws and institutions and traditions" (Nussbaum, 2002, p. 132). This underscores the importance of national educational contexts in shaping not only the link between education and well-being, but also individual's beliefs and aspirations related to post-secondary education (Jongbloed, 2012).

3.4.2.2. *'Bounded Agency Model'*

Although Olympio's schema of capability building and inhibiting characteristics of educational systems offers an important theoretical connection between the capability approach and educational system groupings, it relates principally to compulsory education. The "Bounded Agency Model" developed by Rubenson and Desjardins (2009) described above employed a similar theoretical approach in the realm of adult education. They take a theoretical approach to adult education participation and barriers to participation that is based on the fusion of welfare state regime theory and the capability approach, foreshadowing Olympio's (2012) typology.

They argue that the structural characteristics of educational regimes play an important role in shaping individuals' circumstances and the feasible alternatives that they have to

choose from, 'bounding' individual agency (see *Figure 9*). In this argument, they draw on the

work of Sen (1999) to explain how the

> social system regulates the perceived opportunities and liberties that individuals face, and
> hence their *functioning*, or what people can actually do… [which] is defined not only as
> having resources available – internal (i.e., knowledge or skills such as literacy) or external
> (i.e., money) – but also in terms of individuals knowing about the range of possibilities of
> how these resources can be used to realize things that matter to them and knowing how to do
> so. (Rubenson & Desjardins, 2009, p. 196)

Therefore, welfare state regimes affect both structural conditions framing individuals' lives

(both at work and at home, in civil organizations, etc.) and individuals' perceptions of their

opportunity structures in a macro-micro interaction between public policy and individual

choice (Rubenson, 2006; Rubenson & Desjardins, 2009).

This approach mobilizes the concept of structure-agency interaction between

institutional arrangements and individual life outcomes, and recognizes that individuals both

shape and are shaped by public policies in a non-linear feedback process. Importantly, they

assert that welfare state regimes impact "dispositional barriers" as well as structural barriers,

which refers to individual perceptions like having "little to gain by participating, concerns

about own ability to succeed, belief that one is too old to go back to study, and bad previous

experiences with schooling" (Rubenson & Desjardins, 2009, p. 192). These dispositions then

become "features of the self" that constrain individual choices and freedom to participate.

Importantly, institutional and situational structural barriers, and not only individual ones,

produce these dispositional barriers. For example, age as a barrier to post-secondary study

has been shown to significantly differ amongst European countries (Orr, 2010). Differences

in adult education participation and barriers to participation are clearly found across welfare

regimes, as was described above. Furthermore, levels of inequality in adult learning also

differ significantly, leading to regime-specific patterns of adult learning (Desjardins et al.,

2006; Rubenson, 2006).

Bounded Agency Model
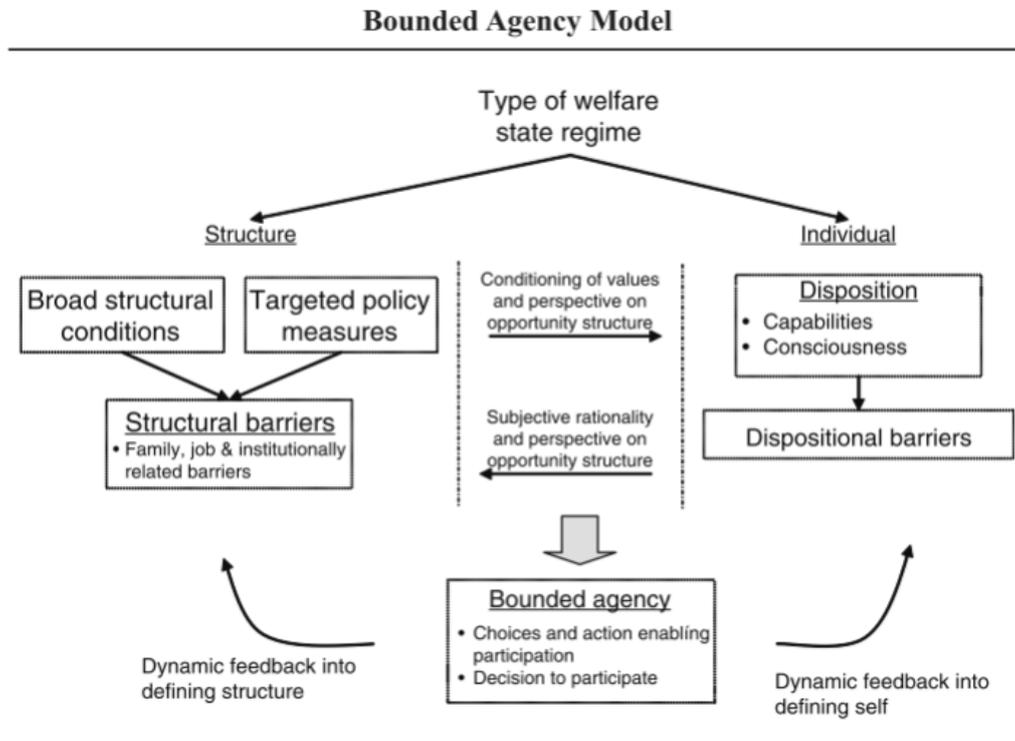
Figure 9. Rubenson and Desjardins' "Bounded Agency Model" (reproduced from Rubenson & Desjardins, 2009, p. 195).

This model has been applied empirically by other groups of researchers finding further evidence of significant differences between welfare state regimes (Massing & Gauly, 2017; Saar et al., 2014). Specifically, researchers found that gender significantly impacts participation in adult education and training, with men participating more than women, in all countries except the Nordic countries and Belgium (Massing & Gauly, 2017). This aligns with Rubenson and Desjardins' (2009) finding that family responsibilities are a commonly reported barrier to participation and more commonly reported amongst women. As these researchers argue, the 'Nordic exception' is related to lower levels of inequality resulting from overt and demanding equity standards (Rubenson, 2006).

Another adaptation of this approach begins from the 'bounded agency' premise that institutional arrangements create structural conditions that affect individuals' capabilities to participate, and analyzes higher educational participation barriers through this framework (Saar et al., 2014). They focus on institutional barriers, which are more clearly defined in

policy, rather than dispositional barriers, which are "closely related to the wide range of internalized norms in the social structure of the society" (Saar et al., 2014, p. 694). They find that barriers related to scheduling, transportation, procedures for enrolment, availability of information, and cost differ significantly across welfare state regimes, as measured by institutional differentiation in higher education, flexibility in admissions and organization of studies, diversity of modes of study, and financial support.

The highest barriers are found in Post-Socialist and Post-Soviet countries and the lowest in the Anglo-Celtic and Northern European countries, with moderate levels in the Continental European countries (these groupings were outlined in Table *9* above). 'Meso-level' institutional educational policies related to diversification, access, affordability, and flexibility significantly impact individuals' perceptions of barriers to higher education (Saar et al., 2014). These findings offer empirical support for the 'Bounded Agency Model' and are consistent with the findings outlined earlier related to overall participation rates in higher education (Desjardins et al., 2006; Rubenson & Desjardins, 2009; Saar et al., 2014).

3.4.3. Discussion

These approaches are not yet sufficiently developed to capture all of the complex interactions within and between the educational system and welfare regime context that lead to individual outcomes in both educational participation and well-being (Rees, 2013). That said, this study shares the theoretical argument of Olympio (2012) in assuming that educational institutions and the design of educational policies shape citizens well-being outcomes in terms of capabilities, and that of Rubenson and Desjardins (2009) in asserting that the nature of welfare state regimes affects individuals' capabilities to participate in education and integrate that learning into their lives. The present study attempts to help extend these promising avenues of research.

This study analyzes educational welfare regimes as the confluence of a multiplicity of welfare state institutions, including but not limited to post-secondary educational systems. Here, due to some inconsistencies in country groupings across these various foci, the most constructive way forward is to examine the profile of both micro and macro educational policies and outcomes within national and supra-national contexts on empirical grounds. Furthermore, it also appears possible to modify the scope of the argument for educational outcomes and claim that educational systems affect the association between individual educational attainments and well-being outcomes through broad structural conditions relevant to the role that education plays in society, as framed by the qualitative aspects of educational welfare regimes. The profile and distribution of educational and well-being outcomes is predicted to be consistent with these groupings.

By examining levels of well-being across educational attainment levels, an important critique of well-being research generally and of comparative welfare state research more particularly is addressed: Namely, that "aggregate rankings of happiness assume that all demographic groups report the same level of happiness and thus fail to capture the social mechanisms that relate macro-level forces to happiness at the micro level" (Ono & Lee, 2013, p. 794). In the existing research, there does not appear to be any studies examining the redistributive effects of welfare states on well-being by individual educational attainments, although the least educated within a society are clearly more high-risk and less privileged persons across national contexts.

4. Conclusion

4.1. *Theoretical country groupings*

Although with European integration the Anglo-Saxon tradition of viewing education and social security "as part of one (social) policy sphere" and therefore "no longer conceptually

isolated from each other" has changed higher education policies across Europe (Allmendinger & Leibfried, 2003, p. 64), higher education systems differ considerably across countries, likely modifying the impacts of education on well-being. In order to set the context to explore the association between education and well-being cross-nationally, this chapter outlined a comparative perspective grouping countries by educational system characteristics, and, in particular, by 'stratification,' understood as the level of access to different types and higher levels of education, and 'decommodification,' resulting in varying levels of public and private educational expenditure (Andres & Pechar, 2011; Kerckhoff, 2001; Willemse & De Beer, 2012). The theoretical groupings summarized in this chapter relating to both welfare regimes and educational systems can be organized along these two central dimensions of institutional organization, as shown in *Figure 10* below.

Decommodified − +

Stratified − +

Radical

New Zealand;
Australia

Liberal

USA; UK;
Canada;
Ireland

Education
and welfare
regimes

Social-
democratic

Denmark;
Finland; Norway;
Sweden; Iceland

Post-
Communist

Hungary; Poland;
Slovenia; Czech
Republic; Slovakia;
Estonia

Conservative

Germany; Austria; France;
Netherlands; Belgium;
[Italy]; [Switzerland]

Hybrid

[Switzerland]

Southern

[Italy]; Spain;
Greece; Portugal

Figure 10. Groupings of countries found in the literature related to educational systems and welfare state regimes.

Note: This schema shows the most common country groupings occurring across the 40 studies summarized in this chapter. Each country is shown in the regime grouping where it appeared the majority of the time (i.e. in more than 20 of the studies if the country was included in all studies). For example, the UK appears in a Liberal or 'Liberal-like' grouping in 33 of the 40 studies, while France appears in a Conservative grouping in 22 of 29 studies (and in a Southern grouping in the other seven occurrences). The Netherlands appears in a Conservative grouping in 15 of 23 studies, while this proportion is 21 out of 26 studies for Belgium. Italy is shown in brackets in both the Conservative and Southern groupings because it appears in Conservative groupings in 15 studies and in Southern groupings in 13 studies (of 28 total). Switzerland is also shown in brackets because it appears in Conservative groupings in 13 studies and in Hybrid groupings in 10 studies (of 23 total). These groupings evidently depend both on the characteristics analyzed and the other countries included in the analyses.

This study, while informed by this previous research and theory, constructs an empirical grouping of countries in the next chapter. The aim of this enterprise is to further specify the roles played by decommodification and stratification in post-secondary education across Europe while taking into consideration the Central and Eastern European countries, which have received little attention as of yet in the literature. Furthermore, the current research shares the aims of West and Nikolai (2013), who, disappointed that "sociological and educational studies have tended to focus on the institutional features of education systems and outcomes and have not conceived of education as an integral part of the welfare

state" attempted to classify different European education systems through the lens of "education as a key element of the welfare state policy package" (p. 474).

The groupings suggested here by the bulk of the comparative research in the field, including Social-democratic, Liberal, Conservative, Southern, and Post-communist groupings (summarized in Table *12* below), are tested empirically in the next chapter. As illustrated in *Figure 10* and described in Table *12*, *liberal welfare regimes* place an emphasis on market mechanisms for the production of welfare with low levels of decommodification and comparatively low levels of education stratification. *Conservative welfare regimes* show low to moderate decommodification, high vocational specificity, and low to moderate post-secondary education enrolment, resulting in high levels of stratification. *Southern welfare regimes* show moderate decommodification, low public expenditure, and low post-secondary education enrolment, resulting in moderate to high levels of stratification. *Post-communist welfare regimes* show low to moderate decommodification, moderate to high vocational specificity, and low post-secondary education enrolment, again resulting in high levels of stratification. Finally, *Social-democratic welfare regimes* combine a highly decommodified welfare approach with moderate to high levels of educational standardization and vocational specificity, but comparatively lower levels of stratification. Based on these educational welfare contexts, this study challenges the assumption that the relationship between education and well-being can be theorized as universal; rather, the educational institutional contexts specific to welfare regimes are proposed to shape the effect of education on well-being in unique ways (Jongbloed & Pullman, 2016).

Table 12. *Ideal-typical characteristics of educational systems across welfare regimes*

	Horizontal stratification	**Standardization**	**Vocational Specificity**	**Decommodification**	**Public Expenditure**	**Private Expenditure**
Liberal	*low*	*moderate*	*low*	*low*	*moderate*	*moderate/high*
Social-democratic	*low/moderate*	*high*	*moderate/high*	*high*	*high*	*low*
Conservative	*high*	*moderate*	*high*	*low/moderate*	*moderate*	*moderate/low*
Southern	*moderate/high*	*high*	*moderate*	*moderate*	*low/moderate*	*low*
Post-communist	*high*	*high*	*moderate/high*	*low/moderate*	*low*	*low/moderate*

Note: Adapted from Jongbloed and Pullman (2016) and Willemse and de Beer (2012). This table summarizes the educational system characteristics discussed throughout this chapter.

4.2. Hypotheses

Inconsistent findings regarding the relationship between education and well-being discussed in the previous chapter were suggested to be in part due to the different national educational and welfare state contexts in which peoples' lives are lived. As discussed in this chapter, educational engagement is understood to be associated with different risks and benefits dependent upon how welfare provisions, protection, stratifying forces, and levels of decommodification shape both systems of education and social inequalities. These risks and benefits can be understood as aiding in the promotion of capabilities at both an individual and societal level, or hindering this development (Olympio, 2012). Therefore, the question arises: how is the relationship between education and wellbeing influenced by welfare regime contexts? Furthermore, in terms of inequality, how does the organization of educational systems impact the levels and distribution of well-being across societies?

Based on these questions, several hypotheses are enumerated. The literature outlined in this chapter concerning typologies of welfare regimes and their effect on population well-being suggests that types of welfare regime contexts impact and distribute individuals' well-being (H_9). In doing so, these contexts also impact overall societal well-being (H_8).

The comparative educational literature suggests that countries can be distinguished empirically into categorizations based on post-secondary system characteristics related to stratification and decommodification (H_7). However, we also saw that there was remarkable consistency between various typologies, even when they were based on different aspects of educational systems or different levels of education. Furthermore, these groupings most often resembled only slightly modified 'welfare regime' categorizations. Thus, it would be surprising if a typology of post-secondary educational systems based on stratification and decommodification created country groupings that differed widely from those already proposed in the literature.

The combination of these two strains of research suggests that educational welfare regime contexts shape the impact of education on individuals' well-being through their role in the distribution of overall social welfare (H_{10}). This argument is analogous to others concerning social status (Samuel & Hadjar, 2016) and demographic factors such as marital status, presence of children, and income (Ono & Lee, 2013). Thus, this study examines whether educational policies resulting in higher or lower levels of post-secondary educational stratification and decommodification, as an integral part of larger social welfare state policies, redistribute well-being from the more privileged (the more educated) to the less privileged (the less educated), as has been found to be the case for income groups (Ono & Lee, 2013).

These hypotheses are tested in the final chapter, after analyses determining the empirical educational regime groupings (Chapter 4) and analyses conceptualizing and operationalizing the capability-informed measure of *flourishing* as the dependent well-being variable (Chapter 5). These postulates are consistent with the central argument underlying the dialectical justifications of this research: Beyond a consideration of 'student satisfaction,' the role for education in social well-being is more accurately viewed in its long-term scope of providing individuals with the tools to construct lives that they have reason to value and empowering them to do so for both themselves and those around them (Gibbs, 2014).

Chapter 4. Post-secondary education across countries

1. Résumé en français

Les politiques d'aide sociale de l'État-providence incluent nécessairement des politiques éducatives comme une composante essentielle. De par son rôle d'élément-clé dans les dispositifs sociaux, il est postulé que l'éducation a un impact sur la distribution du bien-être dans les divers régimes de protection sociale. Par conséquent, la structure des systèmes éducatifs est importante tant dans la distribution que dans les niveaux moyens de la qualité de vie au sein des pays. Après avoir exploré la littérature liée aux régimes de protection sociale et d'éducation dans le chapitre précédent, des outils analytiques d'économie politique et de sciences de l'éducation sont désormais mis en œuvre afin de regrouper des pays dans une typologie de « régimes éducatifs du bien-être social ».

Ce chapitre décrit les méthodes utilisées pour regrouper les pays en fonction des caractéristiques de leurs systèmes éducatifs. Appuyée par les considérations théoriques présentées dans le chapitre précédent, une taxonomie analytique des caractéristiques éducatives autour de deux axes est construite : le premier est la decommodification de l'éducation post-secondaire, et le deuxième est la stratification de l'éducation post-secondaire. Ces deux dimensions analytiques « macro » visent à saisir des politiques éducatives, des dispositifs, et des institutions éducatives et leurs interrelations avec l'État-providence en utilisant les données relatives aux caractéristiques éducatives du pays et de leurs populations.

Les groupements de pays sont ensuite testés avec des analyses typologiques (de « *cluster* ») et des analyses factorielles des correspondances (« *multi-dimensional scaling* ») de ces indicateurs « macros ». Quatre classes reposant sur les caractéristiques éducatives de la

taxonomie analytique constitue la classification des pays finale de cette étude : les pays dits « Universalistes », « Libéralisés », « Conservateurs », et « Polytechniques ». Ces pays diffèrent par leurs niveaux de la stratification et decommodification de l'éducation post-secondaire, comme illustré dans la *Figure 11* ci-dessous. Ce chapitre décrit également les méthodes utilisées pour mesurer les diplômes d'études post-secondaires – soit de l'enseignement et de la formation professionnels (EFP), soit de l'enseignement supérieur – comme plus haut niveau de scolarité atteint pour les individus (et, par conséquent, pour les moyennes par pays). Enfin, les moyennes de niveau de qualification le plus élevé sont comparés entre les pays et les groupements de pays dans les analyses descriptives, et les différences systématiques entre les classes des pays sont exposées.
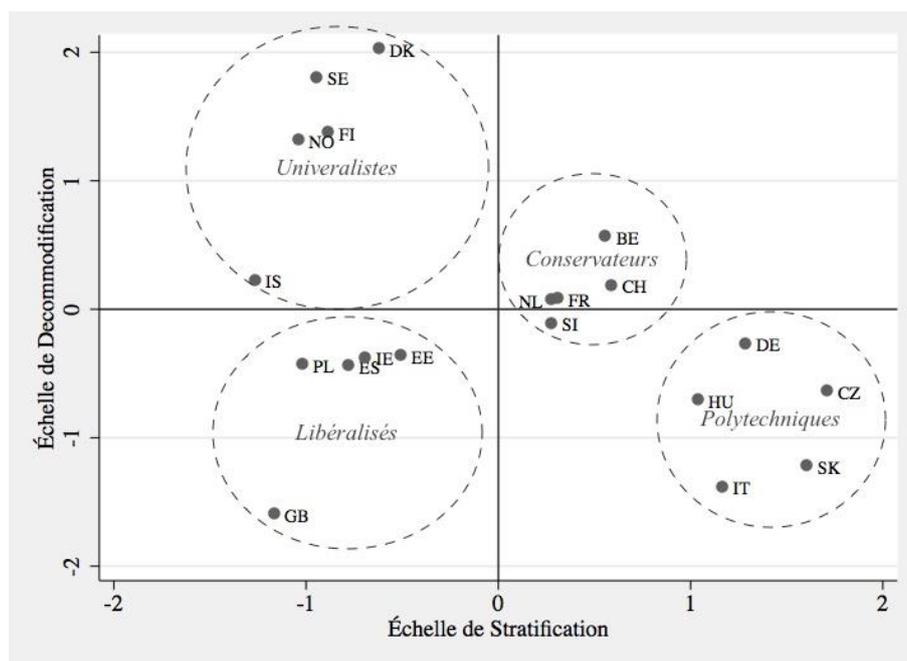

Figure 11. Nuage de points montrant la corrélation entre les scores (standardisés) des pays sur les échelles de la stratification et decommodification de l'éducation post-secondaire.
Note: Ce diagramme montre les scores des pays sur l'échelle de stratification de l'éducation post-secondaire tracés et les scores de ces mêmes pays sur l'échelle de la decommodification de l'éducation post-secondaire. Les points représentent les pays, et les pays regroupés montrent des scores similaires sur les deux échelles. Les cercles en pointillés illustrent les pays qui semblent se regrouper sur ces deux dimensions analytiques.

2.   Summary

The provision of social welfare necessarily includes educational policy as a key component. Through its role as a fundamental part of welfare provision, education is hypothesized to impact the distribution of well-being within welfare states. Thus, the structure of the educational systems is important to both the allocation and overall levels of welfare within countries. After exploring the literature related to welfare and educational regimes in the previous chapter, analytical tools from political economy and comparative educational studies are now put to use in order to group countries into 'educational welfare regimes' (EWR).

The present chapter outlines the methods used to measure individual and country-level educational attainments and to group countries by educational system characteristics. Informed by the theoretical considerations outlined in the last chapter, an analytical taxonomy of educational characteristics along two dimensions is constructed: the first is post-secondary educational decommodification, and the second is post-secondary educational stratification. Country groupings are then tested using cluster analyses on the standardized quantitative (continuous) data and multi-dimensional scaling (MDS) on rank (ordinal) data for all of the 20 country-level indicators. Finally, levels of educational attainment in terms of educational credentials and years of education completed are compared across countries in descriptive comparative analyses.

This chapter sets the stage for exploring how national differences in post-secondary educational system characteristics, as well as the structural effects of macro-economic conditions, contribute to explaining observed differences in overall levels of well-being and the relationship between post-secondary education and well-being across countries. These research objectives will be addressed in the final chapter, after developing the capability-informed measure of well-being as *flourishing* in the following (fifth) chapter.

3. Empirical study design

This study mobilizes large-scale international survey data to achieve the objectives outlined above. This decision was made based on the primary research objectives (which include measuring the impact of post-secondary education on well-being as understood from a capability approach within international comparative context, and defining how national educational system characteristics influence this relationship). It was not feasible to collect data on such a large scale, involving multiple countries, in particular with an eye to having sufficient sample sizes for comparative inferential statistical analyses.

3.1. Measuring individual-level education

Education is measured in this study using the two most common measures of education existing in the literature: educational attainment and years of education. These measures are readily available in the survey data, and are broadly comparable across countries. However, the focus is on educational attainment in particular, as this measure is better able to capture 'credential effects,' which "can be detected only if education is represented as a set of discrete categories, not as a continuous measure" (Kingston, Hubbard, Lapp, Schroeder, & Wilson, 2003, p. 59). Furthermore, the use of years of education (in a linear model) carries with it the problematic assumption that each additional year of schooling has the same effect on outcomes as any other, ignoring these potential 'signaling' effects.

3.1.1. Educational attainment and years of education

Educational attainment is measured using a simplified version of the International Standard Classification of Education (ISCED) schema as outlined in Table *13*. The ISCED typology is "a multidimensional multi-purpose cross-classification for harmonising national educational programmes into a cross-national framework for levels and fields of education" (Schneider &

Kogan, 2008, p. 16). In this study, three levels of education are compared: 1) secondary education or less (ISCED levels one to three), 2) non-tertiary and professional diplomas (ISCED levels four and 5b); and 3) tertiary bachelor's and research degrees (ISCED levels 5a and six).

Other authors have also used simplified versions of the ISCED classification: for example, four categories with primary or below, lower secondary, upper secondary, or any tertiary (Meschi & Scervini, 2014); four categories with less than a secondary school diploma, vocational or technical training at the upper secondary level, general upper secondary school, or tertiary degree (Andersen & van de Werfhorst, 2010; Wolbers, 2007); three categories with lower secondary or below, secondary, or any tertiary (Bernardi & Ballarino, 2012); and two categories with less-than-upper-secondary and upper- secondary or (non-tertiary) post-secondary education (Heisig & Solga, 2015), depending on the research focus of the study.

For the present research, because the focus is on post-secondary education, a classification emphasizing differences in higher, rather than primary and secondary education, was relevant to the study. In particular, differences between vocational education and training (VET) and academic tertiary education are emphasized, as these different streams lead to very different employment outcomes and have been linked to the perpetuation of class inequalities, particularly in strongly differentiated systems where movement between these streams is difficult (Olympio, 2012; Pechar & Andres, 2011; West & Nikolai, 2013).

There are a number of limitations to this measure of education. First of all, it is necessarily coarsened to allow for many differences in educational categories, even between countries in Europe. This task has been described as "the notorious problem of harmonising different national school designs" (Bernardi & Ballarino, 2012, p. 424). Furthermore, national program expansions and participation patterns in terms of academic versus vocational tracks

in post-secondary education have been shown to be increasing and decreasing, depending on the country context (Giret, Guegnard, & Michot, 2011).

Notably, it was necessary for the analyses to have individuals in all categories in all countries. As Pfeffer (2008) notes, it is necessary to avoid "cell scarcity in the cross-classifications of educational levels" (p. 548). As well, it is preferable to have more rather than less sizable sub-samples in each category in order to maximize one's power to make inferences based on these groups.

Due to the fact that this study focuses on post-secondary education, differences between vocational and academic *secondary* education are not directly explored in the independent variables in the individual-level regressions. This may be a disadvantage in terms of capturing cross-national differences. As Andersen and van der Werfhorst (2010) point out, although many researchers focus on vocational education at the post-secondary level (for example, Müller & Shavit, 1997), "vocational content at the (upper) secondary level" may be "both more relevant than at the tertiary level and more strongly discriminant across countries" (p. 343). However, it is a necessary limitation due to both a lack of relevant data concerning VET more generally and missing OECD data for some countries (Busemeyer, 2015). Furthermore, these choices are consistent with other research focusing on post-secondary vocational education (Böckerman, Haapanen, & Jepsen, 2018).

Finally, while these types of measures are commonly used in the literature, other more outcomes-based measures could have certainly added nuance to this study, including measures of adult skills as found in PIAAC (Programme for the International Assessment of Adult Competencies). However, as argued in the first chapter, these skill measures likely do not capture the quality of education in a broad enough sense to be applicable to the relationship investigated here. Likewise, subjective measures, such as perceptions of educational quality, relevancy, and utility, do not exist in large-scale comparable datasets and

are rarely collected in conjunction with in-depth quality of life and wellbeing indicators. Thus, more traditional objective measures of education in the form of schooling are used in the present research. However, potential avenues of future research utilizing these other measures are proposed in the conclusion.

Table 13. *Simplified ISCED educational classification*

ISCED (2011) classification	Description	Simplified ISCED classification	Description
Level 0: Early childhood education	"Support[s] children's early cognitive, language, physical, social and emotional development and introduce young children to organized instruction outside of the family context" (p. 20)	Level A: Secondary education or less	Compulsory education providing fundamental skills, such as literacy and numeracy, often a values-oriented focus on citizenship, and an introduction to theoretical concepts in different subjects; potential post-compulsory education providing instruction in subject-based and skill-based areas, as well as access to tertiary education.
Level 1: Primary education	"Provide[s] students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy) and establish a solid foundation for learning and understanding core areas of knowledge, personal and social development, in preparation for lower secondary education" (p. 30)		
Level 2: Lower secondary education	"Lay[s] the foundation for lifelong learning and human development upon which education systems may then expand further educational opportunities… organized around a more subject-oriented curriculum, introducing theoretical concepts across a broad range of subjects" (p. 40)		
Level 3: Upper secondary education	"Designed to complete secondary education in preparation for tertiary education or provide skills relevant to employment, or both… offer students more varied, specialised and in-depth instruction" (p. 48)		
Level 4: Post-secondary non-tertiary education	"Provides learning experiences building on secondary education, preparing for labour market entry as well as tertiary education. It aims at the individual acquisition of knowledge, skills and competencies lower than the level of complexity characteristic of tertiary education… designed for direct labour market entry" (p. 60)	Level B: Post-secondary vocational education and/or training (VET)	Post-secondary education in preparation for skilled work in the labour market without a research focus, but may provide access to research programs.
Level 5: Short-cycle tertiary education	"Usually practically-based, occupationally- specific and prepare students to enter the labour market… However, they may also provide a pathway to other tertiary education programmes" (p. 74)		
Level 6: Bachelor's or equivalent level	"Designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification… typically theoretically-based but may include practical components and are informed by state of the art research and/or best professional practice" (p. 82)	Level C: Post-secondary tertiary education	Tertiary education in research and academic-oriented subjects for professional careers both outside and inside the educational system itself.
Level 7: Master's or equivalent level	"Designed to provide participants with advanced academic and/or professional knowledge, skills and competencies, leading to a second degree or equivalent qualification… [and] may have a substantial research component" (p. 90)		
Level 8: Doctoral or equivalent level	"Designed primarily to lead to an advanced research qualification… devoted to advanced study and original research and are typically offered only by research-oriented tertiary educational institutions such as universities… [but] exist in both academic and professional fields" (p. 98)		

3.1.2. Data availability and sample

A number of large-scale micro-level international datasets concerning education exist; however, not all of them include variables capturing both educational attainments and diverse measures of eudaimonic and hedonic well-being. Two datasets meeting these criteria, which are also freely available to researchers online, are the *European Social Survey* (ESS) and *European and World Values Surveys* (EVS and WVS respectively). Recent survey waves including detailed items regarding well-being were chosen (between 2010 and 2014 for the WVS, and 2006 and 2012 for the ESS). After developing the capability-informed measure of *flourishing*, it was only possible to conduct the main analyses on the sixth wave (2012) of the ESS data (as described in the next chapter). However, analyses focusing on hedonic well-being were tested in a similar theoretical comparative framework using multi-wave WVS data (Jongbloed & Pullman, 2016), and are discussed in robustness checks.

Thus, the *European Social Survey* Wave 6 (2012) supplementary wellbeing questionnaire is used for the bulk of the analyses conducted in this thesis. The *ESS* contained items that more closely mapped onto the concepts underlying the central capabilities, while allowing for international comparison and comparability. Other researchers have taken similar approaches using the capability approach with national datasets (Anand et al., 2005).

Beyond the importance of constructing the dependent variable of interest, it was also imperative to have detailed and comparable measures of education. The *ESS* measures education in two ways: Years of education are measured in whole years, including compulsory education. The question asked on the ESS questionnaire is: "About how many years of education have you completed, whether full-time or part-time? Please report these in full-time equivalents and include compulsory years of schooling." (ESS, 2014, pp. 43-44); Highest educational attainment is measured using the ISCED (2011) coding frame on the

questionnaire (ESS, 2014, pp. 43-44), and the responses are adapted into the scale outlined above in Table *13*.

The sample of individuals is restricted to those aged 25 to 64 years old at the time of the ESS Wave 6 survey (2012). The logic of this decision was to keep a relatively homogenous, working-age sample of individuals, who have faced relatively similar educational contexts (although these have of course changed over time). This practice is common in the literature (Kieffer, 2008). Because all individuals in the sample are aged between 25 and 64 years old, they can be considered as having the potential to be active in the labour market – most have in all likelihood completed their schooling and most have not yet retired. However, control variables are still included for these possibilities, which concern only a small percentage of the sample (four percent and eight percent of the sample, respectively). Those in sample were thus born between the years 1948 and 1987, beginning compulsory primary school at age six between 1954 and 1992.

The average age of the sample respondents in 2012 is 45 years old (SD=0.41). Twenty-two percent are under 34 years old, 26% are between 35 and 44 years old, 27% are between 45 and 54 years old, and 26% are between 55 and 64 years old. Fourteen percent of the sample was unemployed at the time of the survey, including those who are actively looking for work, not looking for a job, and those who are permanently sick or disabled (this is included as a control variable in analyses). The overall sample is 52% female, and 58% and 51% of the sample is married and has children, respectively. Nine percent are engaged in full-time, unpaid household labour (doing housework, looking after children, and other forms of work that take place within the home).

3.1.3. Limitations and country data discrepancies

Of the two education measures, "years of education" is more clearly objectively comparable across countries; however, both of these measures will contain qualitative differences. Concerning years of education, respondents may or may not (although instructed to) include pre-primary education, such as *école maternelle*, in their computations. Part-time studies are converted into full-time equivalencies, and thus this information is not available. Also, years of education *not* completed are neglected in this measure. Highest educational credentials are compared vertically; however, the educational categories (both of ISCED and the simplified version used in this study) will contain significant horizontal variation that is qualitative in nature (Kieffer, 2008; Pfeffer, 2012; Schneider & Kogan, 2008).

In particular, post-secondary academic education will differ not only by those holding a bachelor's, masters, professional, or doctoral degree, but also by the institution granting the tertiary degree, the exact number of years required for the degree, the field of study, and other factors. These qualitative differences between degrees have been shown to significantly impact individual economic outcomes (Giret & Goudard, 2007; Goudard & Giret, 2010). Unfortunately, these 'horizontal' differences are not captured in simplified ISCED measures (Kieffer, 2008; Pfeffer, 2012). Nevertheless, this measure does capture an important similarity spanning this range (notably in portability across national labour markets in Europe), and it is impossible using existing data to cover all of these variables in a comparative context. It would also be prohibitively expensive and time-consuming to collect all of this data alongside well-being data for an individual researcher.

3.2. *Measuring country-level educational variables*

3.2.1. Educational system characteristics data

Country-level data was found primarily in the OECD's Education at a Glance reports from 2011 and 2012, with data having been collected in 2008 and 2009, which corresponds to three or four years before the time of data collection for the principle dataset used in the analyses related to well-being. Where data was missing, the closest previous year was used (all data concern the time span between 2005 and 2012). Other sources were also used to provide missing data, including the United Nations and World Bank online databases. These sources are highlighted in the relevant tables.

3.2.2. Country case selection

The goal of the analysis is to examine the relationship between education and well-being across national contexts, attempting to link educational system-types with patterns of influence. Due to the potential influence of a wide range of important variables relating to differences in development, the relatively homogeneous group of the Organisation for Economic Co-operation and Development (OECD) countries was chosen. Thus, unlike most studies utilizing the capability approach, the focus here is on developed countries, and thus the differences in per capita income, population size, and GDP are smaller than in many other studies. This group also includes the countries commonly included in welfare regime and educational typologies, as well as some Central and Eastern European countries, thus allowing for comparison across studies. Furthermore, the availability of pertinent well-being data limited the country selection to those countries surveyed in the *European Social Survey*

2006 and 2012 waves. Although these choices limit the number of countries covered, they also lesson the impact of non-measured variability between countries.[15]

Thus, the final selection of the country-level sample was determined by the availability of relevant educational macro-level data, relevant individual-level micro-data concerning individual educational attainments and detailed individual-level well-being measures, and relevant economic and socio-demographic control variables. Furthermore, each country needed theoretical and empirical evidence for inclusion into the educational groupings, had to have provided adequate information on their sampling methods for the ESS to ensure the representativeness of the sample, and could not be an extreme outlier on key educational variables. For example, Portugal was excluded because levels of individual education were drastically lower in this country than in any of the other countries used, skewing some of the bivariate relationships explored. Russia and the Ukraine were also excluded, due to unresolved questions about the representativeness of the national sample. The final selection of 20 countries is listed in Table *14* below.

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[15] Country or macro-level economic controls are included in most analyses (see below) to account for what might be considered national or cultural differences in reporting, particularly for the hedonic well-being indicators.

Table 14. *Countries selected for the study with associated codes and previous groupings*

Country	Code	Regional grouping	Welfare Regime grouping
Belgium	BE	Core European	Conservative
Czech Republic	CZ	Eastern European	Post-Soviet
Denmark	DK	Nordic	Social Democratic
Estonia	EE	Eastern European	Post-Soviet
Finland	FI	Nordic	Social Democratic
France	FR	Core European	Southern European
Germany	DE	Core European	Conservative
Hungary	HU	Eastern European	Post-Soviet
Iceland	IS	Nordic	Social Democratic
Ireland	IE	Anglo-Saxon	Liberal
Italy	IT	Core European	Southern European
Netherlands	NL	Core European	Conservative
Norway	NO	Nordic	Social Democratic
Poland	PL	Eastern European	Post-Soviet
Slovak Republic	SK	Eastern European	Post-Soviet
Slovenia	SI	Eastern European	Post-Soviet
Spain	ES	Core European	Southern European
Sweden	SE	Nordic	Social Democratic
Switzerland	CH	Core European	Conservative
United Kingdom	GB	Anglo-Saxon	Liberal

Note: This information is drawn from the ESS database (ESS, 2012), as well as the literature outlined in the previous chapter concerning welfare regime groupings.

4. Grouping countries empirically

4.1. *Analyses on country-level data*

4.1.1. Analytical taxonomy of educational characteristics

Following the line of argumentation outlined in the previous chapter, countries are presumed to fit to greater or less degrees into welfare regime categories based on their educational system characteristics, theorized as part of their overall social welfare regime contexts. Furthermore, following the lead of previous empirical research taking an inductive approach to testing how countries group by 'educational welfare' dimensions, real groupings based on existing characteristics were hypothesized to exist. The current chapter tests this hypothesis.

Based on the previous research investigating these characteristics and categorizations of educational and welfare systems, data was chosen mapping onto the two key strands in the literature: educational decommodification and educational stratification. As described in Chapter 3, decommodification is the degree to which individuals can have an acceptable standard of living without reliance on market forces, while stratification is the active force that orders social relations (Esping-Andersen, 1990a, 1990b). Decommodification includes both the extent to which an individual's access to services is dependent upon their market position, as well as the extent to which a country's provision of services is independent from the market (Bambra, 2005a). The definition of stratification is consistent with sociological research that defines educational stratification in several ways, from the struggle for dominance and resources (Collins, 1971) to mechanisms of social selection (Heyns, 1974). A more complex account of stratification is understood as involving two orthogonal forms, including both distributions within ('vertical stratification') and between ('horizontal stratification') social fields (Blackburn, Jarman, & Brooks, 2000). In examining vertical stratification researchers generally consider unequal access to specific education levels, while

horizontal inequality refers to stratification within a type of education or field of study (Charles & Bradley, 2002).

Other research has examined educational decommodification and stratification using single-item measures. For example, Busemeyer (2015) measures stratification by "the difference in the odds ratio of expectations between students from strong socio-economic backgrounds and students from weak socio-economic backgrounds" in "whether they expected to complete higher education (at ISCED level 5A or 6)" (p. 31), and decommodification by "the share of education spending that comes from private sources for all levels of education" (p. 32). Others use multi-item taxonomies to map onto educational stratification and decommodification (for example, Pechar & Andres, 2011; Willemse & de Beer, 2012), which is also the approach taken in this study.

Within these two analytical dimensions, sub-categories of data focusing on pre-post-secondary stratification, post-secondary participation and vocational emphasis, overall governmental investment, and student funding through tuition and loans, are identified as significant in the literature (Busemeyer & Nikolai, 2010; Pechar & Andres, 2011; West & Nikolai, 2013; Willemse & de Beer, 2012). The measures underscored as important in this literature for which data were available for all 20 countries in the sample between the years 2005 and 2011 were selected for inclusion in the study. These data are the outcomes representing underlying policies rather than actual government policies themselves (Beblavý et al., 2011). The indicators comprising this analytical taxonomy are outlined in Table *15*. Country raw scores on all indicators are shown in Appendix 1. Next, each of these indicators is discussed individually.

Table 15. *Analytical taxonomy of the macro-level educational data*

Analytical dimension	Sub-dimension	Indicators
PSE Decommodification Scale (10 items; α=0.79)	Overall state investment	*Public spending on education as a percentage of total expenditures (%)*
		Public spending on education as a percentage of GDP (%)
		Public expenditures on tertiary education relative to GDP per capita (US $)
		Public expenditures on tertiary education as a percentage of GDP (%)
		Percentage of tertiary expenditures that are publicly funded (%)
	Patterns of student funding	*Average tuition (US $)*
		Percentage of tertiary expenditures that are privately funded (%)
		Student loans as a percentage of public tertiary expenditures (%)
		Household expenditures as a percentage of public tertiary expenditures (%)
		Annual expenditures per student on tertiary education relative to GDP per capita (US $)
PSE Stratification Scale (10 items; α=0.88)	Pre-post-secondary tracking	*First age of selection (years)*
		Number of programs offered in secondary education (number)
		Vertical stratification as measured by first age of compulsory schooling and grade repetition (scale[a])
		Horizontal stratification between schools as measured by tracking in secondary school (scale[a])
		Horizontal stratification as measured by ability-grouping in secondary school math classes (scale[a])
	Patterns of participation	*Enrolment rates in post-secondary education, ages 18-25 (%)*
		Percentage of population with tertiary education, ages 25-64 (%)
		Percentage of population with tertiary education, ages 25-34 (%)
		Enrolment rates in vocational education, ages 18-25 (%)
		Percentage of the population with vocational education, ages 25-64 (%)

Note: Data are compiled from the OECD Education at a Glance report 2012, reflecting data from 2005 to 2011. Expenditures are adjusted relative to GDP and spending is converted into US dollars using purchasing power parity (PPP). [a] These variables are scales from PISA (2010) data reflecting compulsory educational system characteristics.

4.1.1.1. Post-secondary educational decommodification

4.1.1.1.1. Overall state investment

These indicators capture the levels to which countries invest in education. This investment can be seen as a measure of importance when examined relative to gross national product (GDP) and overall levels of spending on social welfare:

> [P]ublic expenditure on different levels of education (primary, secondary and tertiary) as a percentage of GDP is the key indicator of a country's investment in education and can be viewed as a reflection of the priority the country gives to education. (West & Nikolai, 2013, p. 479)

These indicators are therefore always measured in relative terms.

1) Public spending on education as a percentage of total expenditures and 2) public spending on education as a percentage of GDP. Due to the fact that there is some evidence for a 'trade-off' between educational expenditures and other social welfare expenditures, as described in Chapter 3, these variables tap into the importance of education as a part of the overall welfare state (Busemeyer & Nikolai, 2010; Hega & Hokenmaier, 2002; Heidenheimer, 1981; West & Nikolai, 2013). Higher percentages represent a more important place for education in the provision of social welfare.

3) Public expenditures on tertiary education as a percentage of total public expenditures and 4) GDP. Relative to GDP in per capita US dollars and as a percentage of GDP, respectively, this indicator shows the priority given to higher education as one area of resource allocation, and thus the prominence of educational investment at this level (West & Nikolai, 2013). This can also be seen as a signal of the priority of higher education within the scope of government policies (Pechar & Andres, 2011). Tertiary education is highlighted as a central feature of the overall higher education system.

5) Percentage of tertiary expenditures that are publicly funded. A central measure of decommodification, the proportion of public investment, as compared to private investment, in higher education provides a window into the overall government subsidization of the system (Ansell, 2008; Willemse & de Beer, 2012). This measure is complemented by indicators tapping into various sources of private investment in the next sub-component.

4.1.1.1.2. Patterns of student funding

Tuition, student aid, sources of private funding, and spending per student all provide information about the individual-level investments from both private and public sources that go into post-secondary education.

1) Average annual tuition fees charged by type-A tertiary institutions. In US dollar purchasing power parity (PPP), this measure provides an indication of the individual investment in higher education, before student loans or other forms of individual-level government subsidies. This measure is used by other researchers examining decommodification of education within welfare regimes (L. Moulin, 2015; Pechar & Andres, 2011; Willemse & de Beer, 2012).

2) Percentage of tertiary expenditures that are privately funded. The inverse of the proportion of public investment, this key measure of commodification or marketization of higher education is central to the overall analytical dimension. This additional item reflects the centrality of the public/private duality in the notion of decommodification.

3) Student loans as a percentage of public tertiary expenditures. This item maps onto public investment through student loans, which might be seen as the crossroads of public and private

investment. It is an important factor in access to post-secondary education: "the eligibility and generosity of student loans and grants affect people's ability to pay the tuition fee [*sic*] and enrol into higher education… without being dependent on a market income" (Willemse & de Beer, 2012, p. 108). This clearly links loans to levels of decommodification. However, although key to opening up access to higher education, student loans translate into higher rates of student debt after graduation (L. Moulin, 2014). The limitation to this measure is that it may hide important differences between countries, with some "being much more 'market-like' than [others] and hence leading to higher debt loads" (Pechar & Andres, 2011, p. 32).

4) Household expenditures as a percentage of public tertiary expenditures. These direct private investments represent individual household's level of financing of higher education, and thus, the extent of commodification in the higher education system. Higher household expenditures are linked to a larger place for market forces within the educational system, and has been used as measure of educational decommodification by other researchers (Busemeyer, 2015).

5) Annual expenditures per student on tertiary education. Including both public and private expenditures, this indicator reveals the importance placed on higher education within the realm of both government policy and the marketplace. It may also be seen as a rough approximation of 'educational quality' in terms of inputs. It is measured in US dollars relative to GDP per capita.

4.1.1.2. Post-secondary educational stratification

4.1.1.2.1. Pre-post-secondary tracking

This group of indicators measures conditions before entry into higher education, capturing prerequisites and barriers impacting whether students can enter the next levels of education (Pechar & Andres, 2011). These are important indicators of institutional differentiation in comparative research, which is typically defined as: "the way in which educational opportunities are differentiated between and within educational levels through formal tracking or streaming as well as the timing and rigidity of student selection [at] the secondary level" (Pfeffer, 2012, p. 11). These are key to classic studies of educational inequalities in quantitative sociology (for example, Allmendinger, 1989; Shavit & Müller, 1998). More recently, a high level of tracking in secondary education has been shown to negatively impact access to tertiary educational qualifications by ensuring "that fewer people are eligible to access tertiary education," but also by guaranteeing "that fewer people require its qualifications to obtain desirable positions in the labour market" (Andersen & van de Werfhorst, 2010, p. 338).

1) First age of selection. This variable is measured in years and captures the age when the decision to attend different types of schools is generally made for the first time in the country (OECD, 2012a). This can also be seen as a measure of equality of opportunity within an educational system: Earlier tracking tends to reproduce existing inequalities (West & Nikolai, 2013). This tracking also impacts post-secondary educational opportunities and access, as some tracks make it less likely or impossible to enter higher education. Indeed, some vocational tracks "preclude advances up the career ladder, when such training, especially in tracked systems, limits access to university" (Beblavý, Thum, & Veselkova, 2013, p. 489). Thus, early tracking can be viewed as "a powerful instrument of social selection in that

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individuals are routed to institutions which, in turn, will largely determine their future life chances" (Pechar & Andres, 2011, p. 33).

2) Number of programs offered in secondary education. This variable captures the number of different types of schools or programs that are put in place for 15-year-olds in the country; it is measured as a continuous numerical value and is often termed 'tracks' or 'tracking' in the literature (OECD, 2012a). This can also be seen as an indicator of equality of opportunity in schooling: Pupils are typically selected based on their academic performance, and this performance is often strongly linked to family background (OECD, 2013b). As mentioned above, these academic choices in secondary school shape later opportunities for further education.

3) Vertical stratification as measured by first age of compulsory schooling and grade repetition. This variable is a scale variable in the 2012 PISA data that combines the variation in age of entry into primary school and grade repetition in a measure that taps into the variability in students' grade levels (OECD, 2012b). This again maps onto equality of opportunity in schooling. In particular, grade repetition has been shown to be negatively related to equity in education and highly related to students' socio-economic status (OECD, 2013b).

4) Horizontal stratification between schools. Another scale measure from PISA, this variable measures tracking in secondary school through five variables: number of educational tracks, prevalence of vocational and pre-vocational programs, early selection, academic selectivity, and school transfer rates (OECD, 2012b). These have been identified as key institutional

determinants of educational inequality across countries (Peter et al., 2010). These five indicators are highly inter-correlated (OECD, 2013b).

5) *Horizontal stratification within schools*. This final variable captures ability-grouping in secondary school math classes, which is another important element of 'streaming' or 'tracking' that is not captured in the above measures (OECD, 2012b). Indeed, this item shows a negative correlation with horizontal stratification between schools (OECD, 2013b). Thus, the inclusion of this variable allows for less visible forms of student sorting and selection, which are nonetheless prevalent in many educational systems (for example, Heyns, 1974).

4.1.1.2.2. Patterns of post-secondary participation

This group of variables captures both equality of opportunities and outcomes within the post-secondary educational system, as both rates of participation and completion are included to give a full picture of to what extent countries attain mass, or democratized, higher education.

1) *Enrolment rates in post-secondary education*. The percentage of the population ages 18-25 enrolled in post-secondary education allows for a general view into the degree of 'massification' of the overall post-secondary educational system for the most recent generation in a country (Pechar & Andres, 2011). This is an important overall characteristic of higher education systems that, in combination with levels of public and private costs, differentiates OECD countries (Ansell, 2008).

2) *and 3) Percentage of the population with tertiary education*. The percentage of the population ages 25-64 and the percentage of the population ages 25-34 who are graduates of tertiary education captures patterns of tertiary completion for the overall working population

and the most recent generation, also capturing developments in these trends. This can also be seen as a measure of equality in educational outcomes: if there is a higher proportion of people who have completed higher education, then educational outcomes can be seen as less unequal (West & Nikolai, 2013). The inclusion of these two variables allows for consideration of the expansion of the tertiary system over time (Pechar & Andres, 2011).

4) Enrolment rates in vocational education. This variable measures the percentage of the population ages 18-25 who are enrolled in post-secondary vocational education and training (VET). This variable taps into 'vocational specificity,' which is an commonly identified aspect of stratification, capturing the overall importance of VET within a system (Kerckhoff, 1995, 2001; West & Nikolai, 2013). More specific rates for vocational secondary education are not available (Busemeyer, 2015).

5) Percentage of the population with vocational education. The percentage of the population ages 25-64 for whom a VET credential is their highest educational attainment again provides information on the prevalence of VET (Busemeyer, 2015). This level of education will often remain unchanged, as those with VET have a small likelihood of enrolling in tertiary education (Pechar & Andres, 2011).

4.1.1.3. Links to the capability approach

In the previous chapter, it was emphasized that educational system characteristics may enhance or hinder the capability development of individuals living in these differing institutional contexts. Indeed, the measures outlined above have clear implications from a capability perspective. They can be seen as environmental-level conversion factors that in turn impact individual resources, such as educational policies that enable participation in a

general academic post-secondary course that in turn shapes an individual's ability to critically evaluate health information later in life.

Taking a general view, it is clear that high scores on the items comprising the analytical dimensions of post-secondary educational stratification are capability-hindering: Early tracking and streaming, and thus a lack of common core knowledge and socialization, as well as limited access to post-secondary education, and thus lower participation rates, likely lead to lowered opportunities for capability development across the full social spectrum of the population (Olympio, 2012; Pfeffer, 2012; Rubenson & Desjardins, 2009). The opposite of this, low scores, where there is an extended common core and absence of streaming or tracking, as well as a democratization of access to higher education, in part through reversible educational trajectories, is evidently evidence of capability-building environmental-level conversion factors (Desjardins et al., 2006; Olympio, 2012).

On the other hand, high scores on the items comprising the analytical dimensions of post-secondary educational decommodification are capability-building: Universal loans, lack of tuition fees, and high public spending all represent environmental-level conversion factors that likely enhance opportunities for capability development within a population (Nussbaum, 1997; Olympio, 2012; Rubenson, 2006). These policy measures maximize opportunities for educational participation, while also promoting high educational quality (at least in terms of economic inputs). Thus, these two analytical dimensions, in broad strokes, can be considered as capability-building – as in the case of educational decommodification – or capability-inhibiting – as in the case of educational stratification.

4.1.1.4. Limitations

Although these educational system characteristics are by no means exhaustive, notably excluding more qualitative measures of vocational specificity and differentiation within the

post-secondary sector, they provide a detailed set of indicators that can be examined individually as well as collectively. When the number of analytical dimensions and indicators becomes very large, it is difficult to examine all inter-relations, in particular because the measures of well-being mobilized in this study are also composite measures containing numerous variables that are examined both individually and as scales. Furthermore, data availability for variables concerning vocational educational financing and specific programs was much more limited than data concerning tertiary education (Busemeyer, 2015).

4.1.1.5. Composite scale measures

These indicators, chosen on theoretical grounds based on the existing literature, are compiled into composite scale measures for further analysis. The scale is constructed by dividing the summative score of the standardized values of the individual items by the number of items over which the sum is calculated (finding the arithmetic average). Country values for each of the items and each of the two analytical dimensions are listed in Table *16*. Country scores along the two dimensions are illustrated in *Figure 12* and *Figure 13*, while the bivariate relationship between these two scores is presented graphically in *Figure 14*.

Table 16. *Internal coherence of the analytical taxonomy dimensions*

Analytical dimension	Indicators	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
PSE Decommodification Scale (10 items; α=0.79[b])	*Public spending on education (% exp.)*	0.64	0.52	0.26	0.76
	Public spending on education (% GDP)	0.82	0.75	0.23	0.73
	Public exp. on tertiary (US $)	0.49	0.35	0.28	0.78
	Public exp. on tertiary (% GDP)	0.74	0.64	0.24	0.74
	Percentage of tertiary exp. public (%)	0.75	0.66	0.24	0.74
	Average tuition (US $)	0.41	0.25	0.30	0.79
	Percentage of tertiary exp. private (%)	0.74	0.64	0.24	0.74
	Student loans as % of public tertiary exp.	0.20	0.02	0.33	0.82
	Household expenditures (% of public exp.)	0.71	0.61	0.25	0.75
	Annual exp. per student tertiary (US $)	0.36	0.19	0.31	0.80
PSE Stratification Scale (10 items; α=0.88[b])	*First age of selection (years)*	0.90	0.87	0.38	0.84
	Number of programs (number)	0.79	0.73	0.40	0.86
	Vertical stratification (scale[a])	0.53	0.41	0.45	0.88
	Horizontal stratification between schools (scale[a])	0.90	0.87	0.38	0.84
	Horizontal stratification within schools (scale[a])	0.34	0.20	0.48	0.89
	Enrolment post-secondary, 18-25 (%)	0.53	0.41	0.45	0.88
	Percentage of pop. tertiary, 25-64 (%)	0.70	0.61	0.41	0.86
	Percentage of pop. tertiary, 25-34 (%)	0.80	0.73	0.40	0.86
	Enrolment vocational, 18-25 (%)	0.72	0.64	0.41	0.86
	Percentage of pop. vocational, 25-64 (%)	0.68	0.59	0.42	0.87

Note: Data are compiled from the OECD Education at a Glance report 2012, reflecting data from 2008 and 2009. Expenditures are adjusted relative to GDP and spending is converted into US dollars using purchasing power parity (PPP).

[a] These variables are scales from PISA (2010) data reflecting compulsory educational system characteristics.

[b] The two composite scales show moderate to strong alphas (α=0.79 for the decommodification scale and α=0.88 for the stratification scale), suggesting an acceptable level of internal consistency within the measures.
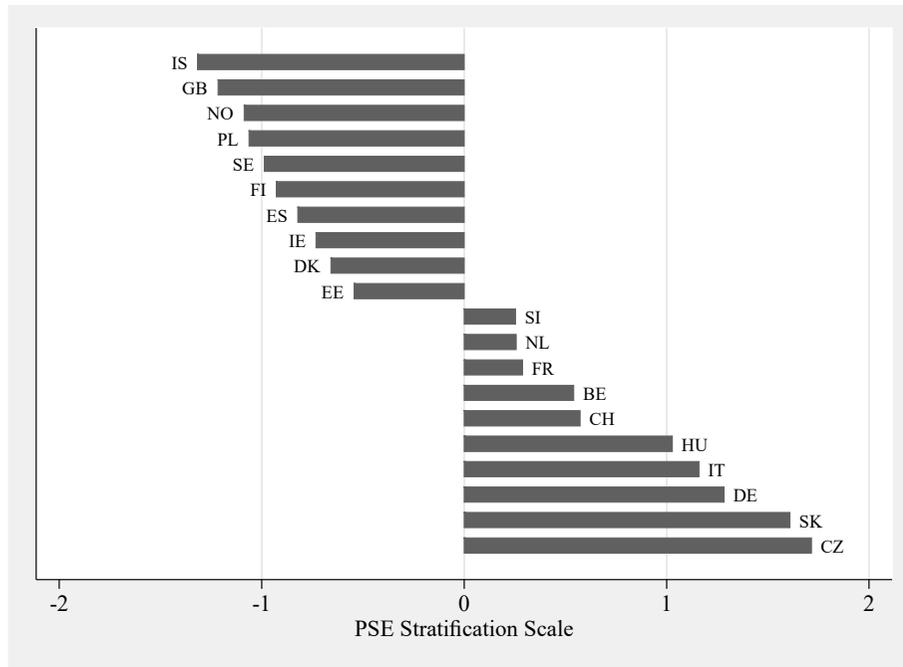
Figure 12. Bar graph showing countries along their (standardized) scores on the post-secondary educational stratification scale.
Note: This graph shows the country scores on the scale measuring post-secondary educational stratification. The scale is created by taking the average of all ten standardized items mapping onto educational stratification in the analytical taxonomy. Higher scores show higher stratification. Here we see that the Czech Republic shows the highest stratification score.
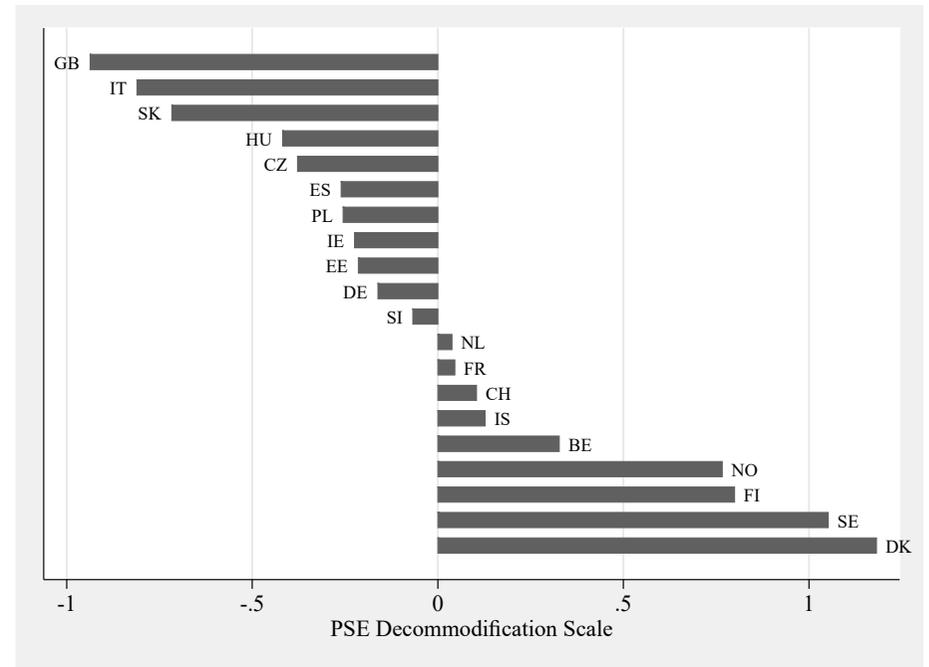

Figure 13. Bar graph showing countries along their (standardized) scores on the post-secondary educational decommodification scale.
Note: This graph shows the country scores on the scale measuring post-secondary educational decommodification. The scale is created by taking the average of all ten standardized items mapping onto educational decommodification in the analytical taxonomy. Higher scores show higher decommodification. Here we see that Denmark shows the highest decommodification score.
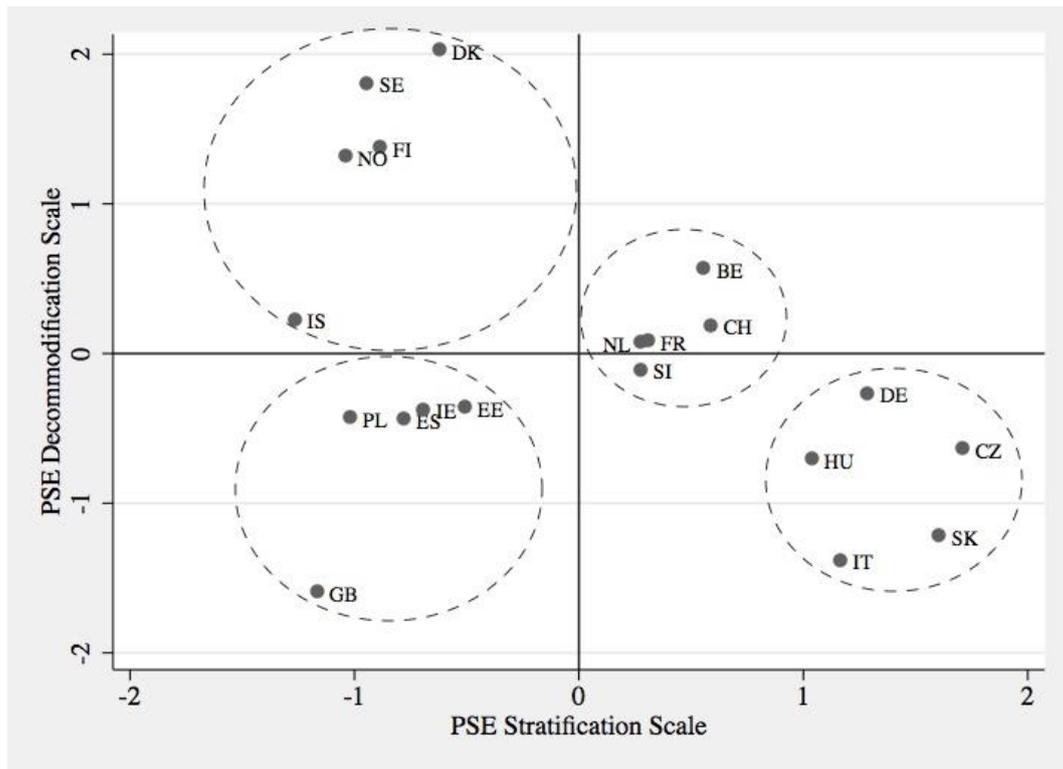
Figure 14. Scatterplot showing countries along their (standardized) scores on post-secondary educational stratification and decommodification.

Note: This plot shows the country scores on the scale measuring post-secondary educational decommodification plotted against the country scores on the scale measuring post-secondary educational stratification. The points represent countries, and countries that are grouped closer together show scores that are similar on both scales. The circles are added to show which countries appear to group together on these two dimensions.

The internal consistency, or reliability, of these two analytical dimensions is good, with Cronbach's alphas of 0.79 and 0.88 for post-secondary educational decommodification and stratification respectively (see Table *16*). The item-test correlations are also strong, with the notable exception of the item measuring student loans as a percentage of public expenditures on tertiary education. This is due to the fact that both Great Britain and Norway show quite elevated values, and the fact that the Nordic countries in general show more elevated (standardized) values than expected. This is likely due to the fact that there is no tuition, but rather loans aimed to allow students to live on their own as part of a greater push towards 'defamilialization' and is consistent with previous research (Pechar & Andres, 2011). However, overall, these dimensions show strong internal coherence in these tests conducted on the standardized (*z*-score) values for all items.

Examining country scores along these two dimensions, preliminary groupings of countries become evident: Consistent with the research summarized in Chapter 3, the Nordic countries clearly form a group with low stratification and high decommodification, while the core European countries of Belgium, the Netherlands, France, and Switzerland group together with Slovenia in the center of the plot, with moderate levels of both stratification and decommodification. Somewhat surprisingly, Germany and Italy group with the Eastern European countries of Hungary, Slovakia, and the Czech Republic, with lower levels of decommodification and higher levels of stratification than the core European countries. On the bottom left of the graph, Great Britain is an exceptional case, with the lowest decommodification, but stratification as low as the Nordic countries on this scale. In the same bottom left portion of the graph, we also find Ireland, Poland, Spain, and Estonia, with fairly low decommodification and stratification.

This scatterplot suggests a moderate, negative, linear association between post-secondary educational decommodification and stratification. Only Great Britain appears to be a potential outlier in the data in terms of decommodification, but its score is not greatly different than that of Italy and Slovakia. The correlation coefficient between these two analytical dimensions is 0.42. In a bivariate OLS regression, the relationship between these two scales is negative and moderately significant ($ß$=-0.36, SE=0.18, p<.10). The explanatory power of this relationship is limited, with only 18% of the variance in scores on decommodification explained by scores on stratification (see *Figure 15*); however, since these two scores capture two distinct analytical dimensions related to country-level educational characteristics, this moderate to low correlation is not problematic. Indeed, other research has found no significant relationship between the two dimensions (Busemeyer, 2015).

Thus, bivariate descriptive analysis of the analytical taxonomy data shows preliminary evidence of four country groupings along the analytical dimensions of post-secondary educational stratification and decommodification: A Nordic group, with low stratification and high decommodification; a Central and Eastern European (CEE) group, with high stratification and low decommodification; a Core European group, with moderate levels on both dimensions; and a mixed grouping, with low levels of both decommodification and stratification. This contrasts similar descriptive analyses of single-item educational stratification and decommodification measures in the existing research showing only three groupings; however, this difference is likely due to the inclusion of the CEE countries (Andersen & van de Werfhorst, 2010; Busemeyer, 2015).

Next, in order to test these country groupings, two different techniques using progressively coarsened data are conducted: cluster analyses on the standardized quantitative (continuous) data and multi-dimensional scaling (MDS) on rank (ordinal) data. Both of these analyses mobilize the data from all of the 20 country-level indicators, comparing these findings to those found with the theoretically-driven analytical dimensions described above. Commonalities in results across approaches are examined in order to determine the typology used in the present study.
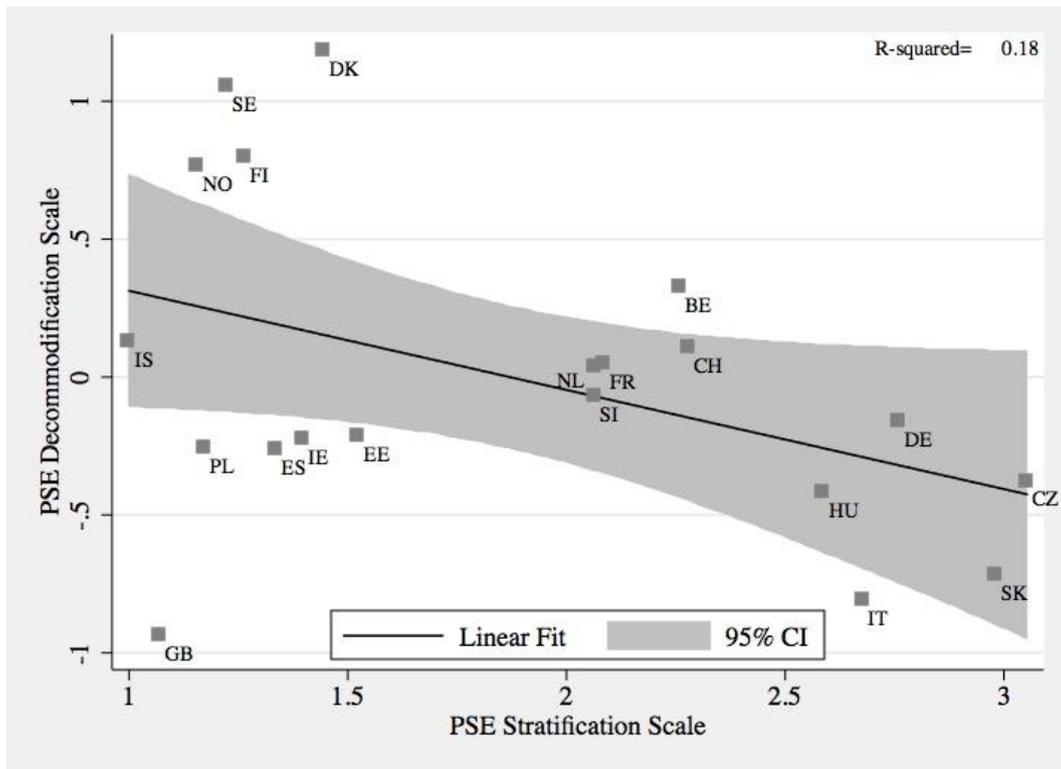
Figure 15. OLS regression model of scores on post-secondary educational stratification predicting scores on post-secondary educational decommodification.
Note: This plot shows the country scores on the scale measuring post-secondary educational decommodification plotted against the country scores on the scale measuring post-secondary educational stratification. The points represent countries, and countries that are grouped closer together show scores that are similar on both scales.

4.1.2. Cluster analyses

In order to test these preliminary empirical groupings taking into account all items in the analytical taxonomy, a hierarchical cluster analysis is conducted on the standardized values for all 20 educational characteristics related to post-secondary educational decommodification and stratification. Cluster analysis is a multivariate descriptive data technique used to create the most homogenous groups possible out of a large heterogeneous sample of cases (McVicar & Anyadike-Danes, 2002). Cluster analyses are a common empirical analytical approach in comparative welfare regime research (Busemeyer, 2015; Fenger, 2007; Ferreira & Figueiredo, 2005; Gough & Abu Sharkh, 2010; Marí-Klose & Moreno-Fuentes, 2013). Cases are grouped by minimizing a distance measure that exists for

all pairs of cases. Thus, the similarities of the cases within each cluster are maximized, as are the dissimilarities with cases in other clusters (West & Nikolai, 2013).

In order to conduct the cluster analysis, the first step is to create a dissimilarity matrix from the input variables. The distance measures are computed using the standardized values (*z*-transformed) for all items, to avoid giving more weight to some items with units with larger values than others. Thus, each variable has a mean of 0 and a standard deviation of 1. These measures are computed using the squared Euclidean distance. This matrix is then used to hierarchically cluster the country observations into groups. To do so, the Ward linkage method is used, which is widely applied in the literature (Brzinsky-Fay, Kohler, & Luniak, 2006; Busemeyer, 2015; West & Nikolai, 2013), and the results are compared to other methods.

Examining the statistical evidence and considering the theoretical groupings outlined in the previous chapter, a five-cluster solution is chosen. The country characteristics are analyzed for each cluster solution visually using graphics (such as the dendogram, shown in *Figure 16*) and the descriptive statistics are compared by different numbers of cluster groups, to find substantive patterns. (The descriptive statistics of the two analytical dimensions by cluster group are shown in Table *17*.) However, the limitation of ensuring a sufficient subsample size in each cluster restricted the viable options to a small number of groups, in particular when dividing the analyses by level of education. Various types of cluster analyses are run and compared in order to find agreement between groups (based on all possible pairs of cases) using the Adjusted Rand Index (ARI). The average ARI value was 0.50, suggesting that there was a fair degree of movement between groups when comparing different linkage methods.
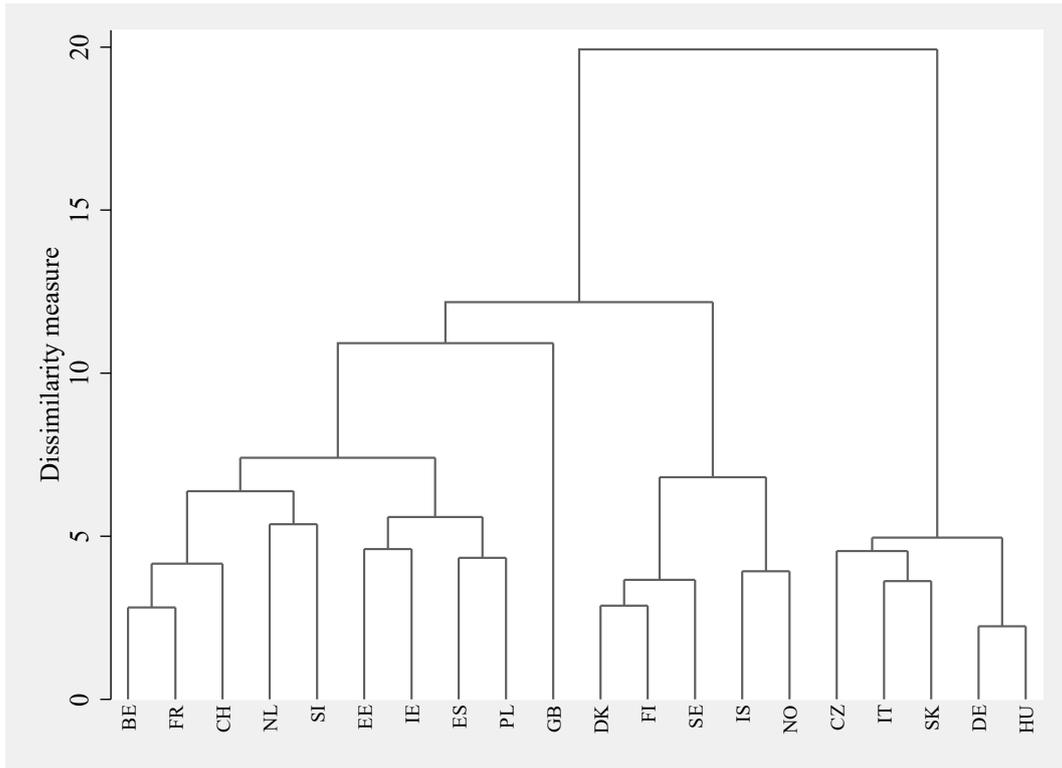
Figure 16. Cluster dendrogram showing countries grouped on the dissimilarity score matrix
Note: This dendogram shows the extent to which countries group together in terms of their scores on the items capturing post-secondary educational stratification and decommodification. The length of the vertical lines show how strongly countries group together. For example, the Central and Eastern European countries (with Germany and Italy) clearly form a distinct group, as do the Nordic countries.

The dendogram for the five-cluster solution is illustrated in *Figure 16*. A cluster dendogram graphically presents the grouping of observations together at various levels of (dis)similarity. Beginning from the bottom of the dendogram, each observation is considered its own cluster, which is then regrouped with other observations as we read up the diagram, until the top where all observations form a single group. The length of the vertical lines show how strongly observations cluster together. Here we see that the Central and Eastern European countries are clearly distinct from the rest of the countries, with a very long vertical line that indicates a distinct separation between this group and the other groups. Germany and Italy are included in this grouping. The Nordic countries are also well separated from the Core and mixed European groups. The shorter lines between these last three groups indicate

that these groups are not as distinct from one another. In particular, Great Britain stands out as an outlier from these cluster groupings.

Table 17. *Descriptive statistics of the analytical dimensions by cluster group*

Cluster group	Countries	Decommodification		Stratification	
		Mean (SD)	Range	Mean (SD)	Range
1. Core European	Belgium; France; Switzerland; Netherlands; Slovenia	0.09 (0.15)	$-0.07 \leq x \leq 0.33$	0.41 (0.16)	$0.28 \leq x \leq 0.59$
2. Mixed	Estonia; Ireland; Spain; Poland	-0.24 (0.02)	$-0.26 \leq x \leq -0.21$	-0.74 (0.21)	$-1.01 \leq x \leq -0.50$
3. Great Britain	Great Britain	-0.94		-1.16	
4. Nordic	Denmark; Finland; Sweden; Iceland; Norway	0.79 (0.41)	$0.13 \leq x \leq 1.18$	-0.95 (0.24)	$-1.26 \leq x \leq -0.62$
5. Central and Eastern European	Czech Republic; Italy; Slovakia; Germany; Hungary	-0.50 (0.26)	$-0.81 \leq x \leq -0.16$	1.37 (0.29)	$1.04 \leq x \leq 1.71$

Note: Total country sample size is 20 countries. Cluster groups shown in order from left to right on the cluster dendogram.

We see that, for the most part, the cluster groups mirror those found on the scatterplot of the post-secondary educational stratification-decommodification bivariate relationship. The notable exception is Great Britain, which belongs to its own cluster, confirming that it may indeed be an outlier.[16] The descriptive statistics for the scales mapping onto the two analytical dimensions show that some groups are more homogenous than others. Indeed, apart from Great Britain, the 'mixed' grouping shows low variability in scores, as do the Core European countries. In fact, the Nordic countries show the greatest variability in decommodification scores, and the Central and Eastern European countries show the greatest variability in stratification scores, although these two groupings were shown to be the most distinctive when considering all items together. This suggests that specific items or dimensions are likely more important in the definition of some groupings as compared to others.

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[16] This is likely due to the countries included in the sample, which include fewer typically 'liberal' cases (Busemeyer, 2015).

It is necessary to further explore these findings and confirm the country groupings suggested thus far; this is the case notably because the ARI index was not high (0.50) when comparing alternative partitioning of cases using the same data but different parameters or algorithms. Since these clusterings were not highly stable across cluster linkage techniques, a further multivariate data reduction and visualization technique is employed in the following section. This further technique allows for an examination of more coarsened data, mobilizing an ordinal transformation of the indicators.

4.1.3. Multi-dimensional scaling analyses

In order to further test the groupings suggested by the cluster data, multi-dimensional scaling (MDS) is performed on the 20 country-level educational indicators. MDS analysis is used to produce a geometric model of proximities from data on the dissimilarities (or distances) among a set of variables (Kruskal & Wish, 1978). However, (modern, non-metric) MDS uses only the rank order of the data, allowing for an ordinal examination that reduces the impact of extreme scores (Scott & Marshall, 2009). Furthermore, one of the goals of MDS is to attempt to represent the data in as few dimensions as possible, aiding in the search for a parsimonious model. Indeed, MDS has been found to be preferable to factor analysis in this regard: while factor analysis typically "finds at least one factor more than there really is (and often two more)," MDS has been found to better at discriminating "between one-dimensional and two-dimensional data… even under error prone conditions" (Brazill & Grofman, 2002, p. 223).

Similar to cluster analysis, one must first create a dissimilarity matrix from the input variables. The MDS analysis then creates a geometric model that represents each observation as a point in space, where smaller interpoint distances represent similarities and greater distances between two points represent differences. The most important gauge in interpreting an MDS map is which points fall close to which other points, as exact distances between

points are often imperfectly rendered (Borgatti, 1997). Of course, one must interpret the MDS point configurations substantively and in relation to relevant theory (Jacoby, 2012).

Of interest to the present study, clusters of points in MDS can be interpreted as corresponding to groups of observations, in this case countries, which differ by certain characteristics, and the directions within the MDS space, or the dimensions, can be interpreted as corresponding to the characteristics differentiating the observations (Jacoby, 2012). When we examine the results of the MDS analysis on the 20 post-secondary educational stratification and decommodification items along 2 principal dimensions, we see consistent groupings to the cluster analysis (see *Figure 17*). Furthermore, the groupings are even more cohesive in terms of distances in this model, likely due to the ordinal nature of the data, with the exception of Great Britain, which remains a potential outlier.

In terms of goodness-of-fit, this model has a Kruskal stress (loss) measure of 0.14, which is within the acceptable range for this type of analysis (less than 0.20). The stress value measures the extent to which the distortion in the plot has been minimized by the MDS algorithm (Pacini et al., 2014). More precisely, it measures "the difference between the distances of each couple of sample points on the MDS plot and the distance predicted from the fitted regression line corresponding to coefficients of dissimilarities" (Pacini et al., 2014, p. 381). Thus, here we can be sufficiently confident that the two dimensions do a good job of fitting the real input data into the predicted model.

We see a clear distinction between the Nordic and Central and Eastern European countries, which are juxtaposed in the top panels of the graph. The core European and mixed clusters of countries are also clearly identifiable, with the core European countries falling to the left of the Nordic countries and the mixed countries closer to the Central and Eastern European countries. However, although the core European group is still present, the Netherlands has moved slightly further from its center. Furthermore, and most apparent,

Great Britain falls much lower than all other countries on the second dimension. However, on the first dimension, it clearly falls in line with the other mixed countries.
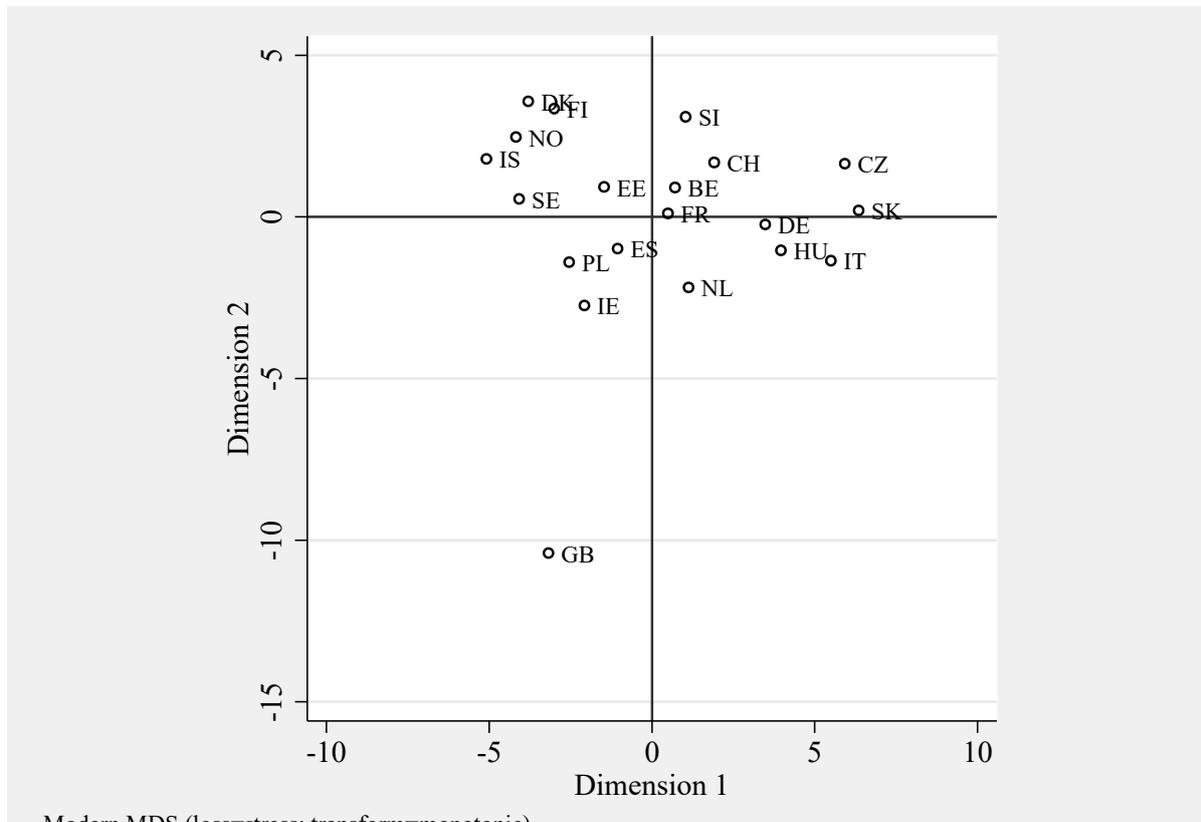

Figure 17. MDS configuration of standardized dissimilarities of stratification and decommodification items.

Note: This map shows the extent to which countries group together in terms of their scores on the items capturing post-secondary educational stratification and decommodification. The distances between points show how strongly countries group together. For example, the Central and Eastern European countries (with Germany and Italy) clearly form a distinct group, as do the Nordic countries.

Indeed, on the MDS map, it appears that countries differ more strongly along the first dimension. This result is further examined using metric MDS methods (see *Figure 18*), which are also called principal coordinate analyses (PCoA) because they are an adaptation of principal component analyses (PCA). These analyses use the continuous standardized data, as was done in the cluster analyses. These supplementary analyses show that the first dimension accounts for 35% of the variation in differences, while the second accounts for only 20%.

These two dimensions map fairly strongly onto the analytical dimensions; however, some variables load much more strongly than others. Specifically, age of selection, horizontal

stratification between schools, and the percentage of the population under the age of 34 participating in tertiary education most strongly determine the first dimension, reflecting the analytical dimension of stratification, along with the variable measuring the overall investment in education as a percentage of GDP, an indicator of decommodification, but also of the overall importance attributed to education within a society (West & Nikolai, 2013). For the second dimension, the balance between public and private expenditures, including household expenditures, along with average tuition, most strongly determine the dimension, mapping onto the analytical dimension of decommodification (Busemeyer, 2015); however, horizontal stratification *within* schools, a measure of stratification through ability-grouping, is also determinant.[17] Thus, the theoretical analytical dimensions are only partially supported, although the groupings are quite consistent.

In these complementary analyses, three further components show *eigen*-values greater than 1.0 (a commonly used cut-off point), explaining a further 25% of the variance in scores. These smaller dimensions are related to the vertical stratification indicator (explaining 11%), tertiary education spending measures (explaining seven percent), and VET participation combined with the part of higher education financing made through student loans (explaining seven percent). The scree plot (not shown) suggests that these additional components provide rapidly diminishing returns in terms of explanatory power.

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[17] This is not surprising based on the country groupings: The values on this indicator tend to be higher for the 'mixed' countries with long common cores but classes organized based on ability starting in secondary school.
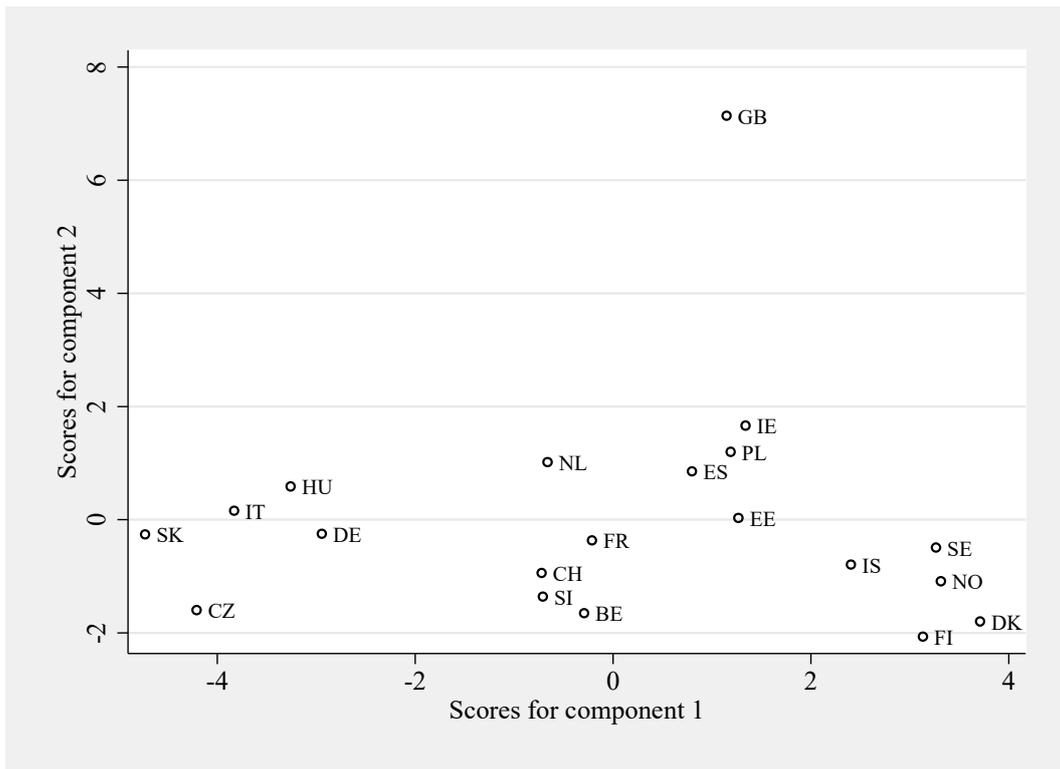
Figure 18. PCA plot of scores on the two primary components from the metric MDS.
Note: This map shows the extent to which countries group together in terms of their scores on the first two components of the PCA. The distances between points show how strongly countries group together. For example, the Central and Eastern European countries (with Germany and Italy) clearly form a distinct group, as do the Nordic and the Continental European countries. Great Britain remains an outlier in terms of component 2, which maps onto the public-private mix in the financing of post-secondary education.

The stress test is reduced to 0.10 in these analyses, showing slightly better fit, due to the fact that it takes into account the continuous nature of the data. Furthermore, overall, we also see quite good fit for this model when we examine the Shepard diagram. Since the data used in the MDS analysis were dissimilarities data, a scatterplot of these proximities against the distances computed by the model for each pair of items should form a straight line from the bottom left to the top right of the graph (Borgatti, 1997). We see that this is generally the case (see *Figure 19*).

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Classical MDS
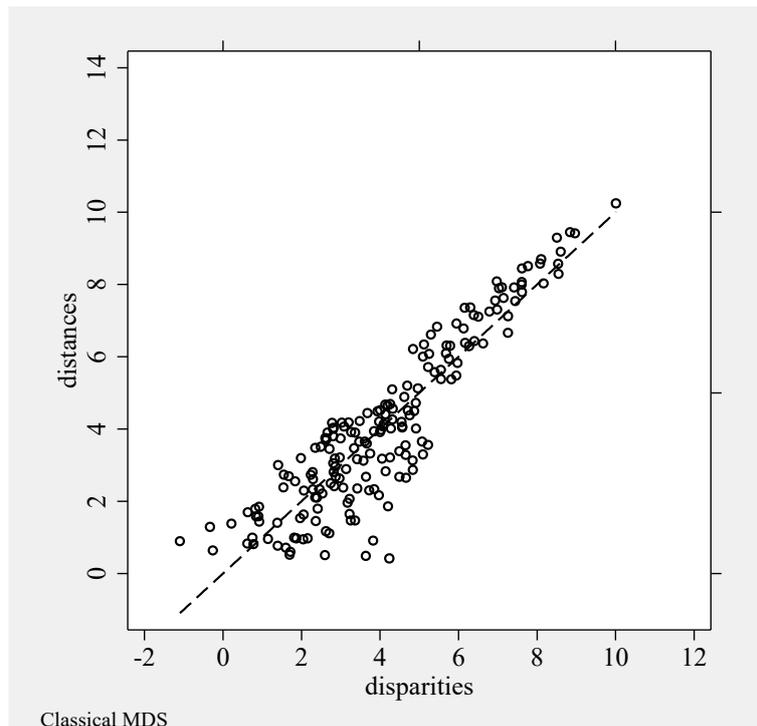
Figure 19. Shepard diagram of the fit of the standardized dissimilarities of stratification and decommodification items.

Note: This diagram shows the computed proximities plotted against the computed distances for each pair of items. The fact that these points form a straight line from the bottom left to the top right of the graph is an indicator of good model fit.

4.2. *Empirical groupings*

Based on the two approaches to clustering the country observations explain above, four groups of countries emerge from the data: a first group comprising the Nordic countries and Iceland, who grouped together in all three of the analyses; a second group combining the Anglo-Saxon countries with Poland, Spain, and Estonia, although Great Britain is potentially distinct in some ways from the rest of the group based on its more extreme values; a third group of 'core' European countries and Slovenia, who consistently exhibited central values; and a fourth group of countries comprising Central and Eastern European countries with the addition of Germany and Italy (see Table *18*).

Table 18. *Empirical groupings emerging from the analyses*

Educational welfare regime	Countries
Group 1	Denmark; Finland; Norway; Sweden; Iceland
Group 2	Ireland; Poland; Spain; Estonia; Great Britain
Group 3	Belgium; Netherlands; Switzerland; France; Slovenia
Group 4	Czech Republic; Hungary; Slovakia; Italy; Germany

Note: Total country sample size is 20 countries.

Furthermore, these groups show fairly homogenous scores on the analytical dimensions of post-secondary educational stratification and decommodification (see *Figure 20* and *Figure 21*). We see that the countries in the first group show consistent low levels of stratification and also generally high levels of decommodification (although Iceland has more moderate levels). The second group shows both low stratification and low decommodification, with Great Britain exhibiting the lowest level of decommodification. The third group shows moderate to high levels of stratification and moderate levels of decommodification, with generally consistent scores. Finally, the fourth group shows high stratification and low decommodification (although Germany has more moderate levels). These findings are summarized in Table *19* below.

Table 19. *Characteristics of post-secondary education systems across groups*

Group	Stratification		Decommodification	
	Overall levels	Anova ($R^2=0.95$)	Overall levels	Anova ($R^2=0.78$)
Group 1	low	*reference category*	high	*reference category*
Group 2	low	0.12 (0.45)	low	-1.16*** (0.00)
Group 3	moderate/high	1.35***(0.00)	moderate	-0.70*** (0.00)
Group 4	high	2.31***(0.00)	low	-1.28*** (0.00)

*Source:* ESS (2012) Round 6 (version 2.3)
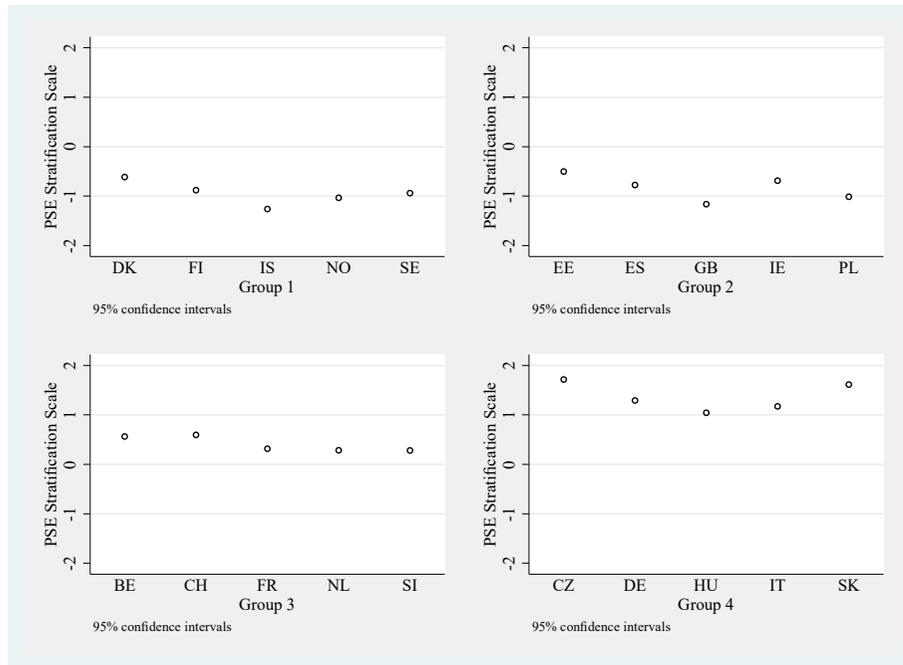
Figure 20. Levels of post-secondary educational stratification by country and grouping.
Note: These graphs show the country scores on the analytical dimension scale of post-secondary educational stratification (comprising 10 items). The scale represents the average of the standardized scores on all 10 items. Countries are shown in their respective groupings.
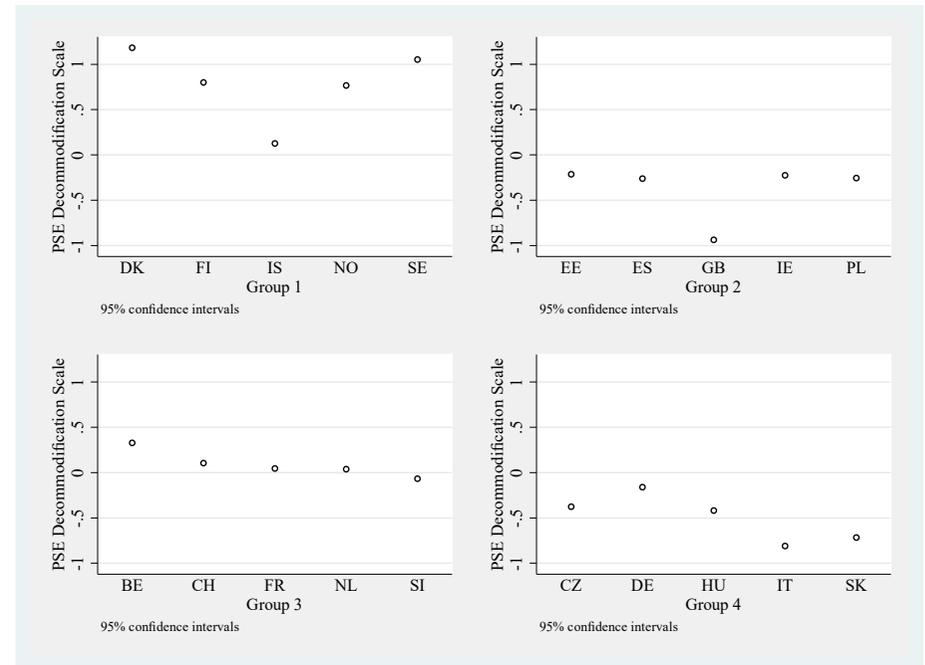
Figure 21. Levels of post-secondary educational decommodification by country and grouping.
Note: These graphs show the country scores on the analytical dimension scale of post-secondary educational decommodification (comprising 10 items). The scale represents the average of the standardized scores on all 10 items. Countries are shown in their respective groupings.

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These groupings also follow clear geographical patterns, as seen when we examine the spatial distribution of levels of post-secondary educational stratification and decommodification across countries cartographically (see *Figure 22* and *Figure 23*). These maps show that levels of post-secondary educational stratification are highest in central and eastern Europe, while levels of post-secondary educational decommodification are highest in the northern extremities of the continent. The Czech and Slovak Republics, as well as Germany, Italy, and Hungary, stand out with high levels of stratification, while France, Belgium, the Netherlands, Switzerland, and Slovenia show moderately high levels. Sweden, Finland, Estonia, Spain, and Ireland show moderate to low levels, while Great Britain, Norway, Iceland, and Poland exhibit the lowest levels on this scale.

Concerning decommodification, the Nordic countries stand out with highest levels, although Belgium also shows moderate to high decommodification. Germany, France, Switzerland, Slovenia, Estonia, and Ireland show moderate levels, followed by Poland, the Czech Republic, Hungary, and Spain with low to moderate levels. Great Britain, Italy and Slovakia exhibit the lowest levels on the decommodification scale. Thus, some exceptions to the overall regional trends are also seen. However, comparing results from the two maps, we see evidence of the negative correlation between the two analytical dimensions across countries, and the four groupings are clearly reflected in the contrasting hues between these two maps.
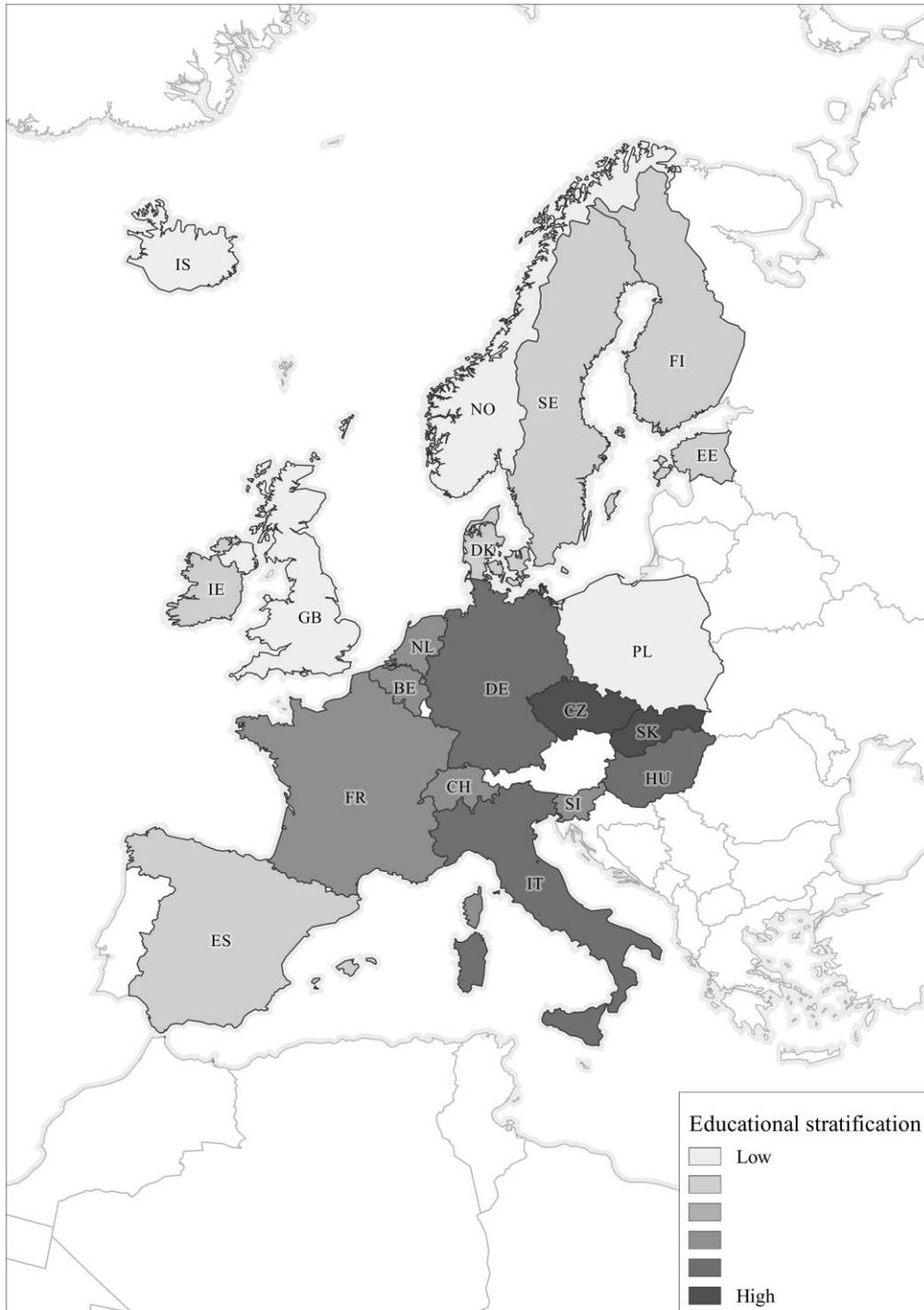
Figure 22. Map of Europe showing levels of post-secondary educational stratification across countries in the study sample.

Note: This map of Europe illustrates levels of post-secondary educational stratification as measured by the composite scale based on the analytical dimension outlined in this chapter. Darker hues correspond to higher levels of stratification. The Czech and Slovak Republics, as well as Germany, Italy, and Hungary, stand out with high levels of stratification, while Great Britain, Norway, Iceland, and Poland exhibit the lowest levels on this scale.
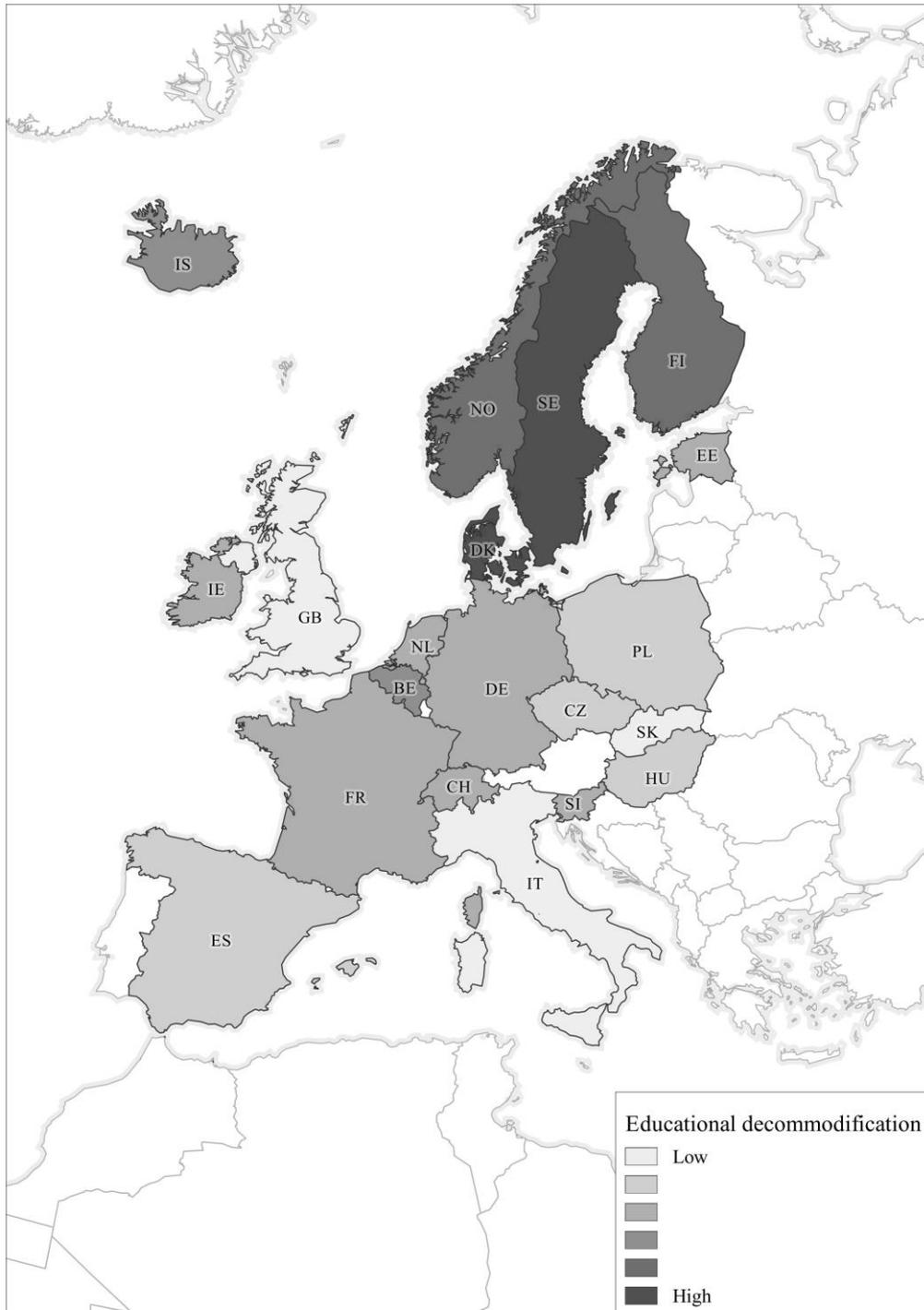
Figure 23. Map of Europe showing levels of post-secondary educational decommodification across countries in the study sample.
Note: This map of Europe illustrates levels of post-secondary educational decommodification as measured by the composite scale based on the analytical dimension outlined in this chapter. Darker hues correspond to higher levels of decommodification. The Nordic countries stand out with high levels of decommodification, while Great Britain, Italy and Slovakia exhibit the lowest levels on this scale.

The grouping of Nordic countries is ubiquitous in the welfare state and comparative education literature. The third and fourth groups are relatively unsurprisingly re-categorizations of the continental European grouping found in most studies with the addition of the CEE countries. Germany and Italy's shared history of recent non-democratic rule based on some Communist-influenced principles, as well as their close geographic proximity to the CEE countries puts their structural similarities in geo-political and historical context. Perhaps the most perplexing group is the second, 'mixed' grouping, which on the surface appears relatively heterogeneous. However, as found in previous research, the explanation may be related to underdeveloped educational pathways in VET, a focus on general skills, and a strongly mixed market of public and private educational provisions (Busemeyer, 2015; Kwiek, 2014).

Thus, based on the empirical analyses conducted thus far, clear country groupings can be identified. The analytical dimensions of post-secondary educational stratification and decommodification differentiate these groupings: The groupings differ significantly by their average levels on each of the two dimensions, with the exception of levels of stratification for groups one and two. However, all other differences are highly significant. What is more, it is already evident that these empirical groupings mirror existing groupings described in the literature, as explored in Chapter 3. These commonalities will be explored at the end of this chapter.

5. Examining levels of education

5.1. *Descriptive analyses*

5.1.1. Levels of education by country

Levels of education differ both within and across countries in the sample, and the association between years of education and educational attainments also differs. However, the correlation between years of education and level of education is 0.68 across all individuals and 0.55 across country averages. The positive relationship between average years of education and average educational attainments is clearly exhibited in *Figure 24*.

Average levels of education differ amongst countries. However, trends within groupings are evident: Average levels of educational attainment are highest in the Nordic countries, although they are also high in Estonia and Belgium. Trends in average levels for years of education are more difficult to interpret. On average, they are again highest in the Nordic countries, with Iceland in particular showing a high average. Ireland, the Netherlands, and Germany are exceptional cases in each of the other groups, showing average levels higher than those of the other countries. Thus, patterns in differences in country average years of education appear to be substantively less clear-cut, although still significant (see *Figure 25* and *Figure 26*).
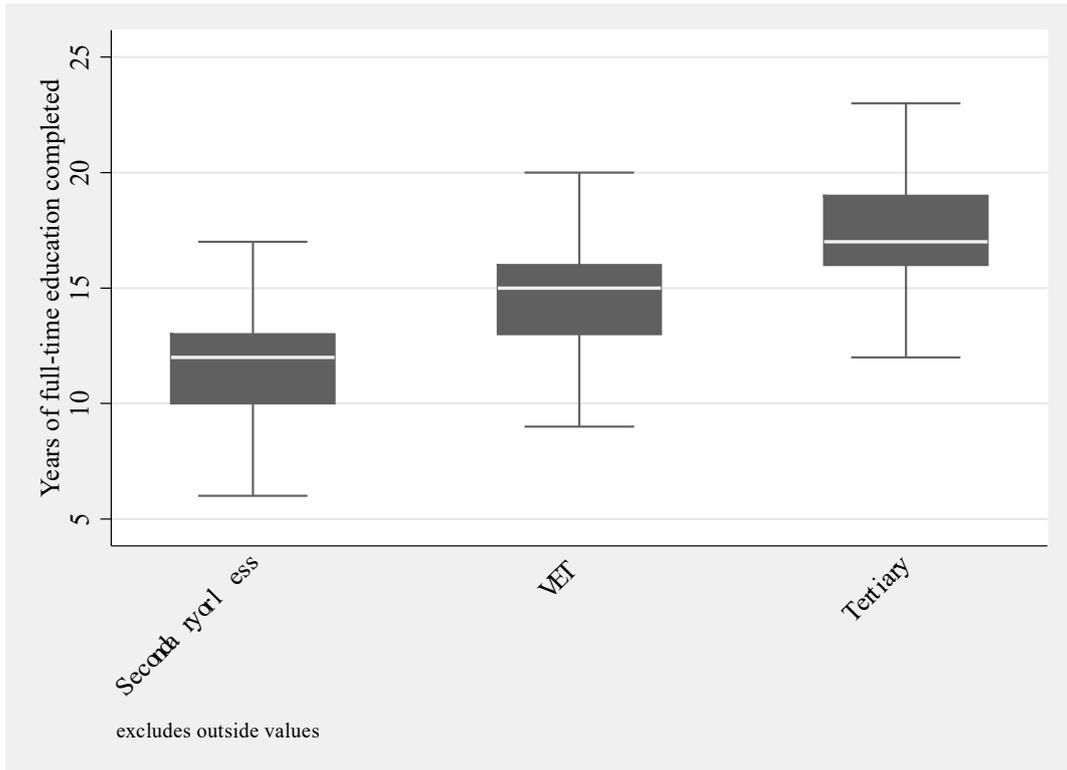
Figure 24. Median years of education shown by educational attainment category (following the simplified ISCED schema) with 25th to 75th percentile boxes and ranges.

Note: These whisker plots show the median value of years of education for each educational category, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, for those with secondary education or less, the IQR is between 10 and 13 years, while the median is 12 years of full-time education completed.
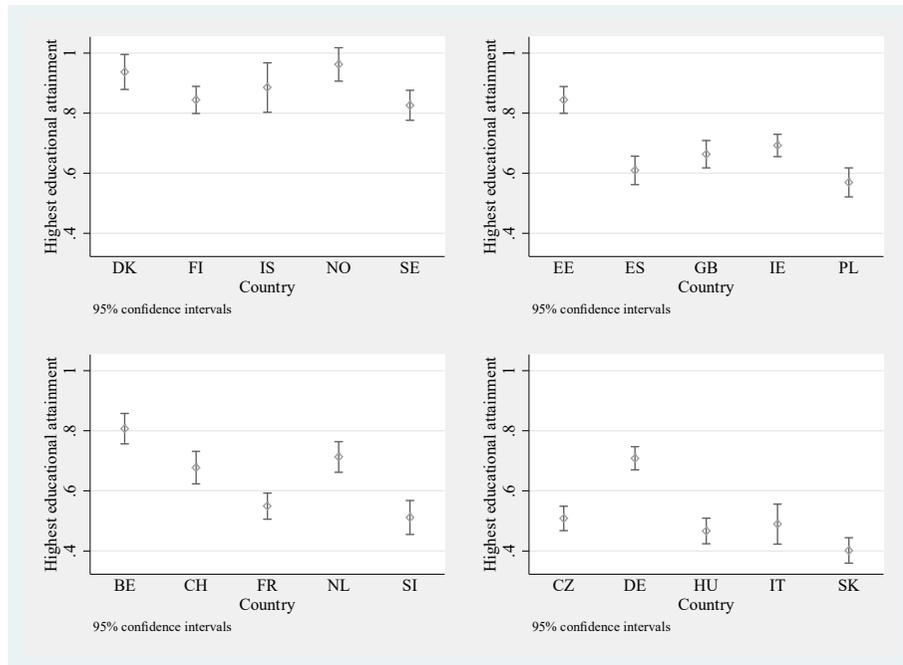
Figure 25. Average highest educational credential by country.
Note: These graphs show the average highest educational attainment by country on the simplified ISCED scale, ranging from 0 (secondary or less) to 2 (tertiary education). These values are meant to be comparative only. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another.
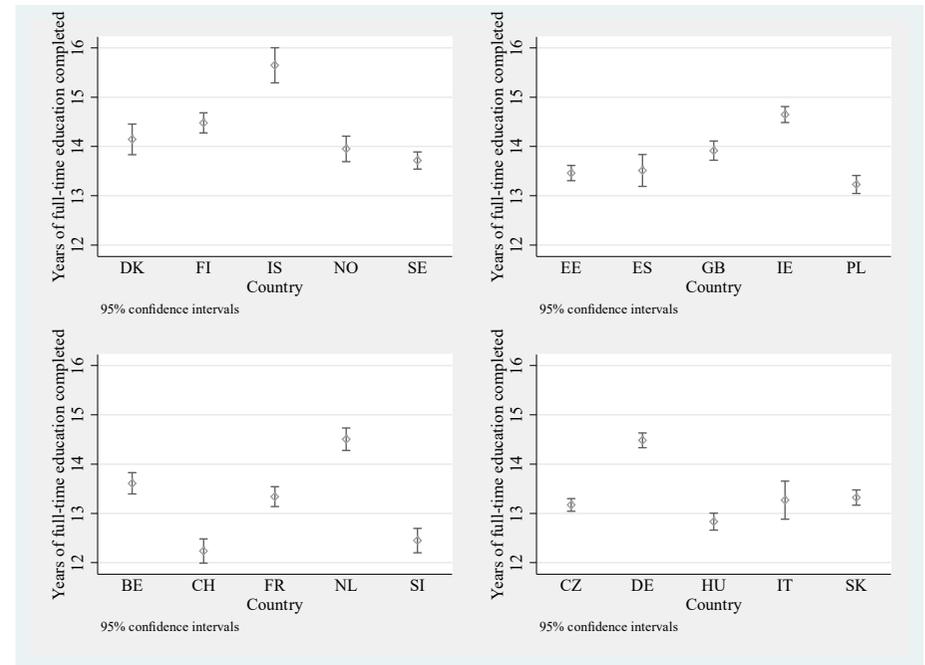
Figure 26. Average years of education by country.
Note: These graphs show the average number of years of education completed by country. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, Belgium and France do not differ significantly in the average number of years of education completed, while Switzerland and France do differ significantly (as does Belgium and Switzerland).

5.1.2. Differences in the distribution of education by groupings

Average levels of education differ significantly between the four groupings identified in the previous section: Average levels of educational attainment and years of education are significantly lower for all groups as compared to the first group, with the exception of years of education for group two (as was illustrated in *Figure 25* and *Figure 26*). However, all other differences are highly significant. The differences are in the expected directions consistent with the macro-data findings outlined earlier.

Indeed, when we examine the percentage of the population within each grouping by highest level of educational attainment category, we see that the first group, comprising the Nordic countries, is again the highest performing (see Table *20*). These countries have the largest percentage of the population with vocational and tertiary education, and the smallest percentage with only secondary education or less. Group two also has a high percentage of respondents with tertiary education, combined with a low percentage of individuals with VET (consistent with the literature; for example, Busemeyer, 2015). The third group shows a higher proportion of respondents with VET, but a lower proportion of respondents with tertiary education, as compared to the first two groups. The final group has the lowest levels of educational attainments: 70% of this group reports secondary education or less as their highest educational attainment. This is again consistent with findings related to educational stratification in the literature (Andersen & van de Werfhorst, 2010).

Most differences between country groupings are significant in post-hoc pairwise comparisons[18] of an analysis of variance and covariance (ANOVA) analysis, which compares the amount of variance within groups and the amount of variance between groups. Only the proportion of the sample with VET as their highest educational credential is not significantly different between group two and group four in these tests. However, all other differences are

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[18] Sidak, Bonferroni, and Scheffe methods all confirmed the significance of the differences.

significant, and – most strikingly – all groups of countries score significantly lower than the first group on both post-secondary educational categories.

Table 20. *Tests of proportions by educational category across groupings*

Group	Secondary or less		VET		Tertiary	
	Proportion	Anova	Proportion	Anova	Proportion	Anova
Group 1	54%	*reference category*	17%	*reference category*	29%	*reference category*
Group 2	62%	0.08*** (0.00)	11%	-0.06*** (0.00)	27%	-0.02 (0.12)
Group 3	64%	0.10*** (0.00)	15%	-0.03* (0.02)	21%	-0.08*** (0.00)
Group 4	70%	0.16*** (0.00)	12%	-0.06*** (0.00)	18%	-0.10*** (0.00)

Source: ESS (2012) Round 6 (version 2.3)
Note: P-values in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The total number of observations is 24212. The sub-sample for group 1 comprises 5094 individuals, for group 2 is 7168 individuals, for group 3 is 5469 individuals, and for group 4 comprises 6481 individuals. Significant differences are shown using the symbols outlined above. For example, all groups have a significantly higher proportion of respondents reporting secondary education or less as their highest credential than the Nordic countries (Group 1), and both Groups 2 and 3 have significantly lower proportions of individuals who have a tertiary degree, as compared to Group 1.

When comparing these rates of educational attainment at the country level, the R^2 are 0.68 and 0.31 for levels of educational attainment and years of education, respectively, in ANOVA analyses (not shown). That is, 68% and 31% of the variance in scores amongst observations by these variables. Thus, we see that these groupings not only differ along the macro-data contained in the analytical dimensions, but also along the averages of the reported individual-level data from the ESS.

5.2. *Predicting levels of educational attainment in country-level regression analyses*

In order to further explore the relationship between the macro-data used in the country groupings and the micro-data used in the analyses that follow, I examine the predictive power of the analytical dimensions to explain the variance in both average levels of highest educational attainment and average years of education completed. As expected, the post-

secondary educational stratification scale, which includes measures of educational attainment, is strongly predictive of average educational attainment. However, surprisingly, the decommodification scale is even more predictive (see *Figure 27*).
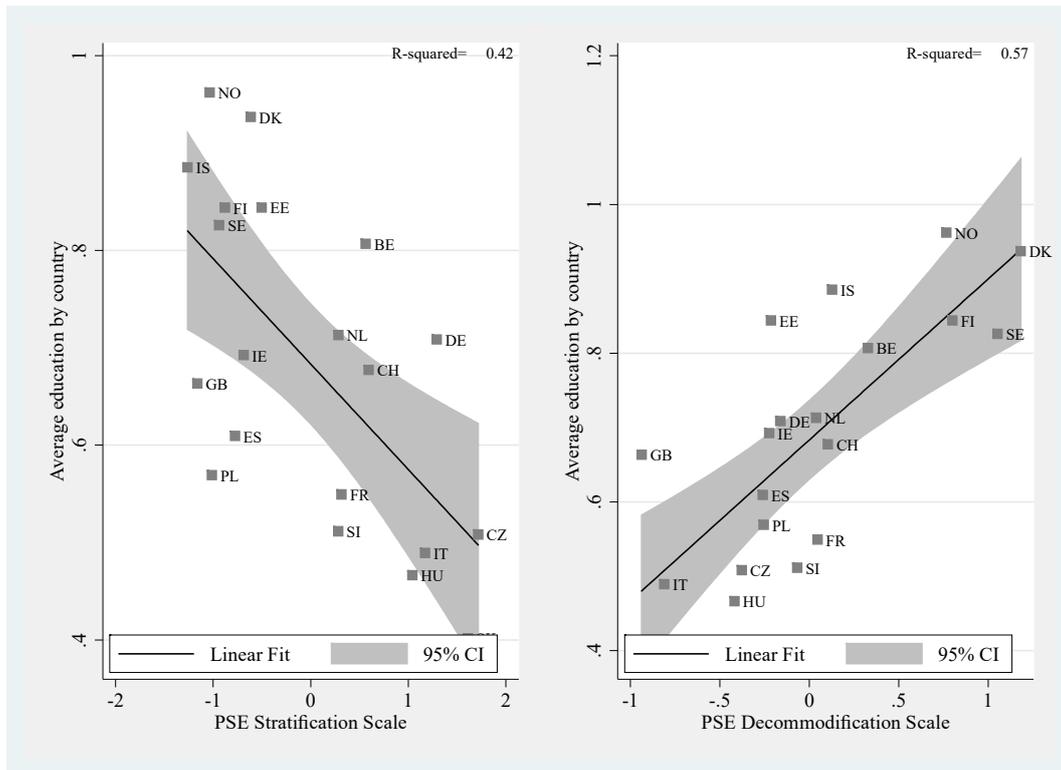

Figure 27. Average education levels regressed on the analytical dimensions.
Note: These scatterplots show the average highest educational credential category by country plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of education that is explained by the analytical dimensions. Here, post-secondary educational stratification significantly predicts average levels of education, explaining 42% of the variation in country averages. Educational decommodification explains an even larger percentage of the variation in country averages: 57%.

The analytical dimensions are less substantively significant in predicting average years of education. This is in part due to the outlier effect of Iceland; however, it is also evident that the trends emerging in the data are less strong than the categorical data, even with the exclusion of this country. However, the patterns that emerge are similar to those seen in the educational attainment analyses above. Thus, educational attainments in terms of credentials appear to differ more consistently along the analytical dimensions of post-secondary educational stratification and decommodification.
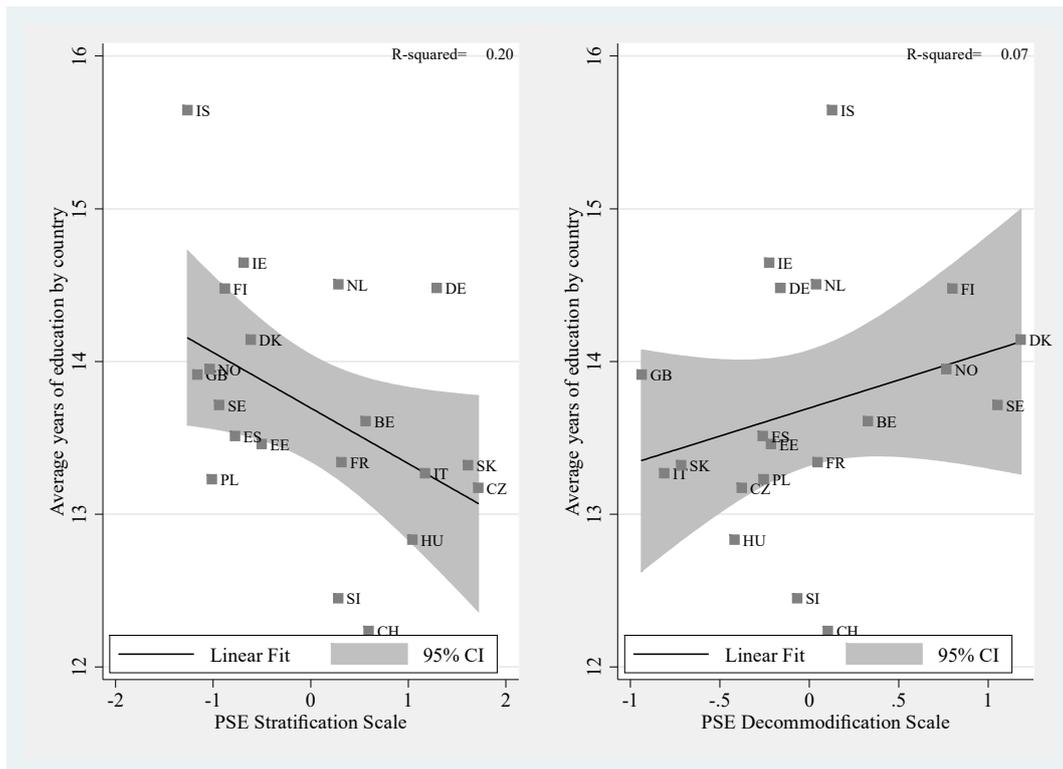
Figure 28. Average years of education regressed on the analytical dimensions.
Note: These scatterplots show the average highest educational credential category by country plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of education that is explained by the analytical dimensions (20% and seven percent, respectively).

6. Final country groupings

The evidence presented thus far suggests that four groupings emerge in the empirical data used in this study. One group comprises the Nordic countries and Iceland, a second group includes the Anglo-Saxon countries with Poland, Spain, and Estonia, a third group contains the core European countries and Slovenia, and a fourth group includes the Central and Eastern European countries along with Germany and Italy. These grouping clearly map onto the welfare and educational regimes described in the previous chapter. Next, the links between these empirical results and the theoretical perspectives found in the literature review in the previous chapter are briefly summarized.

6.1. Combining empirical and theoretical considerations

The first group of countries was described numerous times in the previous chapter under different names: 'Social-democratic,' 'Nordic,' 'Pure comprehensive,' 'Individualized,' 'Universalist,' and 'Mass Public' were all terms used to describe the educational systems in these countries, which are theorized to be more egalitarian, decommodified, and defamilialized than other countries. Indeed, it is found that levels of post-secondary educational stratification were lowest and levels of decommodification highest in these countries. Furthermore, these countries formed strong clusters in all analyses, with the partial exception of Iceland, which is less central to this group.

The third group of countries is also clearly identified in the literature under such headings as: 'Elite,' 'Conservative,' 'Coordinated,' 'Organizational,' and 'Stake-holder dominated.' These countries are usually described as fostering inequalities through historically elite, publically funded tertiary educational systems, combined with separated vocational tracks. These countries cluster fairly consistently across analyses, although they are not always clearly differentiated from the second group. They are characterized by moderate to high post-secondary educational stratification with only low to moderate levels of decommodification. Thus, they differ from the second group on their high levels of stratification and from the fourth on their more moderate levels of decommodification.

The fourth group of countries reflects more recent literature on the grouping of Eastern European countries, showing that the same trends do not emerge in all countries, as mentioned in the last chapter. These countries might be described as 'Post-Soviet,' 'Late-democratic,' 'Late-capitalist,' 'Highly-differentiated,' 'Separated,' 'Qualification-orientated,' or 'Polytechnic.' Although Italy and Germany may seem to be surprising additions to this group, other research has found that these two countries exhibit distinct characteristics when compared to their usual groupings in 'Southern' and 'Conservative' types, respectively.

Germany is an outlier when compared to the other core or 'Conservative' European countries based on poverty rates, particularly amongst the unemployed (Ferragina et al., 2015). Italy shows more elevated levels of social reproduction in terms of the intergenerational transmission of income level than most other European nations except Great Britain, and also shows a strong impact of educational level on both the chances of being employed and average salaries (Dubet et al., 2010; Dubet, Duru-Bellat, & Vérétout, 2011). In fact, the importance of education in predicting employment and income is very high in all of the five countries in this grouping (Dubet et al., 2010, 2011).

Furthermore, three of these countries, Germany, the Czech Republic, and Hungary, are examples of highly differentiated educational systems, where pupils are sorted into vocational or academic training tracks early in secondary school, and have few opportunities to move between tracks after this point (Below, Powell, & Roberts, 2013; Buchmann & Park, 2009). Indeed, research has shown that pupils' placement into these tracks is strongly influenced by socio-economic status, and the schools that they attend in turn largely determine their later educational and occupational outcomes (Below et al., 2013). Overall, it has been found that the institutional arrangements in these highly differentiated educational systems "perpetuate socioeconomic inequalities quite early in the life course, well before students complete their education and enter the labor force" (Buchmann & Park, 2009, p. 245).

Finally, the second (mixed) group is perhaps the least well defined theoretically, or at least at first glance. The Anglophone countries are commonly identified in the literature as 'Liberal,' 'Differentiated,' 'General skills,' 'Market-dominated,' and 'Partially-private.' On the other hand, Poland, Estonia, and Spain are commonly identified as Eastern European and Southern European, or Mediterranean, respectively. However, these countries, and in particular Poland in recent years, have developed extensive private post-secondary branches

in their educational systems, and foster quasi-market principles in the system overall (Kwiek, 2008). These countries' educational systems can be seen as having in common the qualities of having entrepreneurial universities with diversified funding and a strong sense of market competition, growing rates of enrolment across social class boundaries, and an elevated portion of enrolments in private higher education (Kwiek, 2008), as well as their lower levels on both of the empirical analytical dimensions.

The fact that these countries show low levels of stratification overall is a surprising finding considering their low levels of decommodification. This aligns with the findings of Willemse and De Beer (2012), who found that liberal welfare states have comparatively low levels of educational stratification in higher education. Indeed, the introduction of a quasi-market in higher education does not seem to necessarily lead to greater inequalities in outcomes in terms of overall levels of post-secondary educational attainment in a society, but rather the opposite (Kwiek, 2008, 2014). However, all of these countries also exhibit rather high levels of social and income inequality (Dubet et al., 2011). Thus, we see higher levels of educational attainment mixing with greater overall levels of inequality within society as compared to the third group.

Based on this junction between the empirical evidence and theoretical justifications found in the literature, the first group is termed 'Universalist,' the second 'Liberalized,' the third 'Conservative,' and the fourth 'Polytechnic.' These labels are meant to capture important aspects of the post-secondary educational systems, but also the overall social welfare regimes within which they operate. The name 'Universalist' captures the low inequalities and large amounts of public funding in the educational systems of the countries comprising the first group. The name 'Liberalized' points to the market forces at work in the educational systems of the countries in the second group, which does not result in high stratification, but does necessitate high individual-level financial investment. The name

'Conservative' highlights the stratified nature of the educational systems in the countries in this grouping, which provide a fairly high level of funding while still perpetuating significant inequalities in access and attainment. Finally, the name 'Polytechnic' emphasizes the high stratification and vocational specialization found in these educational systems and countries, which also share a fairly recent history of non-democratic government and strong (though evolving) educational inequalities. These groupings are designated as 'Educational welfare regimes' (EWR) to emphasize that their composition is focused on characteristics of post-secondary educational systems. In this, this study follows the lead of Buechtemann and Verdier (1998), who used the term "Education and training regimes" when categorizing individual countries. However, in this case, it was decided that including 'welfare' in the label was informative, because it emphasizes that these educational systems form part of an overall social welfare complex, potentially 'trading off' or complementing other parts of the welfare state in these countries. The educational welfare regime groupings utilized in this study are summarized in Table *21* and *Figure 29*.

Table 21. *'Educational welfare regime' (EWR) groupings used in the study*

Educational welfare regime	Countries	Stratification	Decommodification
Universalist	Denmark; Finland; Norway; Sweden; Iceland	low	high
Liberalized	Ireland; Poland; Spain; Estonia; Great Britain	low	low
Conservative	Belgium; Netherlands; Switzerland; France; Slovenia	moderate/high	moderate
Polytechnic	Czech Republic; Hungary; Slovakia; Italy; Germany	high	low

*Note:* Total country sample size is 20 countries.
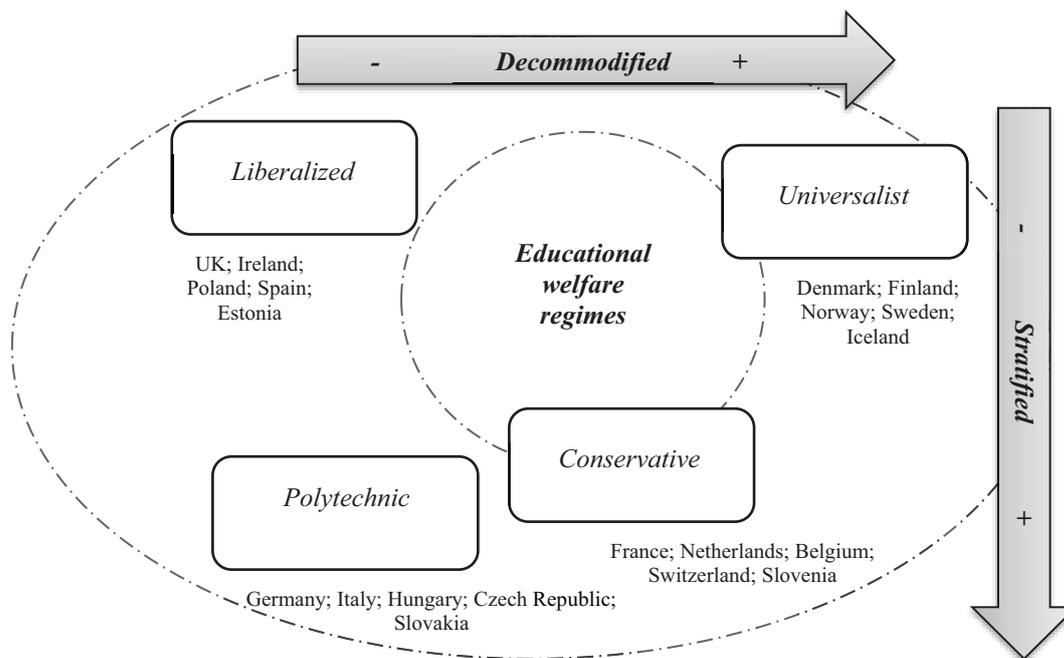
Figure 29. 'Educational welfare regime' (EWR) groupings used in the study.
Note: This schema shows the most common country groupings occurring across the four empirical techniques analyzing educational stratification and decommodification across countries summarized in this chapter.

6.2. Limitations of a grouping approach

There are, however, inherent limitations to any approach that combines multiple countries into larger groups, or even different educational systems within a country into a 'national system.' Although the present study uses an inductive empirical approach to grouping countries, rather than a deductive 'ideal-typical' approach, an example of which was described in the previous chapter, that is not to say that the groupings necessarily provide an accurate reflection of the functioning of the real world. Indeed, this approach has several potential pitfalls: There is both the danger of "a 'fallacy of division', where it is claimed that something that is true of a whole must also be true of all or some of its parts" and the opposite danger of wiping out individual differences within a larger grouping (Rees, 2013, p. 209). The groupings constructed here have, in essence, 'averaged out' many of the real complexities that exist in these educational systems, welfare states, and countries. Thus, the 'averaged' groupings that represent certain characteristics of the educational systems of the

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countries within the grouping will not provide a completely accurate picture of how education functions in each of those countries (Rees, 2013).

7.   Conclusion

7.1. *Hypotheses*

Based on the fact that the educational welfare regimes groupings found here overlap substantially with those found in the literature, and that welfare regimes generally have been found to be linked to overall levels of well-being, it is hypothesized that country-level variables related to educational stratification and decommodification are associated with overall well-being (H_8). Indeed, if we view education as part of the welfare state complex, charged with the (re)distribution of social welfare, it seems only logical that education may have an important role to play in determining that same welfare. Thus, based on the connection between educational inequality and overall societal patterns of inequality, well-being is predicted to be greater where educational stratification is lower and educational decommodification is higher. Furthermore, higher overall levels of education are predicted to be linked to greater overall well-being, based on evidence outlined in Chapter 2 connecting an educated populace with better average outcomes in multiple life domains. These relationships are illustrated in the schema presented in the introduction and reproduced in *Figure 30* below.
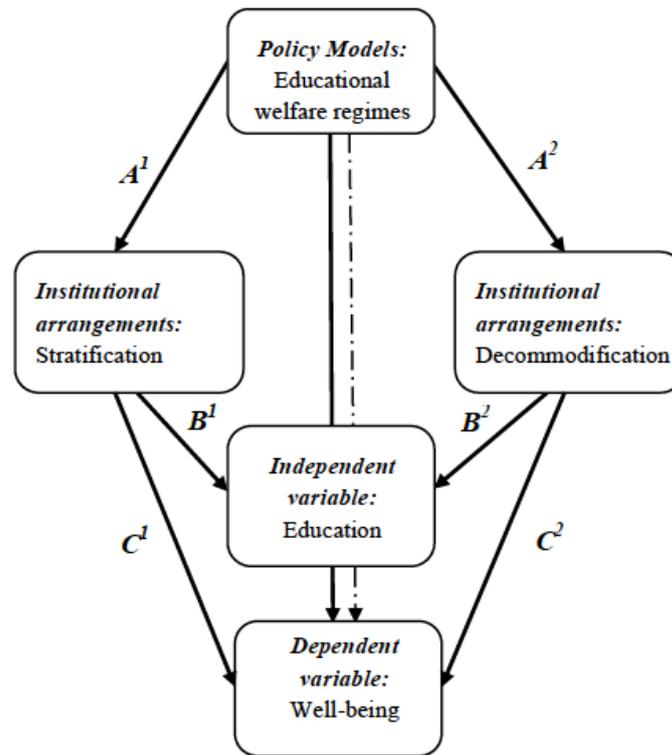
Figure 30. The education-well-being association in international institutional comparative context (adapted from Mau (2004) and Vergolini (2011)).
Note: This schema shows the impact of the educational welfare regimes grouped in this study on educational institutional arrangements related to stratification and decommodification, which in turn shape individual and societal educational outcomes. They may also directly impact levels of well-being (arrows C^1 and C^2).

The final hypotheses of this study assert that levels of stratification and decommodification in post-secondary education are also linked to greater equality in well-being outcomes (H_{10}). Thus, where post-secondary educational stratification is lower and decommodification higher, it is probable that there is less dispersion and greater equality in well-being outcomes. In line with this, there should be weaker associations between educational attainments and well-being at the individual level where stratification is lower and decommodification higher (H_{11}).

7.2. *Educational welfare regimes as an analytical framework*

This study thus uses the typology of countries developed here through the analytical taxonomy of post-secondary educational stratification and decommodification and explored

empirically through various descriptive analytical grouping techniques to test the importance of institutional context in determining overall levels of well-being and the relationship between education and well-being in European countries. The first group, the 'Universalist' countries, with low levels of educational stratification and higher levels of educational decommodification should have higher levels of well-being at the country level and less dispersion in well-being outcomes at the individual level, as well as less inequalities in well-being between educational attainment levels. Perhaps somewhat unintuitively, there is likely to be less of a 'well-being advantage' for the highly educated in these contexts. As Ono and Lee (2013) point out, "even within the social democratic welfare state, some persons benefit more than do others" (p. 792).

On the other hand, the third and fourth groupings of 'Conservative' and 'Polytechnic' countries will likely have lower overall levels of well-being and more elevated levels of dispersion in well-being scores. This is hypothesized to be due to their higher levels of educational stratification, as "highly stratified education systems with strong vocational components, extensive tracking, and early selection into tracks tend to show a stronger relationship between education and occupation," likely also restricting other important outcomes (Andersen & van de Werfhorst, 2010, p. 338). (See Table *22* for the list of countries within each of these groups.) Furthermore, with the high educational stratification found in these countries, educational credentials are likely to play a more important role in shaping individual-level well-being outcomes.

The final group, the 'Liberalized' countries, is difficult to pigeonhole: Although levels of post-secondary educational stratification are low, overall inequalities are higher, and decommodification is also low. Thus, it would seem that the societal advantages of this low stratification might be cancelled out by these other factors. However, it is also possible that educational decommodification and stratification do not play equal roles in shaping social

well-being. These effects remain to be explored in the final chapter, where the two central arguments described in the introduction continue to guide the empirical analyses. Thus, the assumption is made that education affects individuals' access to material (e.g. employment, wages) and non-material (e.g. skills, knowledge) resources in multiple life spheres that shape individual well-being, and the argument that societal institutional arrangements shape the social conditions that generate these individual outcomes, as well as the distribution of these outcomes, is tested (Beckfield et al., 2013).

Table 22. *'Educational welfare regime' (EWR) groupings*

Educational welfare regime	Countries	Abbreviation
Universalist	Denmark; Finland; Norway; Sweden; Iceland	*Univ.*
Liberalized	Ireland; UK; Poland; Spain; Estonia	*Lib.*
Conservative	Belgium; Netherlands; Switzerland; France; Slovenia	*Cons.*
Polytechnic	Czech Republic; Hungary; Slovakia; Italy; Germany	*Poly.*

Note: Total country sample size is 20 countries.

Part III
An education gradient in well-being?
Empirical investigations

Chapter 5. Well-being achievement in Europe

1.   *Résumé en français*

La variable centrale dépendante de cette étude est le bien-être, et ce dernier a été défini d'une multitude de façons dans la littérature existante. Cette recherche étant basée sur le cadre théorique de l'approche par les capabilités, une démarche utilisant des variables tant subjectives qu'objectives et acceptées universellement (parmi des cultures, religions, et visions du monde diverses) était jugée nécessaire. Par conséquent, des études dans la littérature sur les capabilités et la littérature du bien-être défini plus largement ont été examinées dans le Chapitre 2. De cette revue de la littérature, le concept de l'*épanouissement* a émergé comme un pont théorique et empirique entre l'approche par les capabilités et d'autres approches *eudaimonic* du bien-être. Fondée sur ces travaux théoriques existants de la conceptualisation du bien-être, une mesure de l'*épanouissement* basée sur la liste de Nussbaum (2011) des capabilités humaines centrales a émergé comme la mesure la plus adaptée pour cette étude.

Ce chapitre expose les méthodes utilisées pour créer la mesure dépendante de l'*épanouissement* informée par l'approche par les capabilités afin de capturer le bien-être dans son sens plus holistique de qualité de vie. Cet objectif est accompli en utilisant des outils théoriques et statistiques : les mesures sont éclairées par les capabilités humaines centrales de Nussbaum et testées à l'aide des coefficients alpha de Cronbach, des coefficients de corrélation polychoriques (au lieu des coefficients de corrélation de Pearson), et des analyses factorielles exploratoires et confirmatoires. Un « *construct* » global de l'*épanouissement*, ainsi que deux composantes – le *bien-être psychosocial* et « *thriving* » (ou le développement personnel) –sont confirmés statistiquement dans ces analyses.

Ensuite, les niveaux de l'*épanouissement* à travers des catégories éducatives et des pays sont comparés de façon descriptive en analysant les niveaux moyens et les écart-types (ÉT), ou les médianes accompagnées de l'intervalle interquartile (IIQ), selon le cas. Le bien-être est aussi comparé à travers les « régimes éducatifs du bien-être social », les groupements des pays par les caractéristiques éducatives développées dans le chapitre précédent. Il est trouvé que le bien-être est de loin le plus élevé dans les pays dits « Universalistes », et le moindre dans les pays « Polytechniques ». Ces mêmes pays montrent aussi des niveaux d'inégalités du bien-être respectivement le moins et le plus élevé. Il n'y a donc pas de contradiction entre « efficacité » et égalité en ce qui concerne le bien-être sociétal dans l'échantillon de pays considéré dans cette étude.

2. Summary

The multi-dimensional phenomenon taken as the central dependent variable of this study is well-being, which has been defined in a plethora of different ways. Based on the theoretical framework of the capability approach, an approach utilizing varied subjective and objective measures of human outcomes valued across different cultures, religions, and world-views was deemed necessary. Thus, work from both the capabilities literature and the broader well-being literature was examined in Chapter 2, and the concept of *flourishing* emerged as a useful bridge between the capability approach and other eudaimonic approaches. Based on this existing theoretical work, a capability-informed measure of *flourishing* was determined to be the optimal measure for this study.

The present chapter outlines the methods used to create the capability-informed measure of *flourishing* to capture well-being in its more holistic sense of quality of life as defined within the capabilities approach. This is accomplished using both theoretical and statistical tools: the measures are informed by Nussbaum's list of central capabilities and

tested using Cronbach's alpha, polychoric correlations, and exploratory and confirmatory factor analyses. Following these analyses, levels of *flourishing* are compared descriptively across educational categories and countries by examining both the overall average and educational range in well-being at the country level. Levels of well-being are also contrasted across educational welfare regimes (EWR), the country groupings by educational system characteristics developed in the previous chapter.

Finally, these preliminary bivariate results are compared across measures of well-being, contrasting *eudaimonic* and hedonic well-being operationalizations. Inspired by research highlighting differences in 'objective' and 'subjective' interpretations of outcomes (Jaoul-Grammare & Lemistre, 2015), this approach allows a unique glimpse into how general cognitive evaluations, emotional affect, and 'central capability' attainment differ across educational categories. This dependent-variable comparative approach (Becchetti et al., 2016) concludes the chapter, and is continued in the robustness and sensitivity checks of the final chapter.

3. Measuring well-being

3.1. Data and Sample

As previously mentioned, this study uses the sixth wave (2012) of the ESS, a survey that focuses specifically on personal and social well-being. It also captures important socio-demographic information, including prior education, occupational status, and family make-up. To study a comparable group of individuals across 20 countries, the study sample for all analyses is limited to respondents who are working age adults, aged 25 to 64 at the time of being surveyed.

3.2. Hedonic measurement approaches

Hedonic approaches, as outlined in Chapter 2, focus on individuals' perceptions of their lives as a whole or on their emotional states, typically using scales of satisfaction or agreement. For example, in the ESS, overall satisfaction with life is measured with the question: "All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied" (ESS, 2014, p. 8). This is a global measure, gauging overall general well-being, but provides little information on how well-being is composed in individual domains, and thus makes specific recommendations for increasing individual well-being or well-being equality difficult to make.

More detailed hedonic measures, such as 'subjective well-being' have been extensively studied in recent years. A multi-dimensional construct of subjective well-being captures individual feeling and functioning (Diener, 2000; Diener et al., 1999). Beyond only a consideration of individuals' evaluations of their satisfaction with life, subjective well-being includes measures of positive and negative emotion, as captured by feelings of happiness and sadness (Diener et al., 2010). Thus, emotional affect and balance of affect are also captured. However, once again, specific life domains are not addressed. (These hedonic approaches are examined empirically at the end of this chapter.)

3.3. Eudaimonic measurement approaches

Eudaimonic approaches attempt to 'objectify' well-being through a selection of individual areas of well-being, and measures include behaviours as well as emotions and cognitive evaluations. One such example is found in the research of a team working with the European Social Survey (ESS) Round 3 (2006) supplementary well-being module, who created a measurement scheme that closely aligns with the other 'flourishing' models outlined in

Chapter 2 using the same approach as Keyes (2002), combining hedonic and eudaimonic approaches into a single, multi-dimensional measure (Huppert & So, 2011; Huppert et al., 2009). Huppert and So (2011) used thresholds to determine those who are (and who are not) flourishing, outlining the levels of flourishing across countries in Europe.

A recent article adapted their measure, examining the link between eudaimonic and hedonic well-being and educational attainments in Europe (Jongbloed, 2018). However, from a capability approach perspective, it is useful both to re-orient the components of 'flourishing' to capture the basic ingredients of a human life of quality and to include indicators that reflect objective conditions as well as individual perceptions, as discussed in Chapter 2 *vis-à-vis* the limitations of subjective indicators. Nevertheless, this methodology provides a fruitful empirical example of how a well-being scale including diverse indicators can be constructed and levels of well-being measured. Next, a novel conceptualization of well-being as a capability-informed measure of *flourishing* is developed.

4. Combining approaches: Empirical strategy meets theoretical considerations

The conceptualization of well-being used in this study is in accordance with Haybron's (2008) argument that "there is more to human flourishing or well-being than simply being happy" (p. 21). Thus, this line of research attempts to go beyond measuring only psychological states, and towards incorporating more 'objective' criteria. In this attempt, existing *eudaimonic* 'flourishing' measures can be usefully expanded to meet the theoretical demands of the capability approach. This expansion necessitates a change in several measures, and includes a stronger focus on measures of (self-reported) behaviour and (perceived) objective life outcomes.

This approach is consistent with current trends in well-being research. There is now a push to go beyond general, single-item measures towards multi-item scales capturing well-

being across multiple domains (Becchetti et al., 2016; Huppert & So, 2011). This allows for both less 'noise' and less cultural bias in reporting (Becchetti et al., 2016). Furthermore, interpretation is less abstract and more closely reflects objective life experiences and circumstances using this 'sub-component' approach (Becchetti et al., 2016).

The measures used here, although informed by the capability approach, are more accurately measures of *functionings*. As explained in Chapter 2, it is difficult to measure capabilities themselves. Furthermore, this is not necessarily the best approach to take, even based on Sen's argumentation within the capability approach (Fleurbaey, 2006). Thus, based on a rich literature, the present study has made several empirical choices regarding the operationalization of well-being: the measure employed here taps into individual values and preferences by using subjective scales (Schokkaert, 2007), takes into account achievements rather than capabilities as such (Fleurbaey, 2006), places value on being both informed and autonomous in one's well-being (Haybron, 2008), and bases the domains of well-being on 'objective' criteria (Nussbaum, 2008).

In order to include items capturing the maximum number of 'central capabilities' possible within an international comparative framework, this study uses ESS data drawn from the sixth wave (2012) of the survey, which included a rotating module adapted from the third wave that focused specifically on personal and social well-being. It includes multiple measures relevant to most of Nussbaum's central capabilities, as well as numerous other aspects of eudaimonic well-being. It also includes measures of education, health, income level, occupational status, and family make-up, as well as many other potentially important individual-level control variables.

Items were chosen that mapped onto the descriptions of the 'central capabilities.' Some match the descriptions very closely, such as Physical health, while others are less closely comparable, such as Security and Control over one's environment, and some were not

at all possible with this dataset, such as Life and Other species (see Table *23*). Although two indicators were found for each central capability, one was chosen which best captured the meaning behind the central capability, as well as showing sufficient variability in responses (i.e., not everyone responded in the same manner). These final item choices are described in the next section.

Table 23. *Items capturing the ten central capabilities in the ESS Wave 6 (2012) well-being dataset*

Nussbaum's central human capabilities	Description of Nussbaum's original *central capability*	The capability-informed measure of *flourishing*	ESS items	*Variable name*	*M*	*SD*	*Missing*
1. Life	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
2. Bodily Health	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.	1. Physical health	(1) How is your health in general? 1-5; very good to very bad, *reversed*	health	3.82	0.86	<0.05%
			(2) Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem? Is that a lot or to some extent? 1-3; yes, a lot to no	hlthhmp	2.74	0.54	<0.05%
3. Bodily Integrity	Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.	2. Security	(1) How difficult or easy do you find it to deal with important problems that come up in your life? 0-10; extremely difficult to extremely easy	deaimpp	5.84	2.07	<0.05%
			(2) How safe do you – or would you - feel walking alone in this area after dark? 1-4; very safe to very unsafe	aesfdrk	1.95	0.79	<0.05%
4. Senses, Imagination, and Thought	Being able to use the senses, to imagine, think, and reason – and to do these things in a ''truly human'' way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid nonbeneficial pain.	3. Development of potential	(1) Please tell me to what extent you learn new things in your life. 0-6; not at all to a great deal	lrnntlf	4.37	1.30	<0.05%
			(2) In my daily life I get very little chance to show how capable I am. 1-5; agree strongly to disagree strongly	lchshcp	3.23	1.11	<0.05%

5. Emotions	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)	4. Emotional well-being	(1) Taking all things together, how happy would you say you are? 0-10; extremely unhappy to extremely happy	happy	7.38	1.89	<0.05%
			(2) I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt sad? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	fltsd	3.44	0.69	<0.05%
6. Practical Reason	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)	5. Personal autonomy	(1) I feel I am free to decide for myself how to live my life. 1-5; agree strongly to disagree strongly, *reversed*	dclvlf	4.00	0.90	<0.05%
			(2) It is important to me to make my own decisions and be free. 1-6; very much like me to not at all like me, *reversed*	impfree	4.89	1.08	<1.00%
7. Affiliation	A. Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)	6. Positive relationships	(1) I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt lonely? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	fltlnl	3.61	0.70	<0.05%
			(2) To what extent do you receive help and support from people you are close to when you need it? 0-6; not at all to completely	rehlppl	5.00	1.24	<0.05%
	B. Having the social bases of self-respect and nonhumiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of nondiscrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin.	7. Dignity	(1) To what extent do you feel that people treat you with respect? 0-6; not at all to a great deal	trtrsp	4.50	1.17	<1.00%
			(2) Would you describe yourself as being a member of a group that is discriminated against in this country? 1-2; yes to no, *reversed*	dscrgrp	0.08	0.27	<1.00%
8. Other Species	Being able to live with concern for and in relation to animals, plants, and the world of nature.	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
9. Play	Being able to laugh, to play, to enjoy recreational	8. Play	(1) I will now read out a list of the	enjlf	2.88	0.90	<0.05%

					M	SD	%
	activities.		ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you enjoyed life? 1-4; none or almost none of the time to all or almost all of the time				
			(2) To what extent do you make time to do the things you really want to do? 0-10; not at all to completely	tmdotwa	6.25	2.27	<0.05%
10. Control Over One's Environment	A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.	9. Accomplish-ment	(1) I generally feel that what I do in my life is valuable and worthwhile. 1-5; agree strongly to disagree strongly; *reversed*	dngval	4.02	0.69	<0.05%
			(2) Most days I feel a sense of accomplishment from what I do. 1-5; agree strongly to disagree strongly; *reversed*	accdng	3.82	0.82	<0.05%
	B. Material. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason, and entering into meaningful relationships of mutual recognition with other workers.	10. Resilience	(1) To what extent do you feel that you have a sense of direction in your life? 0-10; not at all to completely	sedirlf	6.96	2.11	<0.05%
			(2) When things go wrong in my life it generally takes me a long time to get back to normal. 1-5; agree strongly to disagree strongly	wrbknrm	3.39	1.07	<0.05%

Note: Reproduced from Nussbaum (2001, pp. 87-88; 2003, pp. 41-42; 2011, pp. 34-36) and the *European Social Survey*. "*NA*" stands for "not available," to signify that there are no relevant items in the dataset, and "*reversed*" signifies that the item values were recoded in the opposing order in order to be logically coherent with the measure. The item means (*M*), standard deviations (*SD*), and percentages (%) were computed using design weights in combination with population size weights.

4.1. Construction of the composite indicator

The capability-informed measure of *flourishing* is defined here as the ability to live a life that one has reason to value by attaining access to the key ingredients of a life of quality, including physical health, personal security, development of one's potential, emotional well-being, personal autonomy, positive relationships, dignity, play, accomplishment, and resilience. The exact manner in which these valued capabilities are realized by different respondents is open to individuality, with measures that allow for varying perceptions of their realization (and therefore subjectivity). A number of reversed items were also included in order to avoid bias in responses and patterns of responses (Ivens, 2007).

The capability-informed measure of flourishing is detailed in Table *24*. Comparing this measure, theoretically driven by Nussbaum's list of central capabilities, with the '*eudaimonic* well-being' measures discussed above and in Chapter 2, one notices firstly that the focus has shifted from emotional states to (self-reported interpretations of) objective circumstances. However, not all of the capabilities outlined by Nussbaum are measured in this dataset, and some have been significantly adapted, such as "Control over one's environment." These changes were instigated by two considerations: (a) the availability of relevant indicators within the survey instrument; and (b) other aspects of *flourishing* shown to be important in the literature and less emphasized in the capability approach.

Nussbaum's original list includes the following capabilities: 1) Life, by being able to live a life of normal length; 2) Bodily Health, by being able to have good health; 3) Bodily Integrity, by being able to move freely and to be secure; 4) Senses, Imagination, and Thought, by being able to use the senses, to imagine, think, and reason; 5) Emotions, by being able to have attachments and not have one's emotional development blighted by fear and anxiety; 6) Practical Reason, by being able to form a conception of the good and to engage in critical reflection about the planning of one's life; 7) Affiliation, by being able to

live with and toward others, and being able to be treated as a dignified being whose worth is equal to that of others; 8) Other Species, by being able to live with concern for and in relation to animals, plants, and the world of nature; 9) Play, by being able to laugh, to play, to enjoy recreational activities; and 10) Control Over One's Environment, by being able to participate effectively in political choices that govern one's life, and being able to hold property and having the right to seek employment on an equal basis with other workers (Nussbaum, 2001, pp. 87-88; 2003, pp. 41-42; 2011, pp. 34-36).

The dimensions included in the new measure are: 1) Physical health, measured by a question asking the respondents about their health in general on a scale of one to five; 2) Security, measured by a question asking the respondents about how difficult or easy it is for them to deal with important problems in life on a scale of zero to 10; 3) Development of potential, measured by a question asking the respondents about the extent to which they learn new things in their daily lives on a scale of zero to six; 4) Emotional well-being, measured by a question asking respondents how much of the time during the past week they felt sad on a scale of one to four (*reversed*); 5) Personal autonomy, measured by a question asking respondents to what extent they feel that they are free to decide how to live their lives on a scale of one to five; 6) Positive relationships, measured by a question asking respondents how much of the time during the past week they felt lonely on a scale of one to four (*reversed*); 7) Dignity, measured by a question asking respondents to what extent they feel that people treat them with respect on a scale of zero to six; 8) Play, measured by a question asking respondents how much of the time during the past week they enjoyed their lives on a scale for one to four; 9) Accomplishment, measured by a question asking respondents if they feel a sense of accomplishment from what they do most days on a scale from one to five; and 10) Resilience, measured by a question asking respondents if it generally takes them a long time to get back to normal after things go wrong on a scale of one to five (*reversed*).

Thus, we see that the two central capabilities without relevant measures have been eliminated, that is, Life and Other species. The first can be generally assumed to be more or less available to all of the population in European countries. The second would be extremely interesting to analyze, but was not possible here. The first 8 dimensions closely reflect Nussbaum's list, and have also shown to be important within the literature, with the partial exception of Security: the more objective measure of this capability, "feeling safe," varied strongly between countries and by income bracket. It appeared that this item might more closely capture neighbourhood characteristics than individual differences in security across multiple domains of life. Thus, the question regarding being able to deal with important problems in life was chosen to capture security in a broader sense, especially as informed by the theories of *flourishing* outlined in Chapter 2.

The last two dimensions also depart from the list, due the fact that measures of political participation (such as voting) and employment were measured in terms of general satisfaction in the available datasets, and did not tap into notions of being able to achieve valued outcomes or individuals' judgments of their actions and behaviours. Measures such as voting, having confidence in political structures, and being satisfied with one's work do correlate with education; however, satisfaction may not reflect the ability to have a minimum standard of good treatment in these domains. Furthermore, these again vary strongly between regional and country contexts.

Thus, in place of this last central capability, two measures drawn from the *flourishing* literature have been added, which map onto people's sense that they gain a sense of accomplishment from what they do most days and are able to recover when things go wrong. These indicators also capture the larger sense behind Nussbaum's list item "Control Over One's Environment," mapping onto the individuals' sense that they control their lives and accomplish tasks worthy of a human being. The first links to a sense of purpose in life and

achieving valued goals, which is often included in flourishing measures with similar operationalizations (Hone et al., 2014). The second is also often operationalized in a similar manner in the flourishing literature, and is meant to capture "environmental mastery" (Keyes, 2002; Ryff & Singer, 2006). Of note, these tasks may not form a part of paid work, but home or volunteer tasks as well, which are certainly valued life choices for many people.

Consequently, the final data-informed theoretical dimensions of *flourishing* are: Physical health, Security, Development of potential, Emotional well-being, Personal autonomy, Positive relationships, Dignity, Play, Accomplishment, and Resilience. Notably, this list aligns quite closely with the theoretical conceptualizations of *flourishing* outlined in the previous chapter. In particular, this list rejoins the central capabilities with the work of Ryff (Ryff & Singer, 1998, 2006). The dimensions of autonomy, personal growth, and environmental mastery find common theoretical and empirical ground between the two, as does the focus on physical health (Ryff & Singer, 1998). The inclusion of positive relationships and accomplishment aligns with most approaches to *eudaimonic* well-being, including Seligman's theoretical conceptualization of flourishing as "PERMA" (Seligman, 2011).

Emotional well-being in terms of the absence of negative emotion is found across the subjective well-being literature (Diener, 2000; Diener et al., 1999), and Play is often included as well, operationalized as "pleasant" emotions or experiences and feeling "engaged and interested" (Diener et al., 2010). Physical health and security are central notions in quality of life studies (Michalos, 2004). Resilience has been underscored as important to well-being in the psychological research in relation to the concept of "grit" (Duckworth & Gross, 2014; Duckworth & Quinn, 2009). Dignity is less often found in the literature on well-being, but overlaps theoretically with the notion of positive social relationships both inside and outside of work, and has been measured as such in well-being scales (Diener et al., 2010).

Hence, we see that Nussbaum's central capabilities can be theoretically and empirically merged with the 'flourishing' and *eudaimonic* well-being literature to create a measure that attempts to tap into self-reported behaviours that are general enough to allow for large differences in personal values and ways of living. This marriage of subjective and objective approaches is open to criticisms from both sides, but is firmly rooted in a large body of research that has validated the inter-individual comparability of these operationalizations of the individual dimensions (as discussed in Chapter 2). The next aim of the present research is to create a scale measure of "capability-informed *flourishing*" that combines these items into an overall construct of well-being.

Table 24. *Items chosen for the capability-informed measure of flourishing*

The capability-informed measure of *flourishing*	ESS items	*Variable name*	*M*	*SD*	*Missing*
1. Physical health	How is your health in general? 1-5; very good to very bad, *reversed*	health	3.82	0.86	<0.05%
2. Security	How difficult or easy do you find it to deal with important problems that come up in your life? 0-10; extremely difficult to extremely easy	deaimpp	5.84	2.07	<0.05%
3. Development of potential	Please tell me to what extent you learn new things in your life. 0-6; not at all to a great deal	lrnntlf	4.37	1.30	<0.05%
4. Emotional well-being	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt sad? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	fltsd	3.44	0.69	<0.05%
5. Personal autonomy	I feel I am free to decide for myself how to live my life. 1-5; agree strongly to disagree strongly, *reversed*	dclvlf	4.00	0.90	<0.05%
6. Positive relationships	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt lonely? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	fltlnl	3.61	0.70	<0.05%
7. Dignity	To what extent do you feel that people treat you with respect? 0-6; not at all to a great deal	trtrsp	4.50	1.17	<1.00%
8. Play	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you enjoyed life? 1-4; none or almost none of the time to all or almost all of the time	enjlf	2.88	0.90	<0.05%
9. Accomplishment	Most days I feel a sense of accomplishment from what I do. 1-5; agree strongly to disagree strongly; *reversed*	accdng	3.82	0.82	<0.05%
10. Resilience	When things go wrong in my life it generally takes me a long time to get back to normal. 1-5; agree strongly to disagree strongly	wrbknrm	3.39	1.07	<0.05%

Source: ESS6-2012 (Edition 2.3)

Note: Items reproduced from the *European Social Survey*. "*Reversed*" signifies that the item values were recoded in the opposing order in order to be logically coherent with the measure. The item means (*M*), standard deviations (*SD*), and percentages (%) were computed using design weights in combination with population size weight.

4.2. Empirical methods

One of the aims of this study is to create a measure of the construct of "capability-informed *flourishing*". This necessitates a structural analysis of the items found to be theoretically relevant to this construct. In order to this, factor analyses are used, which are procedures that both identify interrelationships among observed variables and group them into dimensions or *factors* with common characteristics (Pett, Lackey, & Sullivan, 2003). A factor is a "linear combination or cluster of related observed variables that represents a specific underlying dimension of a construct" (Pett et al., 2003, p. 3).

Exploratory factor analyses help the researcher to determine inductively how many factors are necessary to explain the interrelationships between items, without requiring an *a priori* judgment. Decisions about how many factors to retain are made based on Eigen-values, which indicate how much total item variance is explained by a given component or factor, and the cumulative percent of explained variance extracted by successive factors (Pett et al., 2003). Different extraction procedures can be used in factor analyses. A common method is principal component analysis (PCA), which uses common, specific, and error variance components to summarize the interrelationships between variables, assuming that "*all* of the variance in an item can be explained by the extracted factors" (Pett et al., 2003, p. 91). A disadvantage of this approach is therefore that errors of measurement are not separated out from the shared variance. In contrast, common factor analysis generates factors from the common, and not the total, variance (Pett et al., 2003).

One such method is "principal axis factoring" (PAF), which is an iterative approach, and combines the decomposition strategies of PCA with the common factor analysis advantage of using the squared multiple correlation coefficient (R^2) to estimate item communalities and therefore common variance (Pett et al., 2003). In this approach, the Eigen-values represent "estimates of the amount of *common variance* among the items that is

explained by the particular common factor" (Pett et al., 2003, p. 110). Decisions about how many factors to retain are made as described above.

It is also important to emphasize that the factors must also make *substantive* or theoretical sense. *Factor rotation* is used to achieve a simple structure that is easier to meaningfully interpret. Rotation is the process of "turning the reference axes of the factors about their origin," which can be *orthogonal*, assuming that the factors are independent of one another, or *oblique*, assuming that there is some correlation between the factors (Pett et al., 2003, p. 132). Simple structure is judged by the *factor-loading matrix* for orthogonal rotations, and by the *factor pattern matrix* for oblique rotations. The first resemble standardized regression beta weights, while the second are like *partial* standardized regression coefficients (Pett et al., 2003). Simple structure criteria vary, but emphasize that, in an ideal factor rotation, each item should have a high loading on only one factor and each factor should have high loadings for only some items. Thus, there should be some high loadings and some zeros in the factor-loading matrix.

4.2.1. Exploratory analyses

Both exploratory common factor analyses (using the principal factor method) and principal component factor analyses are conducted on the standardized items to test an overall construct of capability-informed *flourishing*. The initial exploratory factor analyses without rotation favoured a one-factor solution (*loadings*>0.30) and the overall Cronbach's alpha of all ten items together was 0.78 using standardized (z) values, showing a high level of internal consistency for *flourishing* as a whole. Further factor analyses on the polychoric correlation matrix, which takes into account the ordinal nature of the data, show consistent – and even stronger – loadings for all items.

We see that although the items are strongly linked theoretically as facets of quality of life, the statistical associations vary substantially by dimension. However, the scale reliability for all standardized items together as measured by Cronbach's coefficient alpha is fairly high at 0.78 (Antonovsky, 1993; Gadermann, Guhn, & Zumbo, 2012; Sijtsma, 2009). This measures the internal consistency of a set of items and indicates the proportion of the total variance attributable to a common source in a given scale (Pett et al., 2003).

The alpha is the average of all possible split-half reliability coefficients for a scale of items, which has the advantage of parsimony, but also has the disadvantage of being influenced by the number of items in the scale. Indeed, increasing the number of items will increase the alpha even if with small correlations amongst variables (Pett et al., 2003). Thus, the alpha is a useful but imperfect measure of reliability (Liu, Wu, & Zumbo, 2010; Sijtsma, 2009). The factor loadings and item-rest correlations between the items within the construct are given in Table *25*. (The Pearson product-moment correlation coefficients between items are reported in Appendix 2.)

Table 25. *Exploratory factor analysis on capability items*

Capability-informed measures of *flourishing*	ESS items	*Factor loading*	*Polychoric factor loading*	*Item-rest correlation*	*Alpha (α)*
1. Physical health	How is your health in general? 1-5; very good to very bad, *reversed*	0.39	0.45	0.38	
2. Security	How difficult or easy do you find it to deal with important problems that come up in your life? 0-10; extremely difficult to extremely easy	0.51	0.54	0.48	
3. Development of potential	Please tell me to what extent you learn new things in your life. 0-6; not at all to a great deal	0.35	0.45	0.40	
4. Emotional well-being	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt sad? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	0.59	0.68	0.51	
5. Personal autonomy	I feel I am free to decide for myself how to live my life. 1-5; agree strongly to disagree strongly, *reversed*	0.42	0.49	0.40	
6. Positive relationships	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt lonely? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	0.51	0.65	0.45	0.78
7. Dignity	To what extent do you feel that people treat you with respect? 0-6; not at all to a great deal	0.35	0.46	0.40	
8. Play	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you enjoyed life? 1-4; none or almost none of the time to all or almost all of the time	0.55	0.62	0.50	
9. Accomplishment	Most days I feel a sense of accomplishment from what I do. 1-5; agree strongly to disagree strongly; *reversed*	0.47	0.55	0.45	
10. Resilience	When things go wrong in my life it generally takes me a long time to get back to normal. 1-5; agree strongly to disagree strongly	0.48	0.55	0.45	

Source: ESS6-2012 (Edition 2.3)

Note: Analyses were conducted using design weights in combination with population size weights. After standardization, all ten items showed factor loadings greater than 0.30 on a single factor. The factor loadings show how much of an item's variance is shared with the factor (Pett et al., 2003). The most common cut-off point for item inclusion in terms of factor loadings is 0.30 (in other words, nine percent of the variance is shared). All items meet this criterion. All polychoric loadings are fair to very good using Comrey and Lee's (1992) criteria. The item-rest correlations are the correlations between the given item and the scale score on the rest of the items (after having removed the item). This is another measure of internal consistency. All correlations are relatively high (Pett et al., 2003).

When examining the empirical groupings within the data using principal components factor analysis (PCF) with Varimax rotation on ten standardized indicators (z-scores) for the 10 capability items, a two-factor solution is found. Varimax rotation "maximizes the variances of the loadings within the factors while also maximizing differences between the high and low loadings on a particular factor" – making the high loadings higher and the low loadings lower (Pett et al., 2003, p. 141). Thus, it produces a simplified structure. Using this rotation method, two groups emerge with factor Eigenvalues greater than 1.0 and item factor loadings greater than 0.30, suggesting that distinct components exist within the construct of *flourishing*.

The Cronbach's alphas for each factor are between 0.65 and 0.70, showing moderate scale reliability (see Table *26*). Once again, the polychoric factor analysis loadings are mainly consistent, but stronger, across items. Furthermore, supplementary principal component factor (PCF) analyses with Oblimin rotation, which has the advantage of assuming that the survey items are correlated, replicates these groupings. This is important, as the preliminary analyses suggested the possible existence of a single factor, which is very strong evidence for interrelationships between the two factors.

These two dimensions are termed "*psycho-social well-being*" and "*thriving*," as they appear to tap into different, but complementary, aspects of well-being. The first captures classic measures of positive affect and positive social relationships, as seen in eudaimonic well-being and subjective well-being scales (Gallagher, Lopez, & Preacher, 2009; Kern et al., 2014). The second comprises aspects of 'psychological thriving' in one's life, such as personal growth, autonomy, and purpose in life (Ryff, 1989; Ryff & Keyes, 1995; Ryff & Singer, 1998). These statistical groupings are similar theoretically to the groupings developed by Keyes (2002), with the exception that 'social well-being' did not map onto a distinctive factor (which is likely due to the inclusion of only a single item in this index). These

inductive empirical groupings are also substantively interpretable: There is a clear differentiation between environmental mastery and other externally-oriented capability items related to one's 'place in society' on one side, and items tapping into internal experiences on the other (Gallagher et al., 2009). Social relationships fall on this second side, perhaps due the fact that it is measured through subjective experience ('loneliness'), but also because it most closely relates to the personal sphere, and not that of work or other larger social categories.

Table 26. *PCF with Varimax rotation on capability items*

Capability-informed measures of *flourishing*	ESS items	*Factor*	*Factor loading*	*Polychoric factor loading*	*Item-rest correlation*	*Factor alpha (α)*
A1. Physical health	How is your health in general? 1-5; very good to very bad, *reversed*	Factor A: Psycho-social well-being	0.38	0.44	0.35	0.69
A2. Emotional well-being	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt sad? 1-4; none or almost none of the time to all or almost all of the time, *reversed*		0.81	0.76	0.54	
A3. Positive relationships	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt lonely? 1-4; none or almost none of the time to all or almost all of the time, *reversed*		0.76	0.72	0.48	
A4. Play	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you enjoyed life? 1-4; none or almost none of the time to all or almost all of the time		0.58	0.60	0.46	
A5. Resilience	When things go wrong in my life it generally takes me a long time to get back to normal. 1-5; agree strongly to disagree strongly		0.49	0.50	0.39	
B1. Security	How difficult or easy do you find it to deal with important problems that come up in your life? 0-10; extremely difficult to extremely easy	Factor B: Thriving	0.43	0.47	0.39	0.65
B2. Development of potential	Please tell me to what extent you learn new things in your life. 0-6; not at all to a great deal		0.70	0.52	0.40	
B3. Personal autonomy	I feel I am free to decide for myself how to live my life. 1-5; agree strongly to disagree strongly, *reversed*		0.50	0.51	0.37	
B4. Dignity	To what extent do you feel that people treat you with respect? 0-6; not at all to a great deal		0.64	0.54	0.40	
B5. Accomplishment	Most days I feel a sense of accomplishment from what I do. 1-5; agree strongly to disagree strongly; *reversed*		0.55	0.58	0.43	

Source: ESS6-2012 (Edition 2.3)
Note: Principal component factor analyses (PCF) were conducted using design weights in combination with population size weights. After standardization, the ten items loaded onto two factors with Eigen values greater than 1.0 and factor loadings greater than 0.30. All polychoric loadings are fair to very good using Comrey and Lee's (1992) criteria. The item-rest correlations are all relatively high (Pett et al., 2003).

4.2.2. Confirmatory analyses

Confirmatory factor analyses (CFA) are used to "assess the extent to which the hypothesized organization of a asset of identified factors fits the data" (Pett et al., 2003, p. 4). Thus, these analyses necessitate an *a priori* knowledge of the structure of the construct of interest. CFA is conducted through a comprehensive analysis of covariance structures using structural equation modeling (SEM). SEM is made up of two set of analyses: Firstly, a measurement model identifies how the latent variables (also termed "hypothetical constructs") are measured in terms of the observed items, and secondly, a structural equation model indicates the strength of relationships among the latent variables (Andres, 2009; Schumacker & Lomax, 2010). The results of the SEM analyses provide both measures of the fit in terms of properties (e.g., reliability) of the model, and of the explained and unexplained variance.

The model specifications based on theory from the previous chapter and the exploratory analyses described above, testing hypotheses of both a single underlying latent construct and a correlated two-construct structure, determined the identification of the two models. Similar comparative approaches have been conducted in the research (Dimitrov, 2010; Gallagher et al., 2009). CFAs conducted using SEM corroborate the fact that the groupings presented above provide a satisfactory explanation of the variance in the data. Both the one and two-factor solutions are illustrated as path diagrams with their corresponding loadings in *Figure 31* and *Figure 32* below. The analyses were run using the standardized (z) scores of the ten items.
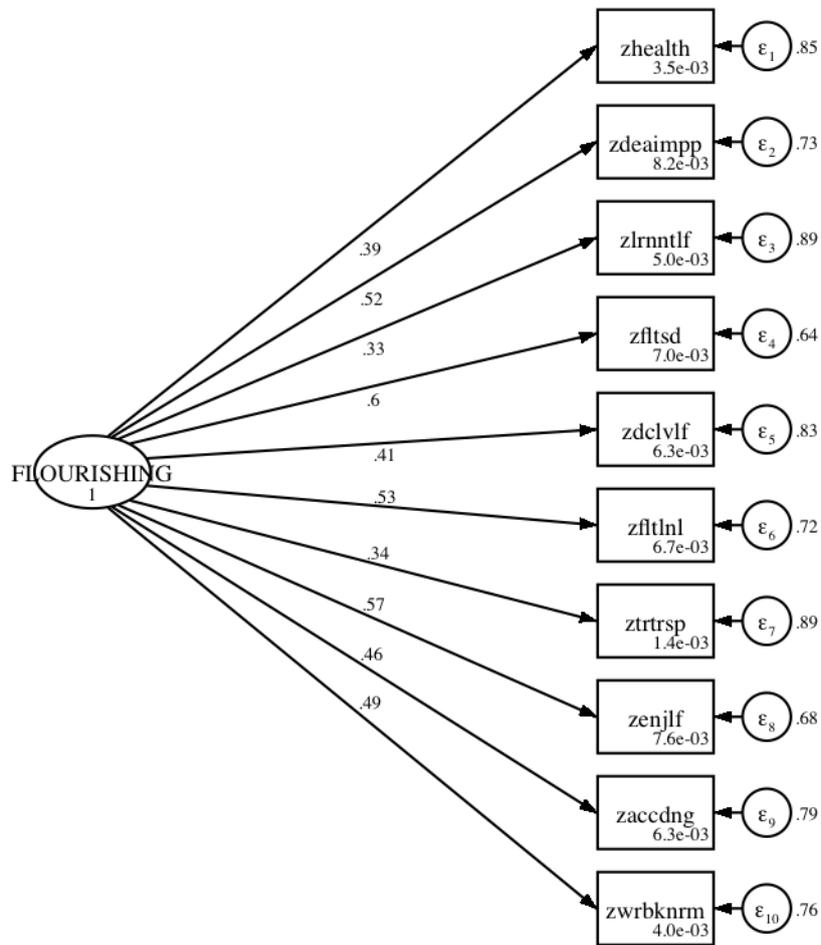
Figure 31. Confirmatory factor analysis of the one-construct solution using SEM.
Note: This model explains the variance in the standardized indicators through their ability to predict a single latent construct ('*flourishing*'). Each standardized indicator correlates with the sum total of all of the indicators, shown in the significant loadings. The latent construct is estimated as the composite of all of the indicators, which are linearly weighted using their common variance (from each indicator). Thus, the CFA factor loadings can be interpreted as the correlations between the indicators and the latent construct.
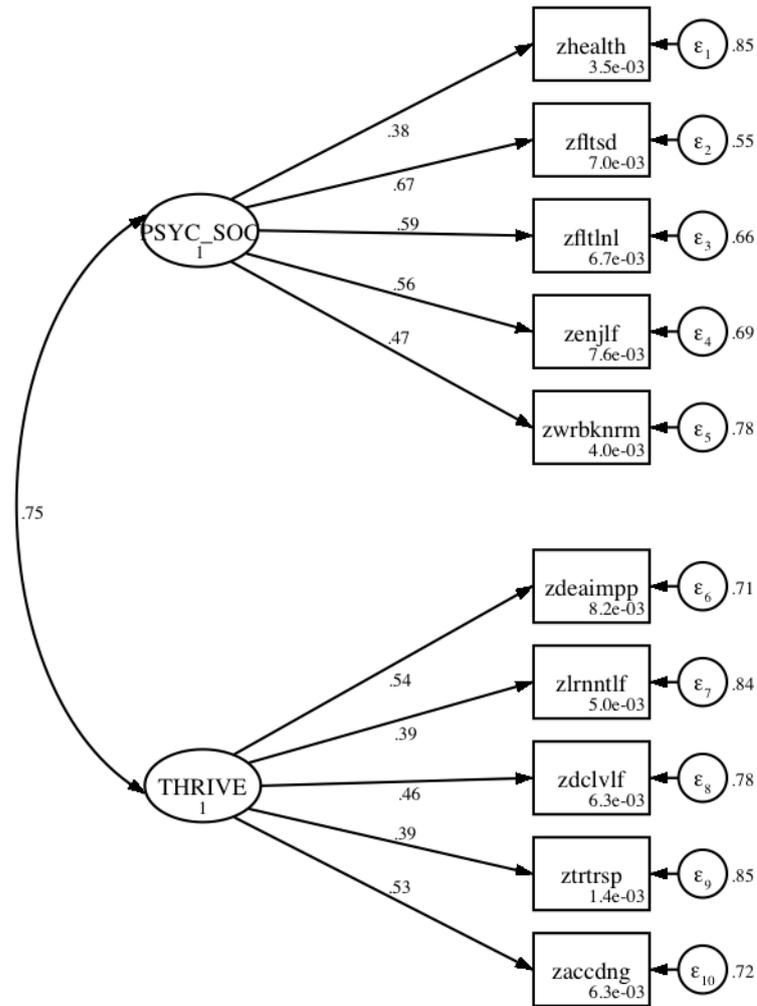
Figure 32. Confirmatory factor analysis of the two-construct solution using SEM.
Note: This model explains the variance in the standardized indicators through their ability to predict two latent constructs ('*psycho-social well-being*' and '*thriving*'). Each standardized indicator correlates with the sum total of the indicators for the respective latent construct, shown in the significant loadings on that construct. Each latent construct is estimated as the composite of all of the indicators, which are linearly weighted using their common variance. Thus, the CFA factor loadings can be interpreted as the correlations between the indicators and their respective latent construct.

The two models tested and presented here both provide satisfactory fit. The one-factor (*RMSEA*=0.07, *AIC*= 651627.51, *CFI*=0.89, *CD*=0.79) and the two-factor (*RMSEA*=0.06, *AIC*= 650336.74, *CFI*=0.92, *CD*=0.86) solutions are both acceptable. For example, both models have a root mean square error of approximation (RMSEA) value below the recommended level of 0.10. The second, two-factor, solution shows slightly better fit with

lower RMSEA and Akaike information criterion (AIC) values, and higher comparative fit index (CFI) and coefficient of determination (CD) values. Furthermore, this model shows that the two sub-components are significantly correlated. Thus, both the two-component solution and the existence of a larger unitary construct are supported by statistical evidence. This may be seen as a classic case of an 'essentially unidimensional scale' that comprises two secondary minor latent variables with Eigen-values greater than one, but that add less explanatory power as compared to the larger meta-construct (Slocum-Gori, Zumbo, Michalos, & Diener, 2009). The one-factor solution explains 30% of the variance in scores on all ten items, while the two-component model explains 41% of the overall variance.

4.3. 'Capability-informed flourishing'

4.3.1. Scale measures

Based on the analyses above, two sets of composite scale variables are constructed to be used as the dependent variables of capability-informed *flourishing*. The first captures this construct as a whole (by the standards of '*essential* unidimensionality' of Slocum-Gori et al., 2009), while the second decomposes the construct into the two components outlined above: *psycho-social well-being* and *thriving*. In order to take account of the ordinal nature of the data in constructing the scales, a polychoric correlation matrix was first created, and then a factor analysis was conducted on this matrix. From the results of this analysis, Bartlett factor scores were predicted for both the complete and sub-scales. Bartlett factor scores are computed by:

> multiplying the row vector of observed variables, by the inverse of the diagonal matrix of variances of the unique factor scores, and the factor pattern matrix of loadings. Resulting values are then multiplied by the inverse of the matrix product of the matrices of factor loadings and the inverse of the diagonal matrix of variances of the unique factor scores. (Distefano et al., 2009, p. 4)

Using maximum likelihood estimates, this approach produces unbiased estimates of the factor scores from the polychoric factor analysis. The "error" of the unique variance is thus minimized and only the shared or "common" information impacts the factor scores. For this reason, the correlations between the resulting scales and their corresponding factors are high, while the correlations with other factors are low, although they may still correlate to some extent (Distefano et al., 2009).

The descriptive statistics for the resulting scale measures are given below in Table *27*. The Pearson product-moment correlation coefficients between the overall *flourishing* scale and *psycho-social well-being* is 0.85, and that with *thriving* is 0.86. The correlation between *psycho-social well-being* and *thriving* is 0.47 (for more information, see Appendix 2). Thus, the subcomponents are (naturally) highly correlated with the overall construct, and moderately correlated with one another. The raw scale scores are reported here, with the standardized values in parentheses (see Table *27*). In the analyses that follow, the raw scores are used when visually illustrating the values across groups, while the standardized scale scores are used in all analyses that compare the subcomponents amongst groups. This linear transformation does not change the shape of the distribution of scores or the distances between scores, but rather highlights differences between the means for various sub-groups and the overall grand mean of the sample.[19]

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[19] This also has the added advantage of being measured in standard deviations, which are more easily interpreted and compared across measures.

Table 27. *Measures of flourishing*

Item	Scoring coefficient	Capability-informed measures of *flourishing*	Mean	SD	Median	Min	Max
1. Physical health	0.12						
2. Emotional well-being	0.16						
3. Positive relationships	0.12						
4. Play	0.28						
5. Resilience	0.14	*Flourishing*	6.87 (0.00)	1.01 (1.00)	7.01 (0.14)	1.35 (-5.44)	9.14 (2.24)
6. Security	0.24						
7. Development of potential	0.13						
8. Autonomy	0.22						
9. Dignity	0.17						
10. Accomplishment	0.17						
A1. Physical health	0.15						
A2. Emotional well-being	0.50						
A3. Positive relationships	0.42	*Psycho-social well-being*	5.28 (0.00)	0.81 (1.00)	5.48 (0.21)	1.53 (-4.64)	6.45 (1.44)
A4. Play	0.26						
A5. Resilience	0.19						
B1. Security	0.31						
B2. Development of potential	0.37						
B3. Autonomy	0.36	*Thriving*	8.38 (0.00)	1.47 (1.00)	8.55 (0.11)	0.81 (-5.16)	11.75 (2.30)
B4. Dignity	0.39						
B5. Accomplishment	0.46						

Source: ESS6-2012 (Edition 2.3)

Note: Standardized values reported in parentheses (scoring coefficients do not change).

4.3.2. *Flourishing* 'thresholds'

In order to capture the underlying idea of 'having' a particular capability (*functioning*) or not, cut-off points were selected for each item to reflect whether a person meets the criteria for this component, as outlined in Table *28*. These points were selected based on the substantive meaning of responses to the items' scales (for example, on an agreement scale, the individual responded with at least "I somewhat agree"), as well as at times being informed by the empirical distribution of the data (in order to usefully differentiate between individuals' responses). These decisions were informed by similar approaches in the literature (Huppert & So, 2011; Smith & Exton, 2013).

These cut-off points on the capability-informed dimensions of *flourishing* are listed in Table *28*, along with the percentage of the sample meeting the criteria. The 'threshold' approach was based on a yes/no dichotomization of the measures at two levels: first, at the individual item level, with the cut-off points described in Table *28*, and then at the overall construct level, with the attainment of a high number of central capabilities corresponding to a "yes" response for *at least seven* items within the construct. On average, individuals reported attaining at least six capabilities by these measures (*SD*=2.37). Only six percent of the sample reported a high level of attainment on all ten capabilities. However, 50% reported attaining high levels on at least seven of the ten central capabilities.

Table 28. *Items chosen for the capability-informed measure of flourishing*

The capability-informed measure of *flourishing*	ESS items	*M*	*SD*	*Threshold*	*Percentage*
1. Physical health	How is your health in general? 1-5; very good to very bad, *reversed*	3.82	0.86	≥4.00	68%
2. Security	How difficult or easy do you find it to deal with important problems that come up in your life? 0-10; extremely difficult to extremely easy	5.84	2.07	≥7.00	42%
3. Development of potential	Please tell me to what extent you learn new things in your life. 0-6; not at all to a great deal	4.37	1.30	≥5.00	51%
4. Emotional well-being	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt sad? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	3.44	0.69	≥4.00	53%
5. Personal autonomy	I feel I am free to decide for myself how to live my life. 1-5; agree strongly to disagree strongly, *reversed*	4.00	0.90	≥4.00	80%
6. Positive relationships	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you felt lonely? 1-4; none or almost none of the time to all or almost all of the time, *reversed*	3.61	0.70	≥4.00	71%
7. Dignity	To what extent do you feel that people treat you with respect? 0-6; not at all to a great deal	4.50	1.17	≥5.00	57%
8. Play	I will now read out a list of the ways you might have felt or behaved during the past week. Please tell me how much of the time during the past week you enjoyed life? 1-4; none or almost none of the time to all or almost all of the time	2.88	0.90	≥3.00	67%
9. Accomplishment	Most days I feel a sense of accomplishment from what I do. 1-5; agree strongly to disagree strongly; *reversed*	3.82	0.82	≥4.00	75%
10. Resilience	When things go wrong in my life it generally takes me a long time to get back to normal. 1-5; agree strongly to disagree strongly	3.39	1.07	≥4.00	57%

Source: ESS6-2012 (Edition 2.3)

Note: Items reproduced from the *European Social Survey*. "*Reversed*" signifies that the item values were recoded in the opposing order in order to be logically coherent with the measure. The item means (*M*) and standard deviations (*SD*) were computed using design weights in combination with population size weights.

In terms of the composite scales described above, only 31% report a high level of *flourishing* defined as scoring at least half of one standard deviation above the mean.[20] The percentages were 34% and 32% for *psycho-social well-being* and *thriving* respectively. These 'threshold' accounts of reaching specific 'cut-offs' for high levels of well-being are used as a complementary method to compare levels of well-being across countries and as a robustness check for the inferential statistical analyses in Chapter 6.

4.3.3. Limitations

Although purporting to measure capabilities, these items more accurately map onto *functionings*. However, researchers have argued for the necessity of both capabilities and functionings when measuring quality of life (Basu, 2011; Fleurbaey, 2006), and Sen himself has pointed to the necessity of considering functionings. In order to remain consistent with Nussbaum's list of central capabilities, the survey items were discussed as tapping into 'capabilities.' In fact, the survey items are somewhere in between: They reflect individuals' *functionings*, but, because they are subjective in nature, these functionings can differ across respondents. For example, how much time one needs per week to enjoy oneself in order to report agreement with the item scale will differ from one individual to the next. This means that these functionings do indeed allow for individual differences in 'the life that one has reason to value.' Thus, for ease of discourse, the text refers to capabilities; however, it should be recognized that 'attained capabilities,' as measured here, are equivalent to (a subjective measure of) *functionings* as defined in the capability approach.

The Cronbach's alpha of the scales mapping onto the capability-informed measure of *flourishing* can be critiqued as being only moderate, with alphas between 0.65 and 0.80.

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[20] These thresholds, unlike those for individual items, are constructed based on the distribution of scores, rather than the substantive responses to survey questions. This provides a relative perspective, which will be useful when comparing average levels of well-being by educational categories, for example. Both approaches are used in the literature (Huppert & So, 2011).

However, alpha estimates have been shown to be downward biased when items are on an ordinal scale (Liu et al., 2010). The number of items in the scale also highly affects the resulting alpha value. Furthermore, alpha estimates alone cannot provide a 'test' of a scale, rather the sufficiency of the alpha value must be interpreted in light of the results of other analyses, such as factor analyses (Gadermann et al., 2012; Sijtsma, 2009). Due to the fact that all items loaded strongly onto their respective components, the moderate alphas were deemed acceptable as one of several indications of the internal consistency and reliability of the measures.

5.   Levels of well-being in Europe

5.1. Levels of well-being across countries

This study is constructed from an international comparative perspective, as described in the previous two chapters. Thus, now, after developing a novel conceptualization of well-being as a capability-informed measure of *flourishing*, the next aim is to compare levels of well-being across the countries in the study sample. This is done by exploring each of the measures described above in terms of average and median responses, as well as in terms of the distribution or dispersion of responses, in order to capture inequalities in well-being across countries. Country-level statistics are reported grouped by the educational welfare regimes (EWR) described in the previous chapter, and themes across these countries are discussed.

5.1.1. Average well-being levels

Firstly, when we examine average overall levels of *flourishing* across countries, we see that the Universalist countries report the highest average well-being, and that this is true of each

of the constituent countries (see *Figure 33*). The only country outside of this grouping that has an average score of higher than seven is Switzerland, although Slovenia and Ireland also each have an average score of seven. The lowest average scores are those of the Polytechnic countries, with the partial exception of Germany, whose average is similar to that of the Liberalized and Conservative countries. All groups of countries score significantly lower than the Universalist countries on overall *flourishing* in post-hoc pairwise comparisons[21] of an analysis of variance and covariance (ANOVA) analysis (R^2=0.06, p<0.001), which compares the amount of variance within groups and the amount of variance between groups.
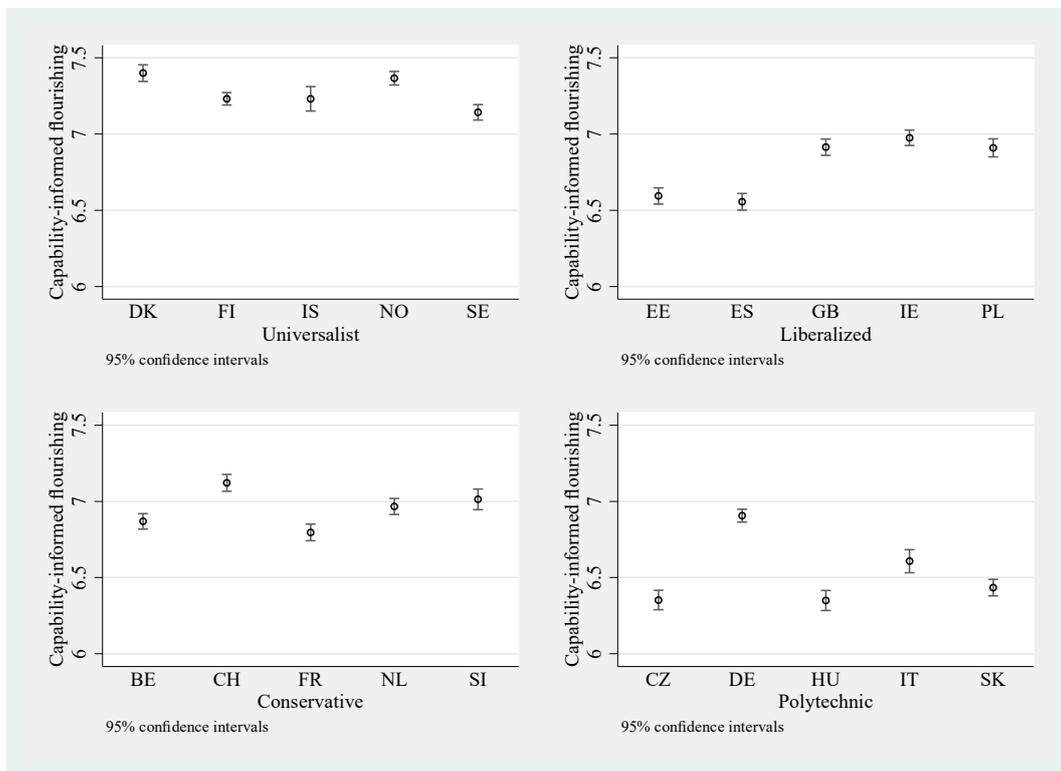
*Figure 33*. Average levels of *flourishing* with 95% confidence intervals by country and EWR.
Note: These graphs show the average score by country on the *flourishing* multi-item scale, ranging from 1.30 to 9.14. These values are meant to be comparative only. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, the Czech Republic and Germany show significantly different average *flourishing* scores.

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[21] Sidak, Bonferroni, and Scheffe methods all confirmed the significance of the differences.

The trends are very similar for the two sub-components of *flourishing*: the Universalist countries report the highest average well-being and the Polytechnic countries the lowest average well-being (see *Figure 34* and *Figure 35*). Both Germany and Italy show higher than expected *thriving* for their grouping, with averages similar to that of the Liberalized and Conservative countries. All groups of countries again score significantly lower than the Universalist countries on *psycho-social well-being* and *thriving* in analysis of variance and covariance (ANOVA) analyses (R^2=0.04 and 0.05, p<0.001).

These patterns are consistent with the large body of literature finding that the Nordic countries have the highest levels of well-being (Huppert et al., 2009; Pierewan & Tampubolon, 2015; Rothstein, 2010; Samuel & Hadjar, 2016). While these countries group in terms of the educational analytical dimensions, which are hypothesized to impact overall levels of societal well-being, this may also be due to the overall size of the welfare state, as researchers have found that "citizens find life more rewarding as the generosity of the welfare state increases, net of economic or cultural conditions" (Pacek & Radcliff, 2008). These findings are also consistent with prior research concluding that the Southern and Central and Eastern European countries report the lowest levels of well-being (Ejrnæs & Greve, 2017; Fahey & Smyth, 2004).
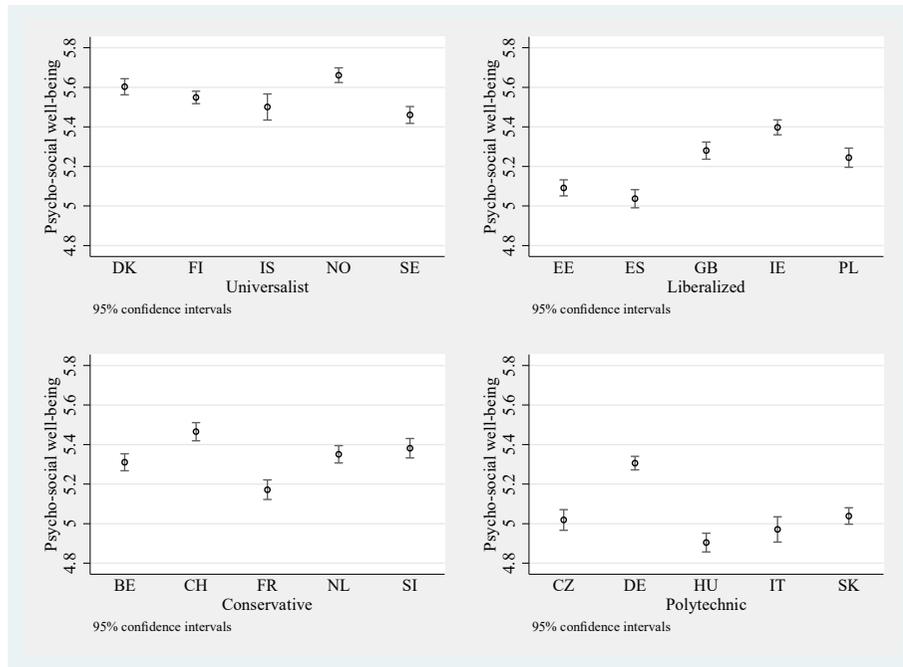
Figure 34. Average levels of *psycho-social well-being* with 95% confidence intervals by country and EWR.
Note: These graphs show the average score by country on the *psycho-social well-being* multi-item scale. These values are meant to be comparative only. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another.
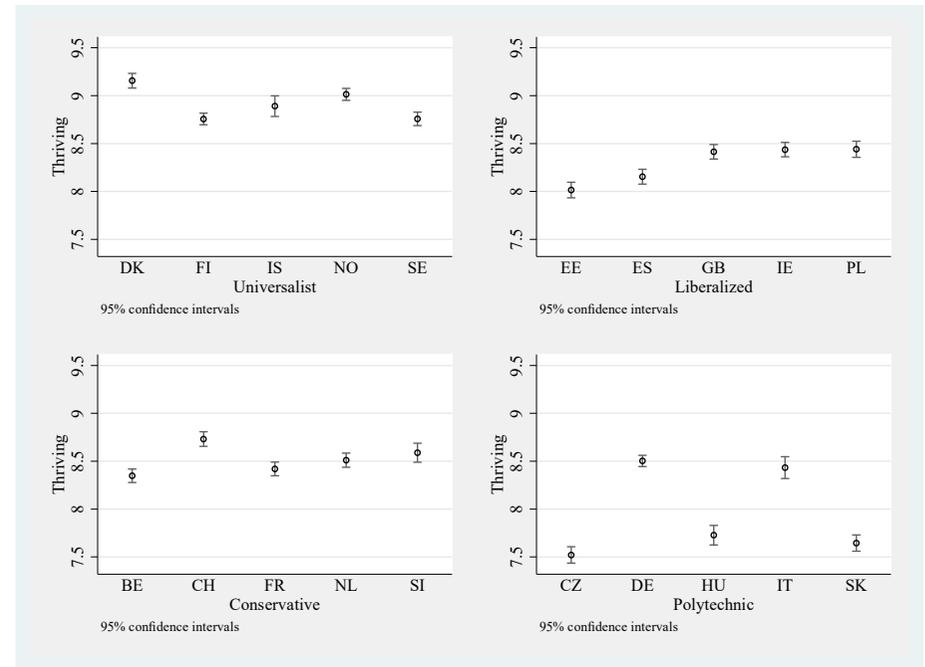
Figure 35. Average levels of *thriving* with 95% confidence intervals by country and EWR.
Note: These graphs show the average score by country on the *thriving* multi-item scale. These values are meant to be comparative only. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another.

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Furthermore, the trends across EWR are consistent with welfare production regime research finding that "the Scandinavian social democratic group [is] the most homogenous and the continental Christian democratic [is] the most heterogeneous" (Huber & Stephens, 2001, p. 3). As seen in *Figure 33*, *Figure 34*, and *Figure 35*, the Nordic countries show more similar average scores across countries on all three measures. The Polytechnic countries show the least consistent average scores. This may in part be due to within-group differences in overall economic performance and welfare state spending (Ejrnæs & Greve, 2017; Fahey & Smyth, 2004).[22]

These trends are again confirmed when we examine the measures of the proportion of the population with a high level of *flourishing* on each of the scales (see *Figure 36*). This is also true of the sub-components of *psycho-social well-being* and *thriving* (not shown). We notice that along with the partial exception of Germany, Estonia and Spain also score lower than the other three countries in the Liberalized grouping. Indeed, here they score at levels comparable to the Polytechnic countries. This is not entirely surprising, since Estonia has also been grouped with the Eastern European countries by other researchers, and Spain has been grouped with Italy in Latin Rim groupings that emphasize the economic volatility in these regions. Thus, as mentioned above, there may be economic factors at work partly determining overall levels of well-being (Fahey & Smyth, 2004). These postulates will be explored further in the inferential analyses.

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[22] For example, Germany and Italy perform better on the well-being measures than the Czech Republic, Slovakia, and Hungary, while also having stronger economies and more developed welfare states (Ejrnæs & Greve, 2017). These possibilities will be explored empirically in the next chapter, where these factors are controlled for in country-level analyses.
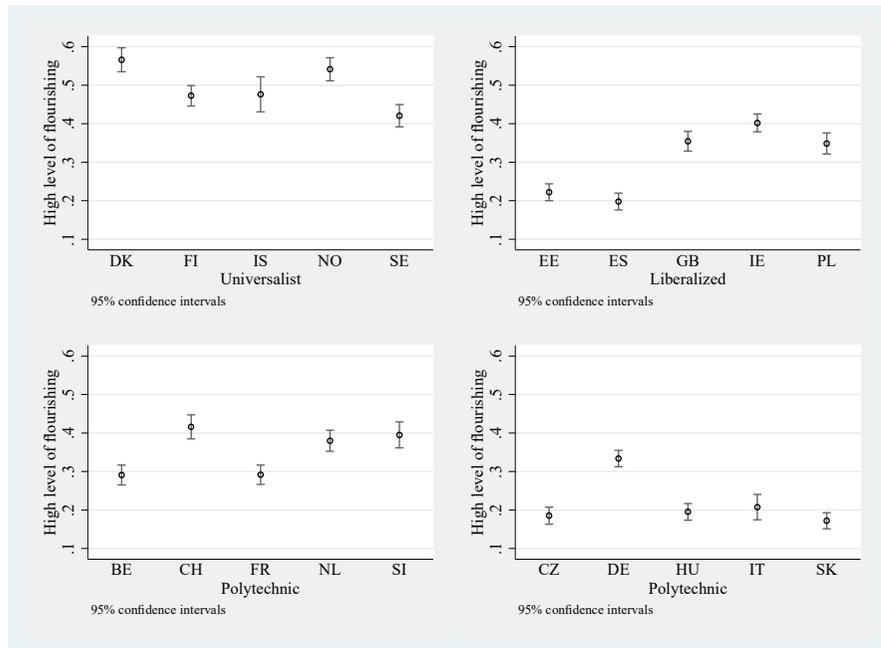
Figure 36. Proportion of the population with a high level of
flourishing with 95% confidence intervals by country and EWR.
Note: These graphs show the proportion of the population with a high level of
flourishing (i.e. the number of individuals who score one on the dichotomous
variable described above). The points (circles) represent the average value, while
the lines show the 95% confidence interval (CI). Thus, significant differences
between countries can be identified when these lines *do not* overlap with one
another.
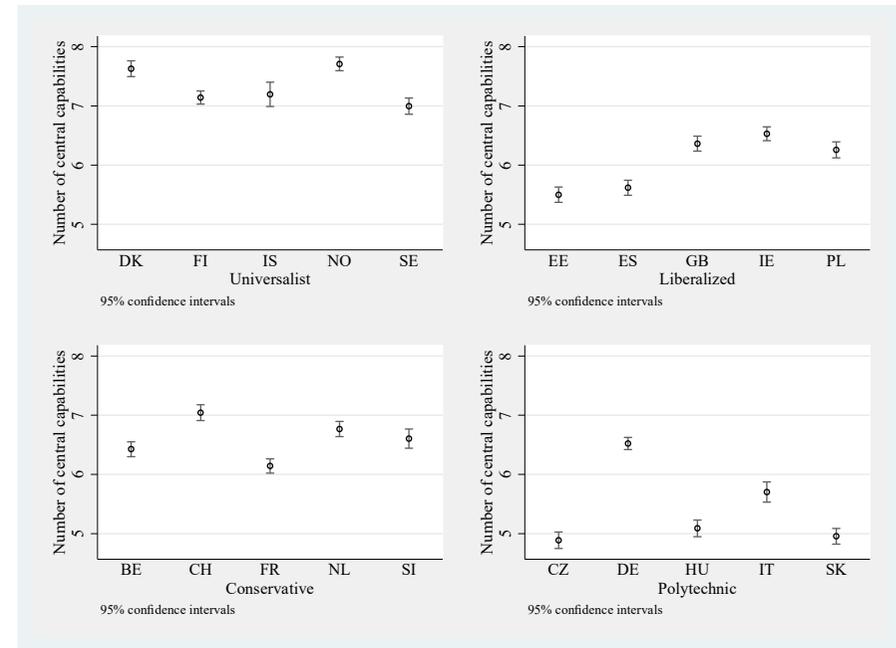
Figure 37. Average number of capabilities with 95% confidence
intervals by country and EWR.
Note: These graphs show the average number of capabilities reported by
individuals within each country. The points (circles) represent the average value,
while the lines show the 95% confidence interval (CI). Thus, significant
differences between countries can be identified when these lines *do not* overlap
with one another.

The average number of capabilities (see *Figure 37*) and proportion of the population with a high number of capabilities (not shown) mirror the findings thus far. It appears that the Universalist countries report the highest levels of well-being across these measures. The Liberalized and Conservative countries fall in the middle, with both Ireland and Switzerland reporting slightly higher scores than their group-fellows. The Polytechnic countries report the lowest levels, although Germany has averages slightly higher than expected within the grouping. These findings are confirmed when we examine average levels of well-being as measured by the *flourishing* scales and individual items in Table *29*.

Thus, overall, we see that levels of well-being by country as measured by the capability-informed *flourishing* scale most often coincide with the groupings of countries created in the last chapter. This is somewhat surprising, as the groupings were based on the levels of post-secondary educational stratification and decommodification without an eye to well-being. However, this provides preliminary evidence for the hypothesis that where levels of educational stratification are low and levels of decommodification high, there is greater overall well-being in society, due to the fact that the Universalist countries show the highest well-being and the Polytechnic countries the lowest. Nonetheless, similarly to the previous analyses, these groupings are not perfect: Some countries stand out from each grouping with levels of well-being higher or lower than expected from the average scores within the grouping.

Table 29. *Average well-being scores across educational welfare regimes*

	Total sample	Universalist	Liberalized	Conservative	Polytechnic
Capability-informed Flourishing	6.82	7.23	6.83	6.88	6.70
	(0.99)	(0.85)	(1.00)	(0.95)	(0.99)
Psycho-social well-being	5.22	5.53	5.23	5.29	5.13
	(0.82)	(0.68)	(0.82)	(0.84)	(0.82)
Thriving	8.38	8.85	8.37	8.44	8.29
	(1.41)	(1.20)	(1.43)	(1.28)	(1.47)
Subjective general health	3.82	4.06	3.86	3.87	3.72
	(0.86)	(0.85)	(0.89)	(0.85)	(0.83)
Deal with important problems in life	5.84	6.55	6.11	5.70	5.57
	(2.07)	(1.78)	(2.07)	(1.90)	(2.15)
Learn new things in life	4.37	4.53	4.33	4.43	4.35
	(1.30)	(1.07)	(1.36)	(1.16)	(1.34)
Felt sad, how often past week	3.44	3.66	3.42	3.44	3.42
	(0.69)	(0.56)	(0.71)	(0.68)	(0.70)
Free to decide how to live my life	4.00	4.12	3.94	4.19	3.94
	(0.90)	(0.80)	(0.91)	(0.88)	(0.91)
Felt lonely, how often past week	3.61	3.75	3.63	3.58	3.58
	(0.70)	(0.54)	(0.68)	(0.74)	(0.72)
Feel people treat you with respect	4.49	4.68	4.48	4.49	4.48
	(1.17)	(0.92)	(1.17)	(1.13)	(1.22)
Enjoyed life, how often past week	2.88	3.04	2.92	3.14	2.67
	(0.90)	(0.80)	(0.88)	(0.79)	(0.93)
Feel accomplishment from what I do	3.82	4.00	3.69	3.88	3.88
	(0.82)	(0.68)	(0.86)	(0.80)	(0.79)
When things go wrong in my life it takes a long time to get back to normal	3.41	3.72	3.37	3.41	3.41
	(1.07)	(0.92)	(1.03)	(1.18)	(1.05)
Observations	24385	5107	7227	5487	6564

Source: ESS6-2012 (Edition 2.3)
Note: Means and standard deviations (in parentheses) of raw scores were computed using design weights in combination with population size weights.

5.1.2. Dispersion in well-being levels

Next, different types of dispersion diagrams of well-being scores are examined in order to assess levels of well-being inequality across these countries. 'Well-being inequality' is a seldom-researched topic, although researchers are now calling for more investigation. Indeed, as Fahey and Smyth (2004) point out, most (subjective) well-being research ignores questions of distribution:

> …cross-country comparisons have focused on levels of subjective well-being, as measured by national means on subjective well-being scales or percentages scoring above or below certain happiness or satisfaction thresholds. They have paid little attention to the distribution of subjective well-being, that is, to differences in the degree of inequality in subjective well-being across countries… [this] is an important oversight since cross-country differences in the variances of subjective well-being are as great and as revealing as differences in the means, and in particular point to important hypotheses about the nature and subjective impact of social inequalities. (Fahey & Smyth, 2004, p. 7)

Although some studies have begun uncovering country differences in the dispersion of well-being (Ott, 2005; Ovaska & Takashima, 2010; Veenhoven, 2005b), there is no conclusive agreement across findings.

From a capability approach, the distribution of well-being scores is an essential aspect to consider, over and beyond average levels of well-being. Indeed, as Ovaska and Takashima (2010) argue (consistent with the critiques outlined by Sen in Chapter 1), two countries can have well-being distributions that are quite different from each other "despite having the same average score" (Ovaska & Takashima, 2010, p. 220). For example, two countries could have an identical *flourishing* score of six as measured on the scale developed in this study, but in one country every individual could report the same score of six, while in the other country 90% of individuals reported 6.5 while 10% reported a score of one (Ovaska & Takashima, 2010). Their averages would be the same, while the actual outcomes of citizens are evidently not equivalent between the two cases.

Well-being inequalities can be examined in a number of ways; however, recent studies have concluded that the most appropriate dispersion measures to examine when looking at reported well-being data are the standard deviation of scores, the mean absolute difference in scores, the mean pair distance, and the interquartile range in scores (Kalmijn & Veenhoven, 2005). A dispersion coefficient, which is the standard deviation divided by the mean and multiplied by 100 can also be used (Murdoch, 2002). However, the most often used comparative metric in the literature is the standard deviation (Fahey & Smyth, 2004; Gainer, 2013; Ott, 2005; Ovaska & Takashima, 2010).

We can already note in Table *29* presented above that the Universalist countries systematically have the lowest standard deviations in well-being scores, and that this is most strikingly the case for the constructed scales. This provides a first indication that dispersion, or inequality, in well-being scores is also lowest in these countries. The Liberalized and Polytechnic countries show the greatest dispersion on the overall measure of *flourishing* and on the sub-component of *thriving*, while the Conservative countries show the most dispersion in terms of *psycho-social well-being*.

Examining box plots of each of the *flourishing* measures emphasizes the similarities in the overall distribution of scores: Although the medians differ significantly, there is typically a close-knit core of scores with a longer tail towards the lower end of the distribution (negative skew). This is also true of the sub-components of *psycho-social well-being* and *thriving* (not shown). The 25th to 75th percentile ranges always overlap within country groupings, and often overlap across country groupings. We notice that some countries have particularly small 25th to 75th percentile ranges, such as Norway, while others have quite large ranges, such as Hungary (see *Figure 38* and *Figure 39*). This is consistent with prior findings regarding subjective well-being measured as 'happiness' (Fahey & Smyth, 2004).

When looking at the median number of capabilities attained (in other words, perceived *functionings*), the results are consistent; however, we remark that the spread of the distribution is significantly larger than on the scale items. Here, the Conservative countries perform better in terms of the median number of capabilities than do the Liberalized countries. As with the previous findings, the Universalist countries have the highest median scores and the tightest distributions, showing more equality in capability-reporting, and the Polytechnic countries show the lowest median scores and the most spread out distributions (although the Liberalized countries are comparable on this indication of inequality). As well, these ranges do not at all overlap between some countries, for example those of Denmark and Norway versus those of Italy, Hungary, and the Czech and Slovak Republics, in terms of the average number of capabilities attained. These differences are quite striking for a range as large as the 25th to 75th percentiles.
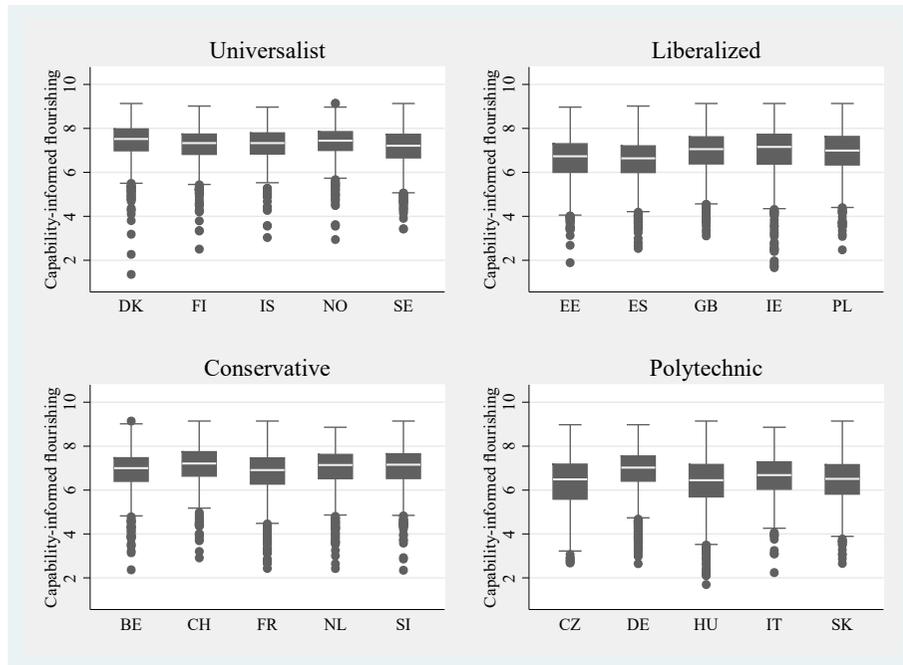
Figure 38. Boxplots of median *flourishing* by country and EWR with 25th to 75th percentile ranges.

Note: These whisker plots show the median value on the scale of *flourishing* for each country, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, for those in Denmark, the IQR is between 7 and 8, while the median is 7.5 on this multi-dimensional index.
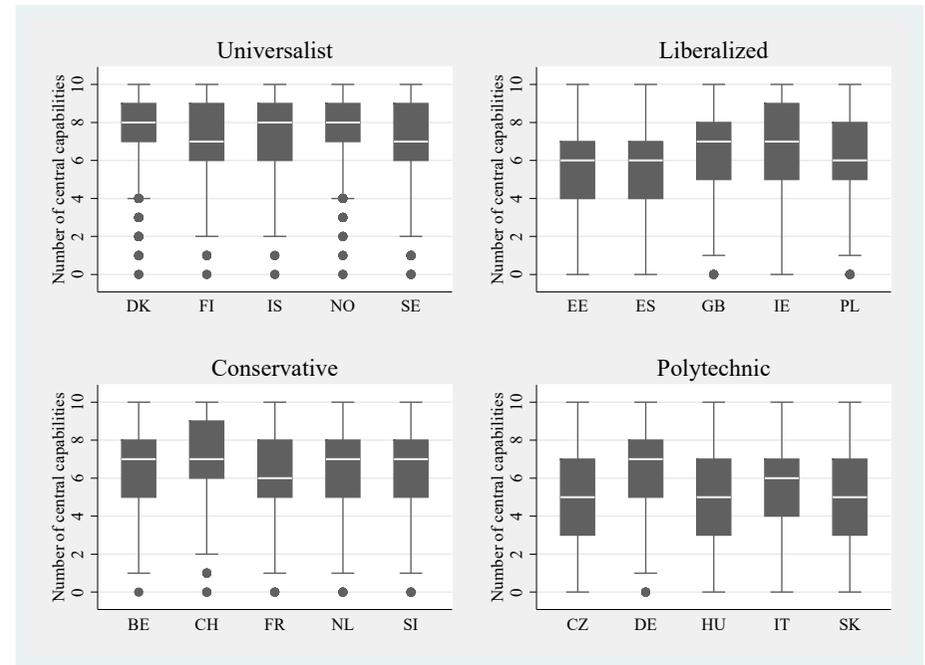
Figure 39. Boxplots of median number of capabilities reported by country and EWR with 25th to 75th percentile ranges.

Note: These whisker plots show the median number of capabilities reported for each country, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, for those in Denmark, the IQR is between 7 and 9, while the median is 8 capabilities.

Another way of examining the dispersion of scores is to examine the gap – or distance – between the 90th percentile and 10th percentile. This measure captures the range in scores while eliminating potential outliers and has been used to measure inequality both in education (such as for PISA scores) and in well-being (J. Allmendinger & Leibfried, 2003; Busemeyer, 2015; Smith & Exton, 2013). When the countries are plotted along their average level of *flourishing* and '90/10 gap' in *flourishing*, we see that countries that have higher average levels of well-being also show less dispersion in scores (see *Figure 40*). This is consistent with prior research on average happiness scores and the standard deviation of happiness scores (measured as emotional affect on a single item) across Europe (Fahey & Smyth, 2004).

We see Universalist countries plotted in the upper left-hand corner, with high average levels of well-being and low dispersion in well-being scores. The Polytechnic, and to some extent the Liberalized, countries show an opposite trend. They appear in the lower right-hand corner with lower levels of well-being and higher dispersion in scores. The Conservative countries fall in the middle with moderate levels on both of these measures. The coefficient of determination of the relationship between the average level of *flourishing* and the 90/10 gap is quite high, explaining 69% of the variation in *flourishing*.
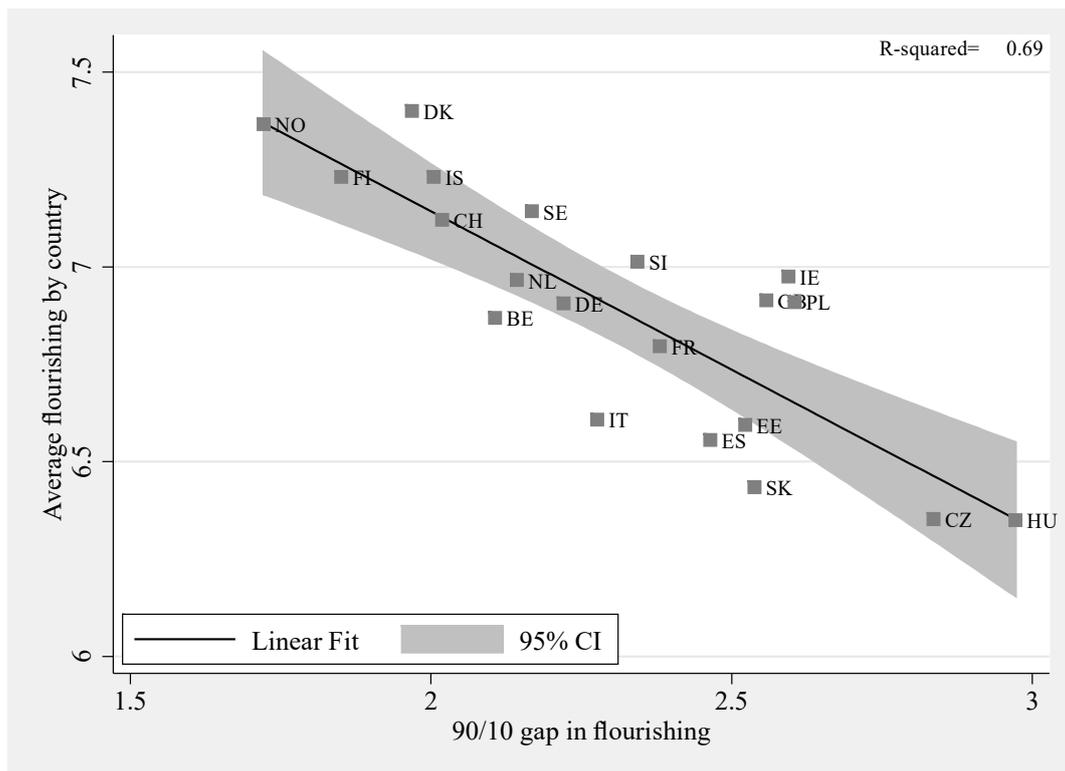
Figure 40. The "90/10 gap" in *flourishing* plotted against the average level of *flourishing* by country.

Note: These scatterplots show the average level of *flourishing* by country plotted against the '90/10 gap' in *flourishing* by country. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average levels of well-being that is explained by the '90/10 gap.'

5.2. *Levels of well-being by educational attainment*

Next we turn to the key independent variable of interest in this study: education. Well-being not only varies across countries, but also across levels of educational attainment within these countries. Furthermore, these differences are suggested to be growing stronger over time (Becchetti, Massari, et al., 2010). The following descriptive analyses examine preliminary bivariate trends in average levels of well-being by educational attainment across countries and educational welfare regimes.

5.2.1. Across all countries

First, trends across all countries in the pooled sample are examined in Table *30*. Average well-being scores increase linearly across all three composite well-being scales, suggesting

that there are indeed significant differences in average well-being scores between those with secondary education or less, VET, and tertiary education. The differences in the median well-being values and ranges are shown in *Figure 41* and *Figure 42*. This reaffirms that although differences exist, there is much overlap in the distributions of scores.

However, the distributions become tighter with higher levels of education, showing less variability. This confirms prior research results regarding life satisfaction, which found that

> …education is the only factor affecting both tails [of the distribution] in the same (negative) way. In particular, being more educated reduces the probabilities of being unsatisfied. On the other hand, a higher level of education also reduces the probability of falling in the higher tails of life satisfaction" (Becchetti et al., 2010, p. 18).

This is hypothesized to be due to the fact that, from a capability perspective, education enables individuals to increase their set of *functionings* and, "through them, to enhance their capabilities," but also increases their aspiration levels in an upward direction as well (Becchetti et al., 2010, p. 19). Thus, education plays a tempering role: "by enlarging the set of functionings and capabilities," it "reduces the probability that individuals lack sufficient resources to avoid the 'low satisfaction trap'" (Becchetti et al., 2010, p. 19). Of course, this will likely depend on the 'capability-building' or 'capability-inhibiting' institutional context of the educational system (Olympio, 2012).
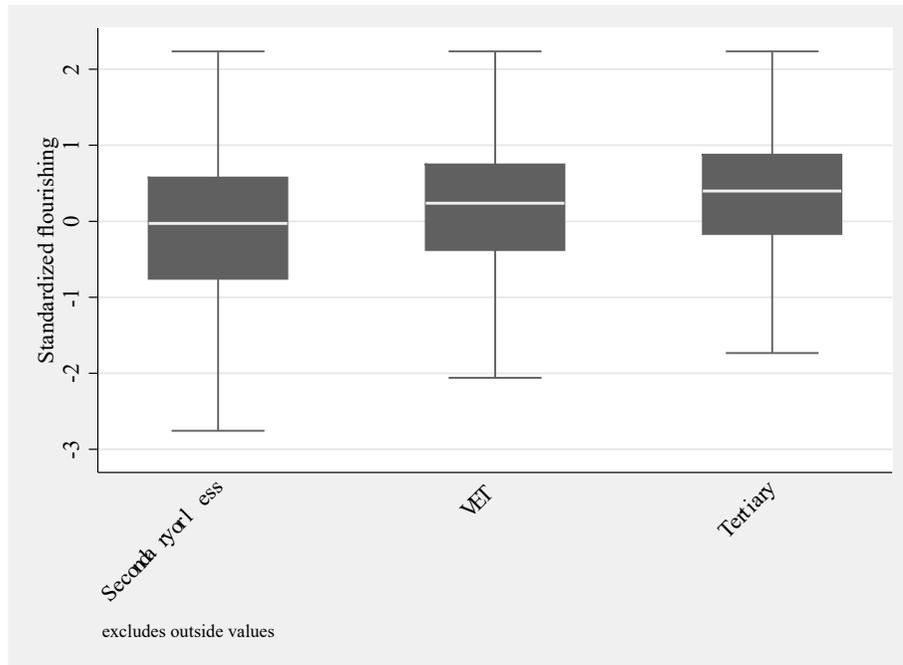
Figure 41. Boxplot of median *flourishing* by educational attainment with 25th to 75th percentile ranges.

Note: These whisker plots show the median value of *flourishing* for each educational category, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, we see here that the dispersion in terms of range is the largest for the lowest levels of education.
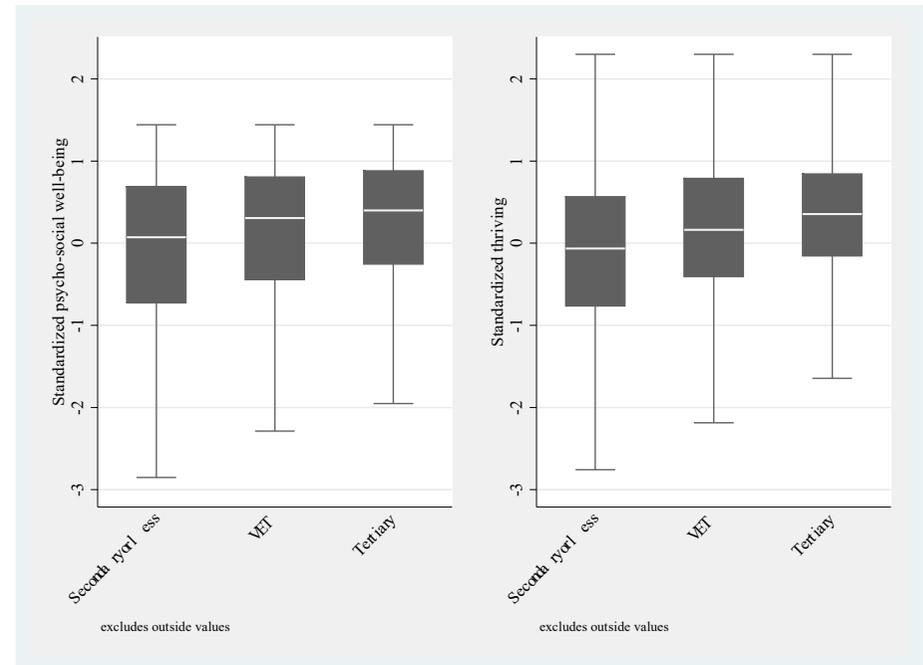
Figure 42. Boxplot of median *psycho-social well-being* and *thriving* by educational attainment with 25th to 75th percentile ranges.

Note: These whisker plots show the median value of *psycho-social well-being* and *thriving* for each educational category, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, we see here that the dispersion in terms of range is again the largest for the lowest levels of education, and also larger for *thriving* than *psycho-social well-being*.

Table 30. *Average well-being scores by level of educational attainment*

	Total sample	**Secondary or less**	**VET**	**Tertiary**
Capability-informed Flourishing	6.82	6.69	6.99	7.07
	(0.99)	(1.02)	(0.90)	(0.87)
Psycho-social well-being	5.22	5.14	5.35	5.39
	(0.82)	(0.86)	(0.74)	(0.72)
Thriving	8.38	8.23	8.55	8.72
	(1.41)	(1.46)	(1.29)	(1.23)
Subjective general health	3.82	3.71	3.92	4.09
	(0.86)	(0.87)	(0.85)	(0.76)
Deal with important problems in life	5.84	5.65	6.12	6.21
	(2.07)	(2.14)	(1.95)	(1.85)
Learn new things in life	4.37	4.20	4.52	4.75
	(1.30)	(1.37)	(1.15)	(1.05)
Felt sad, how often past week	3.44	3.40	3.50	3.51
	(0.69)	(0.72)	(0.62)	(0.64)
Free to decide how to live my life	4.00	3.99	4.01	4.03
	(0.90)	(0.92)	(0.89)	(0.86)
Felt lonely, how often past week	3.61	3.57	3.68	3.69
	(0.70)	(0.75)	(0.60)	(0.61)
Feel people treat you with respect	4.49	4.44	4.52	4.65
	(1.17)	(1.25)	(1.05)	(0.95)
Enjoyed life, how often past week	2.88	2.82	2.98	2.98
	(0.90)	(0.92)	(0.83)	(0.84)
Feel accomplishment from what I do	3.82	3.80	3.86	3.85
	(0.82)	(0.84)	(0.78)	(0.76)
When things go wrong in my life it takes a long time to get back to normal	3.41	3.32	3.57	3.61
	(1.07)	(1.11)	(1.01)	(0.95)
Observations	24385	14166	3630	6416

Source: ESS6-2012 (Edition 2.3)
Note: Means and standard deviations (in parentheses) of raw scores were computed using design weights in combination with population size weights.

In this study, this tightening of the distribution at the highest levels of education is particularly the case for *thriving*. On first examination, the relationship between education and *thriving* appears to be stronger than that between education and *psycho-social well-being*. This makes substantive sense: *thriving* was interpreted to represent externally orientated aspects of well-being, such as 'environmental mastery.' These predictions are confirmed when comparing ANOVA post-hoc pairwise comparisons of means results for the two subcomponents. Indeed, differences between groups in *psycho-social well-being* are smaller and less significant ($p<0.10$) than those for *thriving* ($p<0.001$) in these bivariate analyses.[23]

5.2.2. Sensitivity checks

When we examine individual items in sensitivity checks (see Table *30*), we see that average well-being scores on individual items also increase linearly with educational attainment across most dimensions. However, these differences are fairly small. Although the averages are always significantly higher ($p<0.001$) for those with some form of post-secondary education, there is not a significant difference between VET and tertiary education on six of the 10 items. The items capturing 'Emotional well-being' in terms of feeling sad, 'Personal autonomy' in terms of deciding how to live one's life, 'Social relationships' in terms of feeling lonely, 'Accomplishment' in terms of daily activities, 'Play' in terms of time to enjoy life, and 'Resilience' in terms of getting back to normal after things go wrong all show *insignificant* differences between VET and tertiary education. However, it should be emphasized that while there is not a significant difference between those with these two types of post-secondary education, the differences between each of these two groups and secondary education or less are highly significant in all cases.

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[23] Due to the fact that these are bivariate analyses, no control variables are included. Relationships with controls will be examined in the next chapter. However, design and post-stratification weights used in the computations. Unweighted analyses on raw data show significant differences for all three scales.

Thus, the bivariate sensitivity check on individual indicators suggests that there are indeed significant differences in average well-being scores between those with secondary education or less and those with post-secondary education, but that the differences between those with VET and tertiary education are uncertain. These results remain to be confirmed in analyses with appropriate individual-level control variables.[24] Next, differences between levels of education by country are examined.

5.2.3. Differences between countries and EWR

Examining levels of well-being as captured by the capability-informed measure of *flourishing* by educational attainment groups across countries, we see pronounced differences between countries at all levels; however, these differences appear to be largest at the lowest levels of education. When examining average levels of well-being across countries for those with secondary education or less, we see that levels are highest in the Universalist countries. This is consistent with research suggesting that these countries provide the most benefit to the least advantaged groups in society (Gainer, 2013; Ono & Lee, 2013). The 95% confidence interval overlaps only between these countries and Switzerland and Slovenia. All other countries have significantly lower averages. Furthermore, these averages appear to be lowest in the Polytechnic countries, although Estonia and Spain in the Liberalized grouping show averages comparable to those in Italy. Germany is again a partial outlier from the Polytechnic group in terms of well-being: Levels are more comparable to those in the Conservative countries for those with secondary education or less.

These predictions are confirmed when comparing ANOVA post-hoc pairwise comparisons of means results for *flourishing* and the two subcomponents (not shown). All

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[24] Due to the fact that these are bivariate analyses, no control variables are included. Relationships with controls will be examined in the next chapter. However, design and post-stratification weights are used in all computations.

groupings score significantly lower than the Universalist countries on all measures. These differences are also significant between each of the other groupings, with the Conservative grouping showing the next highest scores, followed by the Liberalized countries, and the Polytechnic countries scoring lowest. All differences are significant ($p<0.05$) in these bivariate analyses, except for the difference between the Liberalized and Polytechnic countries on the *thriving* subcomponent scale.[25]

For those with vocational education and training, the same overall trends are repeated, with slightly higher averages. Visually, there appears to be an exception to this pattern in the Conservative countries: Now average levels in the Conservative countries and Germany seem to approach those of the Universalist countries. However, when comparing ANOVA post-hoc pairwise comparisons of means results for *flourishing* and the two subcomponents (not shown), all groupings continue to score significantly lower than the Universalist countries on all measures. Conversely, these differences are no longer significant between each of the other groupings. We also see that the 95% confidence interval is quite large for some countries (Italy, Slovakia, and Poland), due to the limited number of individuals in this educational category in the sample.

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[25] Due to the fact that these are bivariate analyses, no control variables are included. Relationships with controls will be examined in the next chapter. However, design and post-stratification weights are used in all computations.
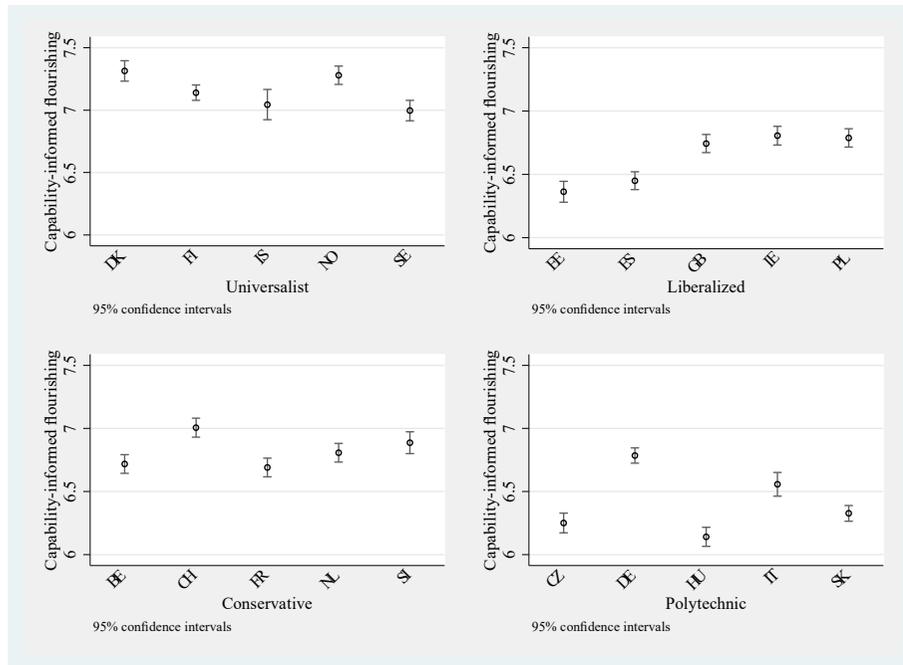
Figure 43. Levels of *flourishing* by EWR for those with secondary education or less.
Note: These graphs show the average level of *flourishing* by country for those with secondary education or less. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, Iceland and Finland do not differ significantly in average *flourishing*, while Iceland and Denmark do differ significantly (as does Sweden and Denmark).
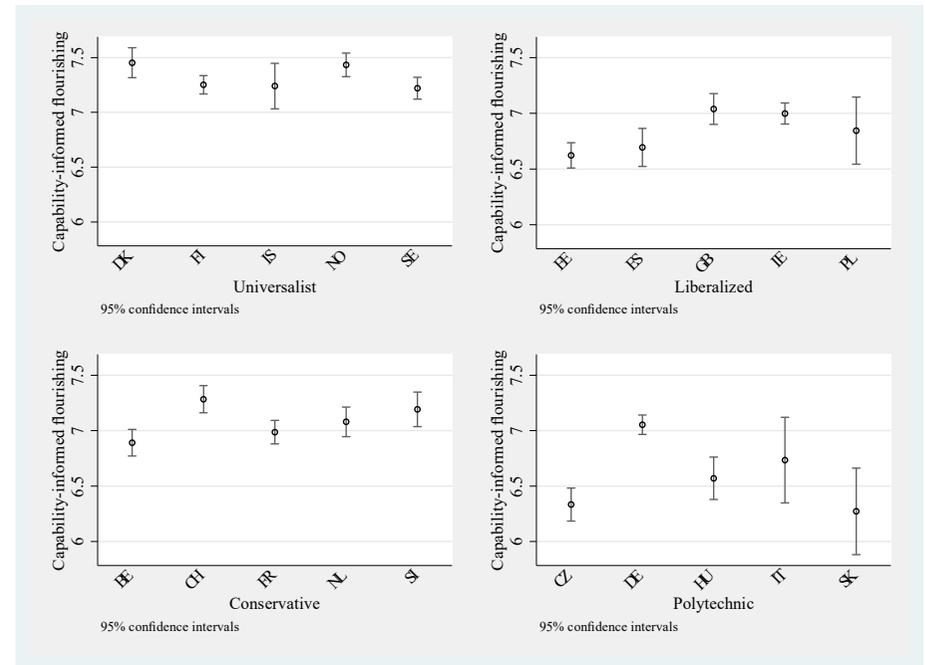
Figure 44. Levels of *flourishing* by EWR for those with VET.
Note: These graphs show the average level of *flourishing* by country for those with VET. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. Here, there are no significant differences between the Nordic countries, for example.

Looking at the same graph for those with tertiary education below (see *Figure 45*), we see that the differences between groups appear more starkly, with the partial exceptions of Ireland, Switzerland, and Slovenia. Indeed, ANOVA post-hoc pairwise comparisons of means confirm this intuition. All groupings again score significantly lower than the Universalist countries on the *flourishing* scale. These differences are also significant between each of the other groupings, except for between the Liberalized and Conservative groupings.

When examining the subcomponents separately (see Appendix 2), it is found that this is due to non-significant differences on the *thriving* subcomponent scale. Indeed, the Liberalized, Conservative, and Polytechnic countries do not show significant differences from one another on this subcomponent for those with tertiary education, while they do for *psycho-social well-being*. Therefore, on the *thriving* subcomponent, which is posited to be related to externally-oriented well-being and environmental mastery, there appears to be more similarity across regime groupings for those with the highest levels of education. Indeed, we saw above that tertiary education has the *largest* impact on this dependent variable. This result seems to suggest that country differences in levels of well-being may be the most pronounced at lower (secondary or less) levels. This aligns with – although does not provide evidence for – a vision of the welfare state as a mechanism of redistribution from the most advantaged groups (in this case, those with tertiary education) to the least advantaged groups (in this case, those with secondary education or less). We will continue to entertain this possibility while exploring levels of dispersion by education in well-being scores across countries and EWR.
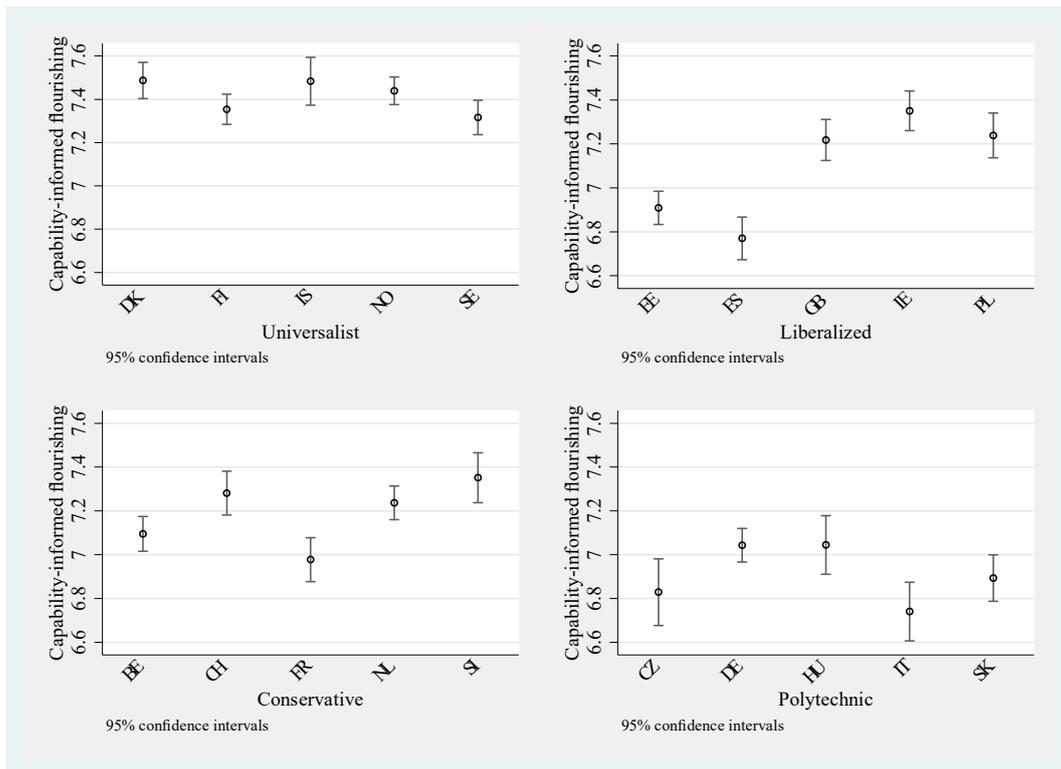
Figure 45. Levels of *flourishing* by EWR for those with tertiary education.
Note: These graphs show the average level of *flourishing* by country for those with tertiary education. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, France and Switzerland differ significantly in average *flourishing*, while Switzerland and the Netherlands do not differ significantly (and neither do Belgium and France).

5.2.3.1. Dispersion in well-being levels by education

Dispersion in well-being scores can also be examined in terms of 'educational dispersion.' This is possible through examining standard deviations of well-being scores by educational attainment category, as was done for the sample as a whole earlier in this chapter. When we plot the countries along their average level of *flourishing* and their standard deviations of *flourishing* by educational category, we see that countries that have higher average levels of well-being also show less dispersion in scores, but that this relationship is due mainly to the *lowest* levels of education (see *Figure 46*), confirming the suspicions outlined above. Indeed, the R^2 is 0.57 for those with secondary education or less ($p<0.001$), 0.43 for those with VET ($p<0.01$), and only 0.18 for those with tertiary education ($p=0.06$).

Once again, we see the country groupings emerge on the graphs, with the Universalist countries plotted in the upper left-hand corner, with high average levels of well-being and low dispersion in well-being scores, and the Polytechnic countries showing the opposite pattern. They appear in the lower right-hand corner with lower levels of well-being and higher dispersion in scores. The Liberalized and Conservative countries fall in the middle with moderate levels on each measure. However, the Liberalized countries consistently show larger standard deviations of *flourishing* scores than the Conservative countries, suggesting a less equitable distribution within educational categories. This is the most pronounced for the sub-samples with some form of post-secondary education.

To further analyze these trends, the gap – or distance – between the average well-being score of an individual with secondary education or less and the average well-being of an individual with tertiary education is examined. This measure captures the bivariate educational inequality in well-being scores between the most and least educated groups in the sample. When we plot the countries along their average level of *flourishing* and 'educational gap' in *flourishing* (see *Figure 47*), we see that countries that have higher average levels of well-being also show less educational inequality in scores. As mentioned earlier, this pattern confirms that lower levels of average well-being are associated with a "wider within-country spread" in well-being, both as a general overall trend in inequality and more particularly in relation to social inequalities due to educational attainments (Fahey & Smyth, 2004, p. 16). These findings offer support to the hypotheses presented in the present study, namely that educational attainments have a stronger impact in some educational welfare regime contexts than others.
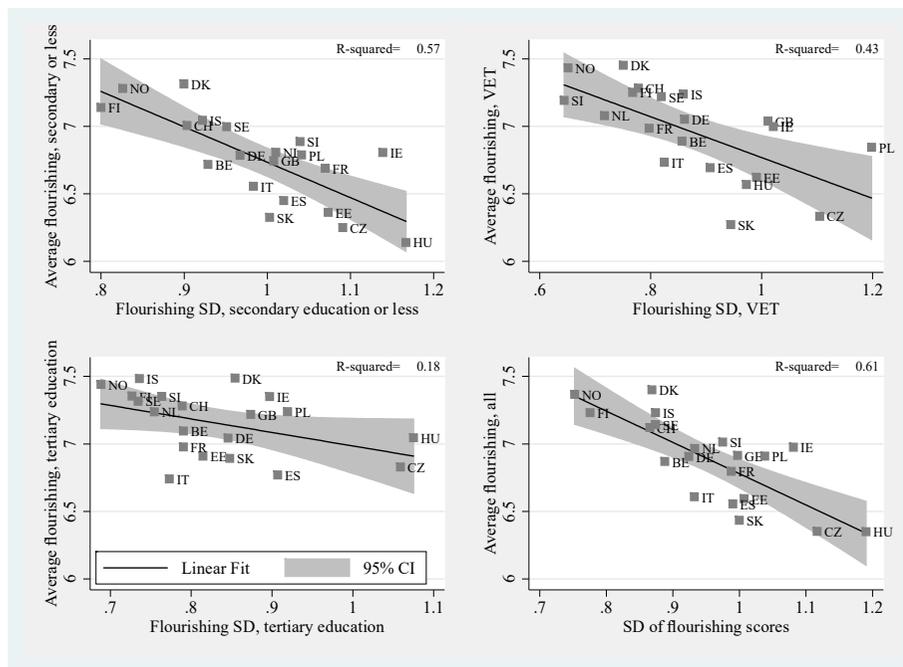
Figure 46. Average levels of *flourishing* by educational category and country plotted against standard deviations of *flourishing* by educational category and country.

Note: These scatterplots show average levels of *flourishing* by educational category and country plotted against standard deviations (SD) in *flourishing* scores by educational category and country. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of well-being that is explained by the dispersion in well-being scores for each category of educational attainment. Here, the dispersion measures significantly predict average *flourishing* across all levels of education; however, the explanatory power of the models is much higher for the lowest levels of education, explaining 57% of the variation in average scores for those with secondary education or less and only 18% of the variation in average scores for those with tertiary education.
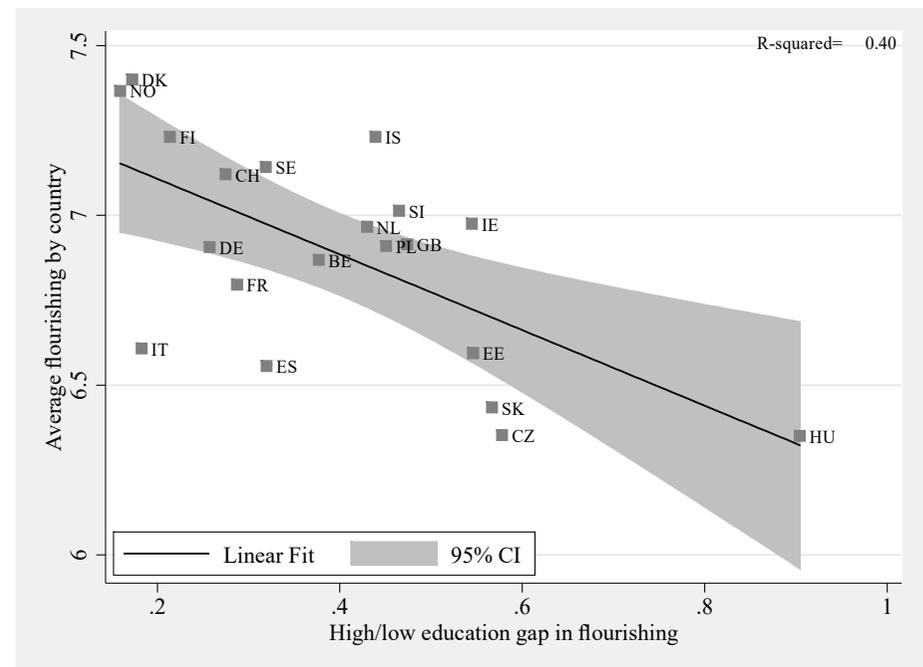
Figure 47. 'Educational gaps' in well-being plotted against average levels of *flourishing* by country, all countries.

Note: These scatterplots show average levels of *flourishing* by educational category and country plotted against the 'education gap' in *flourishing* scores by country (i.e. the gap between the average well-being score of an individual with secondary education or less and the average well-being of an individual with tertiary education). The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of well-being that is explained by the educational dispersion in well-being scores. Here, 40% of the variation in average *flourishing* by country is explained by educational inequalities in average well-being in those countries. However, we see that Hungary is an outlier.

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However, country grouping patterns by EWR are less clear-cut: While we see the Universalist countries plotted in the upper left-hand corner, with high average levels of well-being and low dispersion in well-being scores, the other groupings are now mixed in the center of the graph. Furthermore, it appears that this is at least in part due to the large educational gap in Hungary, which at the bottom right of the graph. Indeed, when we exclude Hungary from the analyses, as shown in *Figure 48* below, the bivariate relationship becomes smaller, although it remains significant ($p<0.05$). The coefficient of determination (R^2) of the relationship between the average level of *flourishing* and the educational gap is 40% when Hungary is included and 29% when Hungary is excluded from analyses.

5.2.3.2. Sensitivity checks

In order to examine the differences described above not only in terms of country groupings, but also on the basis of the analytical dimensions used in the creation of these groupings, it is useful to examine results when the 'educational gap' in *flourishing* (see *Figure 49*) is regressed on analytical dimensions of post-secondary educational stratification and decommodification developed in the previous chapter. Clearly, this bivariate relationship is not significant for educational stratification; however, it is for educational decommodification ($p=0.05$). This is surprising, but less so when we consider that this inequality measure does not take into account VET: it is simply the difference between tertiary and secondary education. On the other hand, the educational stratification analytical dimension is intricately linked with VET. This underscores an important limitation in this measure of inequality. More detailed multivariate analyses are necessary to explore this link.
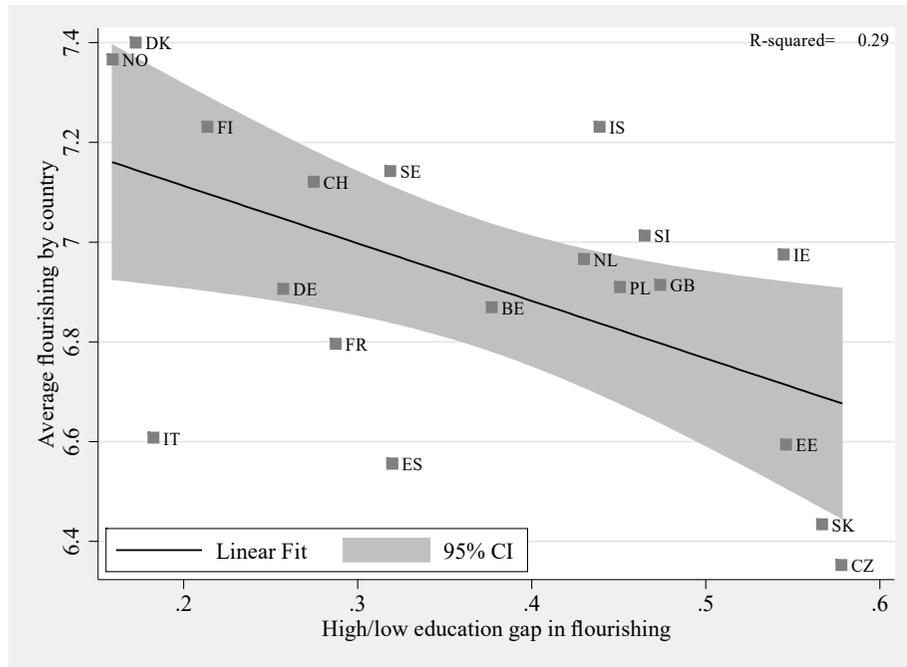
Figure 48. 'Educational gaps' in well-being plotted against average levels of *flourishing* by country, excluding Hungary.

Note: These scatterplots show average levels of *flourishing* by educational category and country plotted against the 'education gap' in *flourishing* scores by country (i.e. the gap between the average well-being score of an individual with secondary education or less and the average well-being of an individual with tertiary education). The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of well-being that is explained by the educational dispersion in well-being scores. Here, 29% of the variation in average *flourishing* by country is explained by educational inequalities in average well-being in those countries. Hungary has been excluded from this analysis.
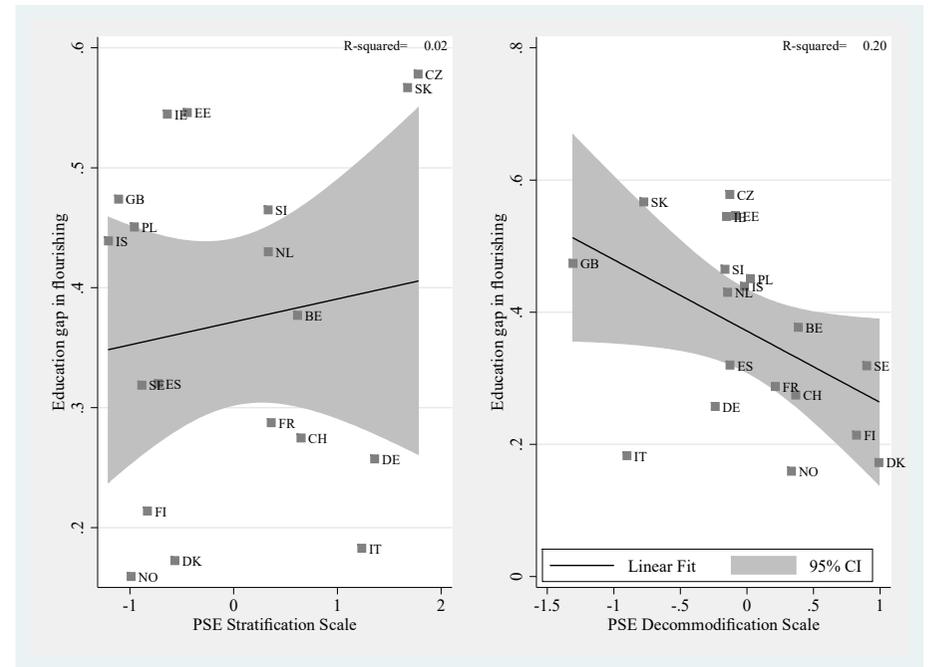
Figure 49. 'Education gaps' in well-being plotted against the analytical dimensions of post-secondary educational stratification and decommodification.

Note: These scatterplots show the 'education gap' in *flourishing* scores by country (i.e. the gap between the average well-being score of an individual with secondary education or less and the average well-being of an individual with tertiary education) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions. Here, post-secondary educational decommodification significantly predicts educational inequalities, explaining 20% of the variation in scores, but educational stratification does not (likely due to the fact that VET, and thus institutional differentiation, is not taken into account in the 'education gap' measure).

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5.3. *Robustness checks*

5.3.1. Satisfaction with life

The results outlined above may or may not be robust to other conceptualizations and operationalizations of well-being. Inspired by research highlighting differences in 'objective' and 'subjective' interpretations of outcomes (Jaoul-Grammare & Lemistre, 2015), how general cognitive evaluations, emotional affect, and 'central capability' attainment vary with education are examined next. To investigate this, levels of well-being, as measured by the capability-informed measure of *flourishing* versus one-dimensional measures of satisfaction with life and multi-dimensional measures of subjective well-being, are compared across educational categories, with many commonalities emerging. Satisfaction with life is measured with the question: "All things considered, how satisfied are you with your life as a whole nowadays?" on a Likert scale of zero to 10.

First, examining this measure of satisfaction with life alone, as is often done in comparative research both generally and concerning the welfare state in particular (Fahey & Smyth, 2004; Pacek & Radcliff, 2008; Veenhoven, 2000), we see that the patterns found for this measure are fairly similar to those found for the capability-informed measure of *flourishing*, but with some notable exceptions. In particular, France is now an outlier from the Conservative grouping, with levels of satisfaction with life significantly *lower* than the other countries (see *Figure 50*). This is consistent with prior research (Senik, 2014). Furthermore, Switzerland, Belgium, and the Netherlands group more closely with the Universalist countries when only life satisfaction is taken into account. Indeed, this broad cognitive evaluation of satisfaction may be more prey to cultural biases in reporting (Becchetti et al., 2016).

All groups of countries score significantly lower than the Universalist countries on satisfaction with life in post-hoc pairwise comparisons of an analysis of variance and

covariance (ANOVA) analysis (R^2=0.07, p<0.001), and significant differences are also found by education. When testing the bivariate relationships between educational welfare regime and well-being for each educational category, again, all groups score significantly lower than the Universalist countries. However, differences between the Polytechnic and Liberalized and Conservative groupings are not significant, suggesting that we are less able to distinguish between these groupings when using the reduced single-item measure of satisfaction with life.

Dispersion in well-being scores is actually larger with this measure, and the coefficient of determination of the relationship between the average level of satisfaction with life in a country and its standard deviation is high (R^2=0.84). This finding confirms previous research examining levels of life satisfaction and inequalities in life satisfaction across Europe. Fahey and Smyth (2004) found that "the standard deviation in life satisfaction" varied "closely and inversely with mean level of life satisfaction," in other words, "the lower the mean, the larger the standard deviation" (p. 14). They also found a comparable coefficient of determination, with an R^2 of 77% in their analysis (Fahey & Smyth, 2004).

This is also the case for well-being inequality as measured by 'educational gaps' in satisfaction with life (see *Figure 53*). Again, with this measure, France stands out amongst the most unequal in terms of differences in life satisfaction outcomes by education, as does Estonia. However, consistent with the *flourishing* measure, Hungary shows the greatest inequalities, followed by the Czech Republic. Thus, these findings related to the inverse relationship between average well-being and well-being inequality appear to be robust across measures of well-being.
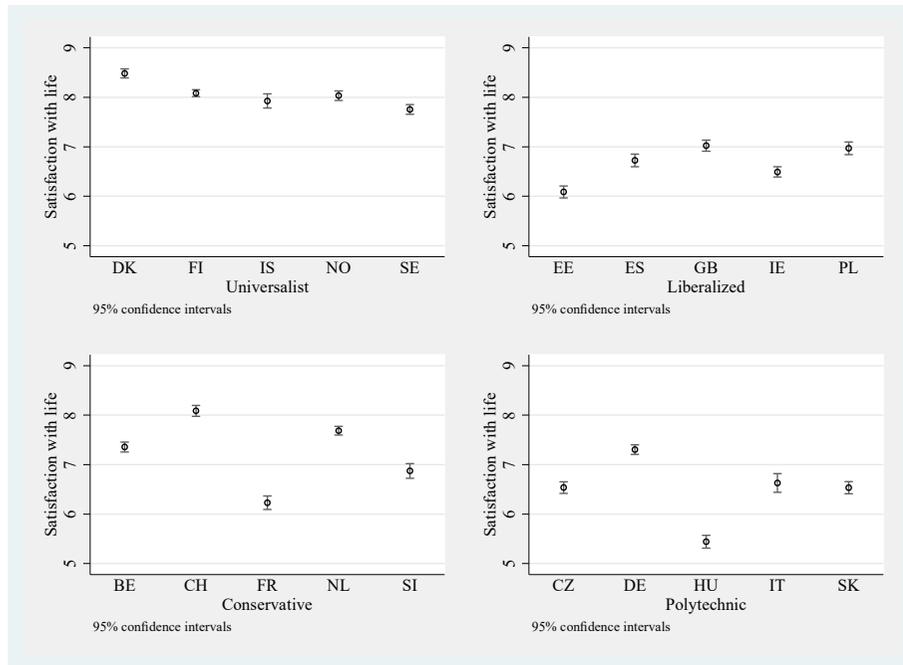
Figure 50. Average levels of satisfaction with life (SWL) with 95% confidence intervals by country and EWR.

Note: These graphs show the average score by country on the SWL scale, ranging from zero to 10. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, all of the Conservative countries report average SWL scores that are significantly different from one another.
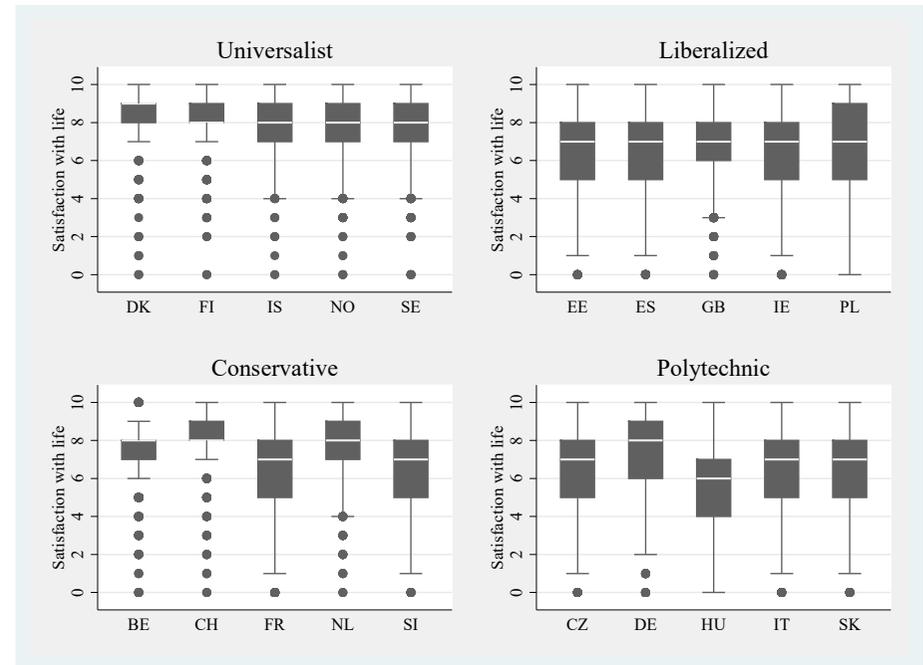
Figure 51. Boxplots of median satisfaction with life (SWL) by country and EWR with 25th to 75th percentile ranges.

Note: These whisker plots show the median value on the scale of SWL for each country, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores. For example, for those in Denmark, the IQR is between 8 and 9, while the median is 9 on this single-item scale.
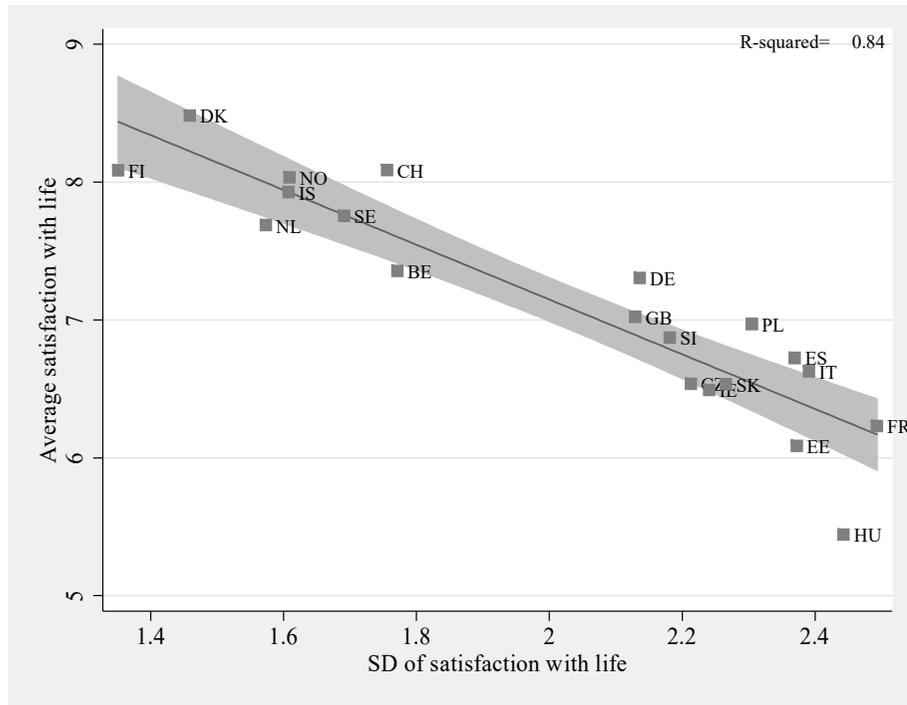
Figure 52. Average levels of satisfaction with life (SWL) plotted against standard deviations of SWL
Note: These scatterplots show the average level of SWL by country plotted against the standard deviation (SD) in SWL scores by country. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average levels of well-being that is explained by the SD. Here, 84% of the variation in average SWL is explained by the SD of SWL.
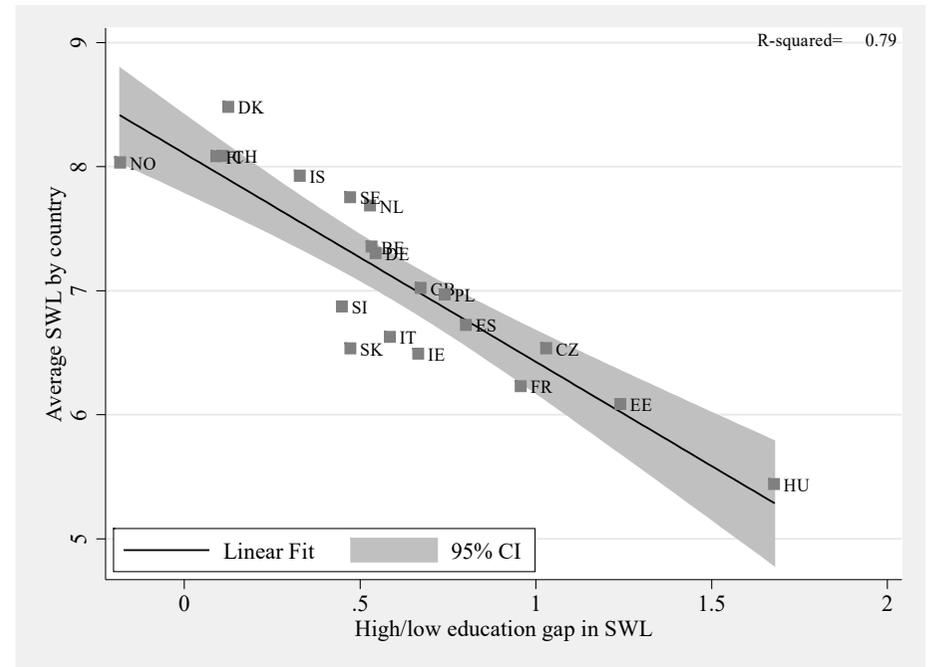
Figure 53. 'Educational gaps' in well-being plotted against average levels of satisfaction with life (SWL) by country
Note: These scatterplots show average levels of SWL by country plotted against the 'education gap' in SWL scores by country (i.e. the gap between the average SWL score of an individual with secondary education or less and the average SWL of an individual with tertiary education). The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of SWL that is explained by the educational dispersion in well-being scores. Here, 79% of the variation in average SWL by country is explained by educational inequalities in average SWL in those countries.

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5.3.2. Subjective well-being

Next, the multi-dimensional measure of 'subjective well-being' (SWB) is examined. This measure is the most common measure used in the psychological literature (Diener, 2000; Diener & Suh, 1999). This hedonic measure, based on the assumption that individuals attempt to maximize positive affect and minimize negative affect, is similar to the *flourishing* measure in that it is multi-dimensional and can be broken down hierarchically into constituent factors (Fenouillet et al., 2017, 2015). Consistent with previous research, it is measured with the questions: "All things considered, how satisfied are you with your life as a whole nowadays?"; "Taking all things together, how happy would you say you are?"; and "How much of the time during the past week did you feel sad?" (Jongbloed & Pullman, 2018). The dependent variable of 'subjective well-being' was constructed from these three items using polychoric factor analysis and scaled using Bartlett's factor scores, as was done for the *flourishing* measures. The coefficient of reliability is 0.70.

All groups of countries score significantly lower than the Universalist countries on subjective well-being in post-hoc pairwise comparisons of an analysis of variance and covariance (ANOVA) analysis (R^2=0.07, p<0.001), and significant differences are also found by education. When testing the bivariate relationships between educational welfare regime and well-being for each educational category, again, all groups score significantly lower than the Universalist countries. However, differences between the Polytechnic and Liberalized and Conservative groupings are again not significant.

Dispersion in well-being scores is lower with this measure than with satisfaction with life alone, and the coefficient of determination of the relationship between the average level of subjective well-being in a country and its standard deviation is again high (R^2=0.82). This is also once again the case for inequality as measured by 'educational gaps' in subjective well-being (see *Figure 57*). With this measure, France stands out less strongly in terms of its

standard deviation and differences in well-being outcomes by education, grouping with the Polytechnic and Liberalized countries. Indeed, in these graphs, we see a large grouping of the Universalist and Conservative countries together in the top left and a large grouping of the Liberalized and Polytechnic countries – and France and Slovenia – in the bottom right. Thus, the country groupings are not clearly differentiated when using this more general, affective measure.

Overall these findings lend less support to the hypothesis that there are differences in overall levels of well-being, dispersion of well-being, and relationships between education and well-being across the educational welfare regimes described in the previous chapters. Thus, it would appear that the *flourishing* measures are indeed tapping into aspects of well-being that go beyond measures of satisfaction with life or subjective well-being. This may help explain why some researchers examining only these hedonic measures do not find significant differences between welfare states, while the present study does (Veenhoven, 2000).
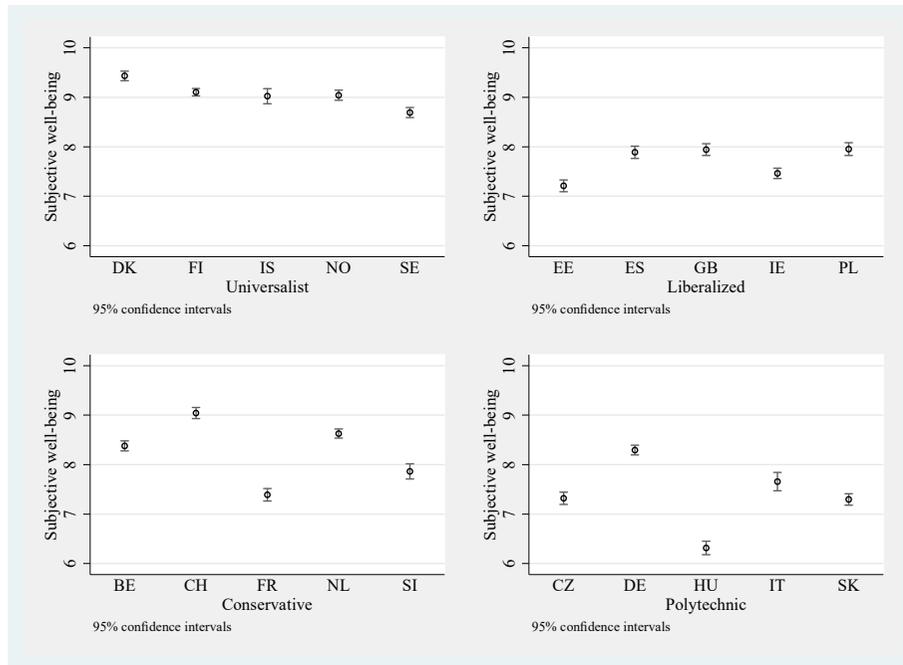
Figure 54. Average levels of subjective well-being with 95% confidence intervals by country and EWR.

Note: These graphs show the average score by country on the SWB scale. These values are meant to be comparative only. The points (circles) represent the average value, while the lines show the 95% confidence interval (CI). Thus, significant differences between countries can be identified when these lines *do not* overlap with one another. For example, all of the Polytechnic countries except the Czech and Slovak Republics report average SWB scores that are significantly different from one another.
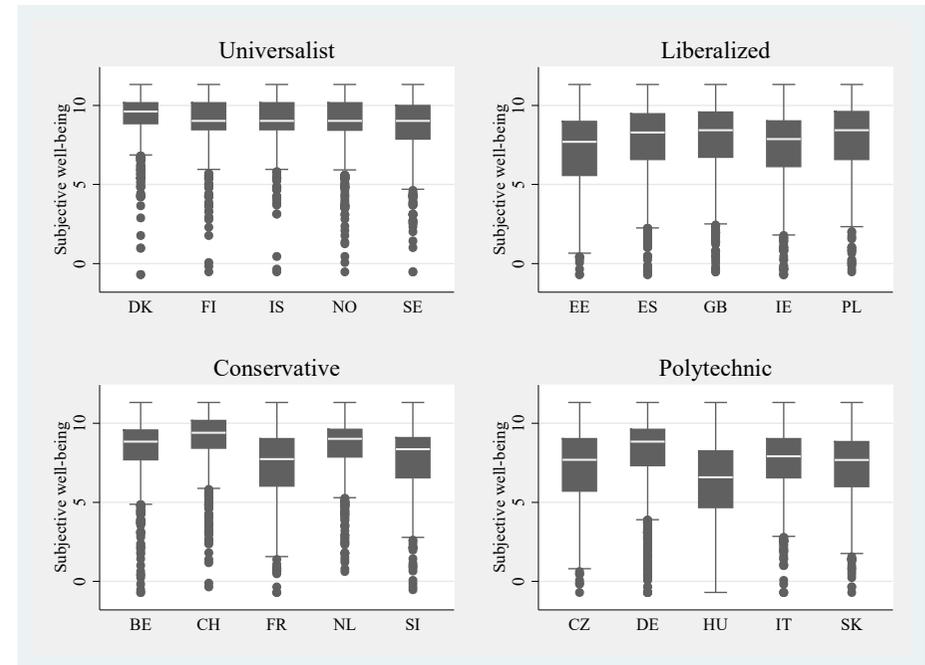
Figure 55. Boxplots of median subjective well-being by country and EWR with 25th to 75th percentile ranges.

Note: These whisker plots show the median value on the scale of SWB for each country, shown as the white line within each dark grey box. The boxes show the interquartile (IQR) range in values, that is, the 25th to 75th percentiles (the median is the 50th percentile). The 'whiskers' show the complete range in scores.

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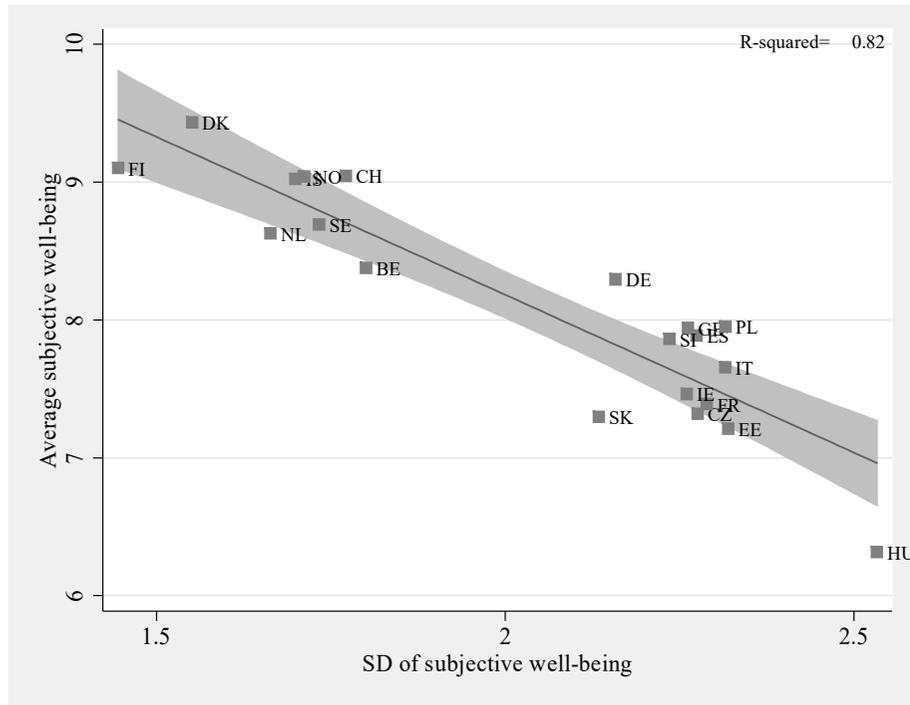
Figure 56. Average levels of subjective well-being (SWB) plotted against standard deviations of SWB.
Note: These scatterplots show the average level of SWB by country plotted against the standard deviation (SD) in SWB scores by country. The R², or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average levels of well-being that is explained by the SD. Here, 82% of the variation in average SWB scores is explained by the SD of SWB.
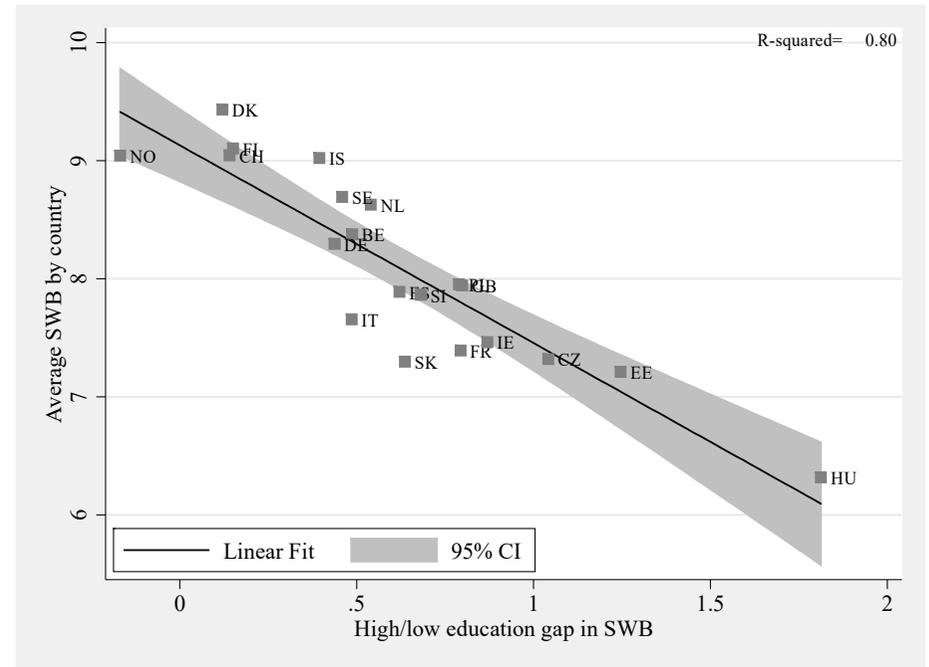
Figure 57. 'Educational gaps' in subjective well-being plotted against average levels of SWB by country.
Note: These scatterplots show average levels of SWB by country plotted against the 'education gap' in SWB scores by country (i.e. the gap between the average SWB score of an individual with secondary education or less and the average SWB of an individual with tertiary education). The R², or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the average country levels of SWB that is explained by the educational dispersion in well-being scores. Here, 80% of the variation in average SWB by country is explained by educational inequalities in average SWB in those countries.

6. Conclusion

The empirical analyses conducted in this chapter aimed to create a capability-informed measure of *flourishing*. Statistical evidence was found for both a two-component solution, including the components of *psycho-social well-being* and *thriving*, as well as the existence of a larger unitary construct. Scores on the resulting scales differed significantly both by level of education and between educational welfare regimes. Patterns were generally consistent with the EWR groupings; however, some inconsistencies were highlighted. These bivariate trends provide preliminary evidence for the fact that education is positively associated with levels of *flourishing*, and that this relationship differs across welfare contexts. However, inferential analyses incorporating both individual-level and country-level control variables are needed to confirm these findings.

In the next chapter, the association of education, operationalized as both highest educational credential and years of education, on well-being net of all controls based on a combined human capital-capabilities approach is tested. Two potential hypotheses are contrasted: Education may have a direct effect on well-being, as suggested by capability accounts, or education may have an indirect effect on well-being through occupational outcomes, as suggested by prominent researchers (Helliwell et al., 2012). These two lines of influence are also expected to differ amongst countries due to differences in educational systems and their interrelations with labour market systems. Thus, the analyses are run within the framework of the 'educational welfare regimes' typology informed by comparative educational research summarized in the previous chapters. These models incorporate the capability-informed measure of *flourishing* developed in this chapter, as well as the two components of *psycho-social well-being* and *thriving*.

Chapter 6. The distribution of well-being through education

1. Résumé en français

Après avoir étudié la littérature par rapport au capital humain et les effets non marchands de l'éducation, ainsi que la littérature utilisant l'approche par les capabilités appliquée à l'éducation, des outils analytiques de l'économie politique et des sciences de l'éducation ont été employés afin de regrouper les pays de l'échantillon en « régimes éducatifs du bien-être social » (dans les Chapitres 3 et 4). Des approches statistiques de la psychologie ont également été mises en œuvre afin de créer des composantes représentant la mesure de l'*épanouissement* informée par l'approche par les capabilités (dans le Chapitre 5). Dans ce dernier chapitre, des approches quantitatives de la sociologie, l'économie, et la science politique sont utilisées afin d'examiner l'association entre l'éducation et le bien-être à travers ces contextes et de tester les hypothèses développées dans les chapitres précédents.

Premièrement, l'impact de l'enseignement et la formation professionnels (EFP) et de l'enseignement supérieur sur l'*épanouissement* et ses sous-composants est examiné à partir des données couvrant l'ensemble des pays. Les effets significatifs sont trouvés pour les trois échelles de bien-être et la plupart des items de « capabilités humaines centrales ». Ensuite, les effets sur ces composants et leurs indicateurs constitutifs à travers des pays sont investigués. Les effets des régimes éducatifs du bien-être social sur les niveaux moyens de l'*épanouissement* et ses sous-composants sont comparés, en incorporant la taxonomie analytique des dimensions de decommodification et stratification de l'éducation post-secondaire. Ensuite, le lien « micro » entre l'éducation et le bien-être au niveau individu est analysé et s'avère différer au sein des pays et des groupements de régimes. Les tendances bivariées et multivariées sont testées paramétriquement en utilisant les termes d'interaction et

une approche en « deux étapes » des analyses de données multi-niveaux et hiérarchiques, où des résultats significatifs sont également trouvés. En effet, il apparaît que les systèmes éducatifs favorisant la réversibilité des parcours au dépend de la sélection précoce et des filières rigides, ainsi qu'une forte implication de l'état dans le financement des études et l'accessibilité aux bourses d'études universelles au dépend d'une place centrale pour le marché dans le système éducatif post-secondaire, minimisent la formation des inégalités du bien-être dans une société.

Ensuite, des complexités dans ces associations apparaissent, en examinant les effets médiateurs proposés dans le chapitre 1. Notamment, les hypothèses basées sur des perspectives de capital humain–capabilités (« *human agency* ») sont comparées avec celles fondées sur les critiques socio-institutionnelles. Ces propositions sont testées en utilisant la méthode « KHB » et explorant les tendances parmi les groupements de régimes. Ces effets indirects diffèrent entre les « régimes éducatifs du bien-être social », avec des effets indirects plus fort où la stratification de l'éducation post-secondaire est plus élevée.

Les dernières analyses impliquent : 1) la vérification de la robustesse des résultats aux opérationnalisations alternatives de l'éducation, en utilisant les années d'éducation, et le bien-être, en utilisant les mesures hédoniques, ainsi que les variables médiatrices potentielles au niveau du pays ; et 2) l'inspection de la sensibilité des résultats aux mesures alternatives en utilisant les échelles continues du stratification et decommodification de l'éducation post-secondaire, et des variables catégoriques pour les échelles du bien-être en utilisant des « valeurs seuils ». Il est notamment trouvé que les années d'éducation complétées ont un effet moindre mais significatif sur le bien-être que les diplômes post-secondaires, et que les résultats sont consistants, voir plus significatifs, pour les mesures hédoniques du bien-être. Une discussion des réponses aux hypothèses de cette étude à la suite de ces analyses conclut le chapitre. Celle-ci est approfondie dans la conclusion.

2. Summary

After exploring the literature related to human capital and the non-market effects of education, as well as the literature using the capability approach to frame the study of educational outcomes, analytical tools from political economy and comparative educational studies were put to use in order to group countries into 'educational welfare regimes' (in Chapters 3 and 4), and from psychology to create the constructs mapping onto capability-informed *flourishing* (in Chapter 5). In this final chapter, quantitative approaches from sociology, political science, and economics are utilized to examine the association between education and well-being across these contexts and test the hypotheses described in the previous chapters.

Firstly, the effects of VET and tertiary educational credentials on *flourishing* and its sub-components are explored in the pooled data for all countries in order to examine the association between education and well-being in Europe. Next, gradients by education on these scales and constituent items within individual countries are investigated. Incorporating the analytical taxonomy of the two dimensions mapping onto post-secondary educational stratification and decommodification, the effects of EWR on overall levels of well-being across countries are compared. This allows us to examine the proposed impact of these institutional arrangement characteristics on average levels, as well as the distribution, of well-being by country. Following this, the individual-level relationship between educational credentials and *flourishing* is analyzed, as well as how it differs among countries and EWR. Bivariate and multivariate patterns are tested parametrically using interaction effects and a 'two-step' approach to hierarchical data analysis.

Finally, some of the complexities in these associations are uncovered by examining the mediating effects predicted in Chapter 1. Specifically, the hypotheses based on the human agency-orientated approaches and their prominent critiques are compared and tested using the

KHB method, and the trends across EWR are further explored. The last sets of analyses involve: 1) checking the robustness of the findings to alternative operationalizations of education, using years of education, and well-being, using hedonic evaluative measures, as well as potential country-level mediating variables; and 2) checking the sensitivity of results to alternative measurement scales through the use of continuous scales of post-secondary educational stratification and decommodification and categorical well-being scales of *flourishing* 'thresholds'. A discussion of the responses to each of the hypotheses and the limitations of the study concludes.

3.   Methods

3.1. Data and Sample

This study uses ESS data drawn from the sixth wave (2012)—a sample of more than 50,000 individuals in 27 European countries (ESS, 2012, 2014). The ESS is a cross-national survey project that began in 2001 and is conducted every two years. Its goal is to explore people's values, beliefs, and behaviours. The sixth wave included a rotating module adapted from the third wave that focused specifically on personal and social well-being. It includes measures of numerous aspects of well-being, as outlined in the previous chapter. It also includes measures of education, health, income level, occupational sector, and family make-up, as well as many other variables. The sample was limited to 20 countries in accordance with the theoretical justifications and data limitations presented in Chapters 4 and 5.

3.1.1. Dependent variable

Beyond only a consideration of individuals' evaluations of their satisfaction with life, the dependent variable representing capability-informed *flourishing* measures the achievement of

high levels of quality of life and includes both hedonic and *eudaimonic* components (Hone et al., 2014). The scale measuring *flourishing* is comprised of ten items capturing Nussbaum's ten central capabilities, and analyses are conducted on each of these items individually in a 'dashboard' approach, as well as on the scales constructed from both these ten items combined and the subcomponents of *psycho-social well-being* and *thriving*.[26]

3.1.2. Measuring education

The main independent variable of interest is formal educational credential. The ESS captures educational level through the International Standard Classification of Education (ISCED), a classification system that allows for comparison across different systems of education. Due to coarsened data and cross-national differences, three levels of education are compared: 1) secondary education or less (ISCED levels 1, 2, 3a, 3b, and 3c) as the reference group; 2) non-tertiary and professional diplomas (ISCED levels 4a, 4b, 4c, and 5b); and 3) tertiary bachelor's and research degrees (ISCED levels 5a and 6). Several different methods of categorizing educational credentials were examined and tested, but discrepancy among countries was a limiting factor. Thus, as described in Chapter 4, VET and tertiary education are captured through a simplified measure of self-reported highest educational attainment, transformed into a variable categorizing respondents with secondary education or less, post-secondary vocational education, or tertiary education (e.g., at the undergraduate or graduate level).

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[26] As outlined in the previous chapter, a single measure of capability-informed *flourishing* and two sub-component scales were constructed using polychoric factor analysis and scaled using Bartlett's factor scores.

3.1.3. Measuring occupational sector and relative income

Occupational sector is operationalized using the International Standard Classification of Occupations (ISCO). The ISCO classification system separates individuals into 1) managers, 2) professionals, 3) technicians and associate professionals, 4) clerical and support workers, 5) service and sales employees, 6) skilled agriculture, forestry, and fishery workers, 7) craft and tradespeople, 8) assemblers, plant, and machine operators, and 9) elementary occupations (such as cleaners and laborers). A tenth category capturing missing occupational data was also created. Occupational sector is modeled as a series of dummy variables, with elementary occupations serving as the reference category.

Income is measured on a relative scale of deciles within countries in the ESS dataset (ESS, 2012; Fahey & Smyth, 2004). This variable measures *household* income, and not individual earnings. The decile categories are country-based and reflect the actual household income range in each country (ESS, 2012). These categories are collapsed into three dummy variables, with 'low income' representing the four lowest deciles and serving at the reference category, and the next three deciles as 'medium income' and the last three 'high income.' A fourth category for 'missing income' is added as an additional dummy variable, as this variable has the highest level of missing data of all variables in the analyses (approximately 17% of the final sample as a whole). Other researchers use this practice with income data from the ESS and other surveys, treating it as a separate category or variable due to comparatively high levels of missingness (Helliwell, Huang, & Wang, 2014; Hou, 2014b; Pierewan & Tampubolon, 2015).

3.1.4. Country-level variables

Country-level indicators used in the analytical taxonomy of post-secondary educational stratification and decommodification, such as the percentage of individuals in each country

with tertiary education, government expenditure per tertiary student, and gross enrollment in tertiary education, as well as country-level economic control variables, including income per capita, Gini coefficients, and overall levels of social spending, are compiled from 2012 data—or closest available year—from the OECD Education at a Glance reports, United Nations Statistics Division, and World Bank online databases. The economic control variables were chosen based on the existing 'political economy of happiness' literature, which highlights the role of these three macro-economic measures – average incomes, income inequality, and the overall size of the welfare state (Ejrnæs & Greve, 2017; Fahey & Smyth, 2004; Ovaska & Takashima, 2010).

3.1.5. Individual-level control variables

The choice of independent variables reflects both the research purpose and factors previously identified in the literature as influential on well-being. Prior research investigating the most robust methods available to examine the determinants of well-being has shown that using analyses that assume cardinality or interpersonal ordinality of responses to well-being questions produce similar results, while including relevant control variables related to observables is very important in explaining well-being and creates stark differences in findings (Ferrer-i-Carbonell & Frijters, 2004). Three key variables that consistently relate to well-being are: age, income, and marriage (Becchetti, Corrado, et al., 2010; de Ree & Alessie, 2011; Lyubomirsky, King, & Diener, 2005); therefore, these and several other standard control variables are included in analyses.

Demographic control variables introduced hierarchically in each model include: gender (the reference category is women), marital status (the reference category is single), presence or absence of children in the household (the reference category is none), 10-year age groups (the reference group is younger than 34), and income level (the reference group is low

income, defined as the bottom third of the distribution). Occupational control variables introduced hierarchically in each model include employment status and occupational sector (categorical dummy variables with employed and elementary occupation as the reference groups), and being a student or retired (the reference category is not being a student and not being retired).

3.2. Modeling approach

> Controversy over different views of "methodology" and "theory" is properly carried on in close and continuous relation with substantive problems… The character of these problems limits and suggests the methods and conceptions that are used and how they are used.
> C. Wright Mills

Three central questions frame this study: Is education (positively) associated with well-being? Do educational welfare regimes (EWR) significantly shape overall country well-being levels? And do EWR impact the association between education and well-being – in other words, do they effect educational inequalities in capability attainment? To test the assertion that education is associated with individual well-being, the overarching association across all countries is first examined. Next, how the direct relationship differs among individual countries and EWR is considered, in order to test if this association varies in particular and significant ways between EWR. In a further step, this research investigates how the country-level measures of post-secondary educational stratification and decommodification correlate to these findings. Finally, the indirect effects of education through other variables in a mediation analysis are examined in more detail, and robustness and sensitivity checks are conducted on the measures of both education and well-being.

The direct relationship between education and well-being is examined through two main approaches. After first briefly reviewing the descriptive findings from the previous chapter, pooled ordinary least squares (OLS) linear regression models with robust standard

errors and individual country OLS linear regression models are used to investigate how educational credentials impact well-being across Europe. Scales [27] created from the standardized items for each well-being component, as described in the previous chapter, are used as the dependent variables in the regression analyses. Analyses were carried out in Stata version 12.1 (StataCorp, 2012).

Three additional approaches are used to further examine how this relationship differs across EWR contexts. First, examining descriptive statistics allows us to compare differences in well-being amongst educational categories over EWR. Next, interaction effects are examined between types of EWR and educational categories in pooled regression analyses. Third, this study explores how country-level variables, including post-secondary educational stratification and decommodification, relate to country fitted intercepts and coefficients of the association between educational credential and well-being (with all controls) in a two-step analytical approach (Achen, 2005; Bowers & Drake, 2005; Bryan & Jenkins, 2015). These effects are illustrated graphically to aid with interpretation.

3.2.1. OLS regression

Nested OLS regressions with robust standard errors are used in the pooled analysis to account for country clustering of errors. The first model includes only education variables, while the next model adds individual demographic variables, including income, and the final model considers occupational variables. OLS regression models are used despite the fact that the dependent variables are ordinal in nature. The choice of empirical model "largely depends on whether the researcher assumes cardinal or ordinal happiness," a distinction that is "very important from a theoretical perspective;" however, "the empirical literature has shown that there is virtually no difference between estimating the happiness equation by means of a

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[27] As explained in the previous chapter, the *flourishing* measures are constructed using polychoric factor analysis on the relevant items to then create a scale indicator using Bartlett's factor scores.

linear or an ordered categorical estimator" (Ferrer-i-Carbonell & Ramos, 2013, p. 1018).

Consistent with prior findings (Balestra & Ruiz, 2014; Ferrer-i-Carbonell & Frijters, 2004;

Ferrer-i-Carbonell & Ramos, 2013), the ordered probit and OLS regression models are

extremely similar (i.e. the sign and size of the coefficients and whether a coefficient is

significant). Thus, because in general the results do not differ in significance and because a

cardinal vision of well-being[28] is espoused in the theoretical framework of this study, the

OLS results are reported here unless otherwise specified. This also adds to ease of

interpretation (Hou, 2014b, 2014a).

Each of these OLS regression models with robust standard errors takes the basic form:

$$WB_{ij} = \beta_{0j} + \beta_{1j}VET_{ij} + \beta_{2j}Tertiary_{ij} + \cdots + \varepsilon_{ij} \qquad (1)$$

where *WB* is the well-being scale or item, *VET* is the dummy variable representing vocational

education or training credential, *Tertiary* is the dummy variable representing tertiary

educational credential, and stage-wise control variables (specified in the tables) are also

included in the regression equation.

Further fixed effects models are run to account for unobserved country-level

heterogeneity, including national and socio-cultural differences, although this is not possible

once EWR grouping variables are introduced, due to elevated collinearity. Pooled and fixed

effects models were chosen rather than multilevel modeling due to the constraint of the level-

2 sample size of 20 countries, which is too small for reliable estimation of level-2 effects

(Bryan & Jenkins, 2015). However, a set of multilevel analyses is run as a robustness check

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[28] This cardinal vision implies that the intervals between two points on well-being indicators (for example, *flourishing*) have consistent meanings, or, in other words, that the interval between these two points is always the same wherever they appear on the scale and that "the difference in happiness between 4 and 5 for any individual is the same as between 8 and 9 for any other individual" (Ferrer-i-Carbonell & Frijters, 2004, p. 641). Thus, this vision asserts that we can compare this metric between different scores and individuals. Clearly, this is a stringent criterion that may not be met in practice. However, differences between ordinal and cardinal approaches in regression analyses have been described as "relatively unimportant to results" (Ferrer-i-Carbonell & Frijters, 2004, p. 655). Those favoring a conservative position use ordinal methods (Balestra & Ruiz, 2014). There exist important critiques of this vision, problematizing the assumed ability to make interpersonal comparisons (Rappert & Selgelid, 2013; Sen, 1985).

at the end of the chapter. All analyses are conducted using ESS Wave 6 post-stratification weights in combination with population size weights.

Next, nested OLS regression analyses conducted separately for each country and then each EWR allow for intra-group analysis concerning the relationship between education and well-being, comparison of the predictive ability between models, and the identification of potential mediating effects within countries. The OLS regression models take the same basic form as equation (1) above, and stage-wise control variables (specified in the tables) are once again included in the regression equations.

Furthermore, preliminary models including EWR country-level variables allows for a first stage of comparison between country groupings. Each of these OLS regression models with robust standard errors takes the basic form:

$$WB_{ij} = \beta_{0j} + \beta_{1j}VET_{ij} + \beta_{2j}Tertiary_{ij} + \beta_{3j}EWR_{ij} + \cdots + \varepsilon_{ij} \qquad (2)$$

where *WB* is the well-being scale or item, *VET* is the dummy variable representing vocational education or training credential, *Tertiary* is the dummy variable representing tertiary educational credential, and *EWR* is a series of four dummy variables representing each of the four educational welfare regimes. Stage-wise control variables (specified in the tables) are also included in the regression equations.

3.2.2. Cross-level interactions

A separate regression analysis including EWR interactions by educational level allows for inter-group comparison, while including all control variables. This model examines the relationship between well-being at each education level as impacted by each EWR type, testing whether EWR groupings moderate the education-well-being association (see *Figure 58* below). A moderator is "a third variable that modifies a causal effect," explaining 'when' or 'for whom' these effects take place (Wu & Zumbo, 2008, p. 368). Thus, these analyses are

undertaken with the goal of understanding of the role of educational institutional context in determining the relationship between educational credentials and later well-being as captured through the capability-informed measure of *flourishing*. This empirical approach has been undertaken by other researchers examining moderating effects of other types of institutional contexts (Aguinis, Beaty, Boik, & Pierce, 2005; Brambor, Clark, & Golder, 2006) and those examining the effects of educational institutional contexts on other relationships, such as that between educational qualifications and labour market position (Andersen & van de Werfhorst, 2010).

Pooled statistical models that include an interaction term between each education level and the EWR group allow us to test descriptive patterns parametrically. Each of these OLS regression models with robust standard errors takes the basic form:

$$WB_{ij} = \beta_{0j} + \beta_{1j}VET_{ij} + \beta_{2j}EWR_{ij} + \beta_{3j}EWR_{ij} * VET_{ij} + \cdots + \varepsilon_{ij} \qquad (3)$$

where *WB* is the well-being scale or item, *VET* is the dummy variable representing vocational education or training credential, and *EWR* is the dummy variable representing the educational welfare regime. These variables are reproduced for each combination of VET and tertiary education by EWR-grouping, and stage-wise control variables (specified in the tables) are also included in the regression equations. Furthermore, all constitutive terms are included in the interaction model specifications (Brambor et al., 2006).
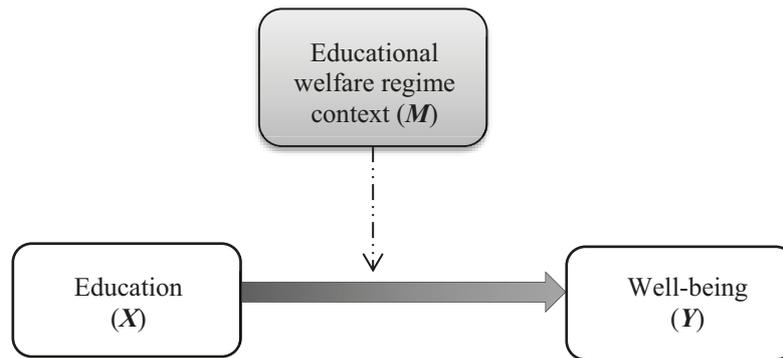
Figure 58. Schema illustrating the moderating effect of EWR context on the relationship between education and well-being (adapted from Wu & Zumbo, 2008).
Note: This conceptual path diagram shows a relationship in which the causal effect of education (*X*) on well-being (*Y*) depends on the value or category of the moderating variable, educational welfare regime context (*M*). The gradient shading of the arrow going from *X* to *Y* shows the potential "change of strength or direction of the casual effect" (Wu & Zumbo, 2008, p. 370) depending on the educational welfare regime context.

Multiplicative interaction models of this type are symmetric. Therefore, these models cannot differentiate between a hypothesis asserting that EWR modifies the effect of education on well-being from its opposite where education modifies the effect of EWR on well-being (Brambor et al., 2006). Due to this fact, the direction of causality cannot be determined empirically; however, theoretical argumentation in combination with the empirical results can provide strong evidence for a particular causal story. The robustness of these findings is further established by the inclusion of relevant country-level control variables for average income per capita, income inequality, and overall social spending.

3.2.3. Two-step approach

Thus far, three different modeling approaches that are mobilized within this study have been described: pooled models with country-specific clustered standard errors, separate models for each country, and verification models employing fixed effects. These three approaches are all commonly used in the literature when analyzing multi-level country datasets, such as the ESS (Bryan & Jenkins, 2015). However, these approaches do not allow the researcher to examine specific country-level factors, as a multi-level approach would allow. Thus, a further

approach is included, termed the 'two-step' approach here, but also called 'two-stage' or 'two-level' regression in the literature (Achen, 2005; Gelman, 2005). This approach is considered a 'special case' of multi-level modeling, although simpler to analyze and interpret, and gives near-identical results if the number of respondents per country in the sample used is large (Gelman, 2005).

First, OLS regression analyses are conducted incorporating fixed effects for each country. From these models, the fitted country intercepts accounting for all individual-level control variables are identified. The fitted intercepts are derived from fixed-effects models of the following form:

$$y_{ic} = X_{ic}\beta + \nu_c + \varepsilon_{ic}, \text{ with } i = 1, \dots, N_c; c = 1, \dots, C. \tag{4}$$

Then, a linear transformation is employed: the overall regression equation intercept is added to each of the country effects in order to compare countries in terms of 'average' well-being scores *ceteris paribus*, net of demographic and occupational controls.

Second, these fitted country intercepts are regressed on specific country-level predictors, including the variables and scales used in Chapter 4 to measure levels of post-secondary educational stratification and decommodification. The regression of the fitted country intercepts on country-level predictor variables in the second regression model takes the form:

$$\hat{\nu}_c = \alpha + Z_c\gamma + \eta_c, \text{ with } c = 1, \dots, C. \tag{5}$$

By taking this 'two-step' approach, regression models are fit at both the individual level and at the country level. Using the second set of models, it is possible to examine the impact of specific country-level factors with unbiased standard errors (Bowers & Drake, 2005). This allows for an examination of the determinants of overall levels of well-being across countries – in other words, the macro-level factors associated with higher societal well-being – by

regressing country-level characteristics related to EWR groupings on the fitted country well-being intercepts.

Data visualization methods are particularly important to this approach: Multiple authors emphasize that it is helpful to display these statistical inferences graphically in order to find patterns in the data (Bowers & Drake, 2005; Gelman, 2005). This has the added benefit of aiding in the identification of influential cases (i.e., countries) that may lead to unreliable estimates, and, therefore, inaccurate substantive conclusions (van der Meer, te Grotenhuis, & Pelzer, 2010, p. 173). Indeed, outliers can be problematic due to the reduced number of observations. Scatter plots at the aggregate level allow the researcher to visually locate these cases and potentially exclude them from analyses if they significantly change the results of the analysis.

A second adaption of the two-step approach is also incorporated: As above, separate OLS regressions of each well-being measure on the education variables and controls for each of the 20 countries are estimated. Using the results of these models, the coefficients are collected for both *VET* and *Tertiary* from the within-country regressions and then used as the dependent variable in the 'second step' of the analyses (Achen, 2005). This general approach can be defined as:

> the procedure of fitting several separate regression models, and then fitting a second, higher-level, regression to the estimated coefficients (for example, fitting a separate regression model to survey data from each of several countries, then regressing the coefficient estimates on country-level predictors). (Gelman, 2005, p. 459)

Thus, the country-level variables then serve as the independent variables in these analyses, which take the same form as Equation 5 above, except that $\hat{v}_c$ is now the coefficient for the *VET* or *Tertiary* variables from the first step (Achen, 2005). This allows us to examine the determinants of the *relationship* between education and well-being across countries by regressing country-level characteristics on the education regression coefficients for each specific country.

This type of approach was used by Shavit and Müller (1998) in their well-known study "From School to Work," where they regressed the coefficients of the effect of education on occupational prestige from individual-level, single country models from 12 different countries on country-level variables capturing educational system characteristics, including the level of standardization, stratification, and vocational specificity. Their findings, which have since been collaborated by others, showed that these characteristics, and vocational specificity in particular, significantly (positively) impacted the association between education and occupational prestige, using this methodology (Andersen & van de Werfhorst, 2010). These approaches are also common to studies in political science and political economy (Achen, 2002, 2005, Gelman, 2005, 2006).

These empirical choices are therefore based on best practices described in the literature and rooted in the reasoning that "it is the second-stage parameters that are theoretically more engaging" here, as is often the case in political science, for example (Achen, 2005, p.449). Furthermore, not only are two-step regression analyses conducted on both fitted intercepts and regression coefficients, but the relationships between country-level educational characteristics variables and both overall levels of well-being in countries (with all individual-level controls) and the relationships between education and well-being by country are also examined in a visual manner through descriptive figures. Scatterplots showing level-2 regression lines as well as plots of confidence intervals for level-2 beta coefficients are used to illustrate the statistical significance and explanatory power of the models across countries and groupings.

3.2.4. Mediation effects and the KHB method

Next, the indirect relationship between education and well-being is examined. In doing so, an argument with causal implications is presented: in other words, "a theoretical hypothesis

about how changes in one variable results in changes in another" (Wu & Zumbo, 2008, p. 368). This argument takes the form of a mediating effect, in which a mediator is "a third variable that links a cause and an effect," to be distinguished from a moderating effect, which was described above (Wu & Zumbo, 2008, p. 368). Mediators explain 'why' or 'how' an effect occurs, in contrast to moderators, which explain 'when' or 'for whom' these effects take place.

As discussed in Chapter 1, education's effect on well-being is hypothesized to be potentially mediated (or explained, answering the question 'why') by occupational status. This hypothesis is based on prominent critiques of human capital arguments. Therefore, mediation models are run to attempt to provide a response to these competing potential causal mechanisms. These models are identical to stage-wise OLS models of the form shown above, introducing the variables of interest one by one and comparing the differences in the regression coefficients between models to find average partial effects. Thus, a preliminary model includes only education variables and control variables, and subsequent models add the potential mediating variables of interest, namely income and occupational sector variables.

These effects are illustrated in *Figure 59*, which was first introduced in Chapter 1. We see the potential mediating, or intervening, effects of occupational sector, illustrated in arrow *B*. Furthermore, educational welfare regimes have now been introduced as a potential *moderating* factor, as described in the section on cross-level interactions above and further explained below. They are hypothesized to determine the strength, and potentially the direction, of the effect of education on well-being through both direct and indirect channels.
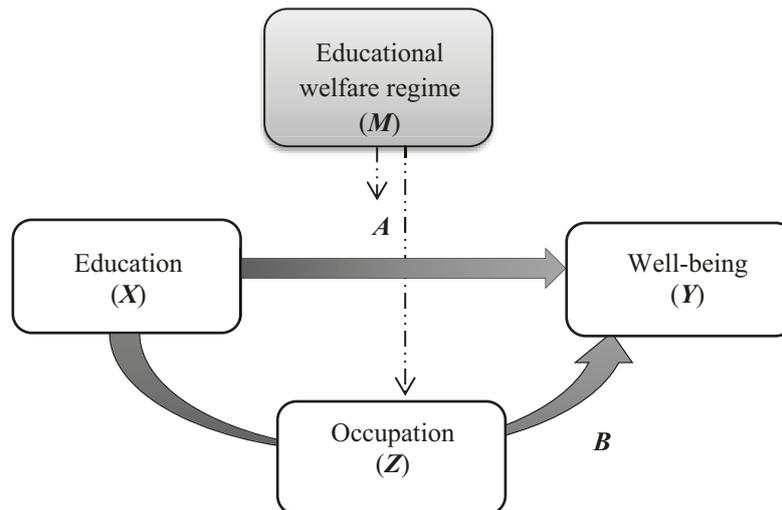
Figure 59. Schema illustrating the potential relationships between education and well-being in institutional comparative context (adapted from Pullman & Jongbloed, 2017)

Note: This path diagram shows a relationship in which the causal effect of education (*X*) on well-being (*Y*) depends on the value or category of the moderating variable, educational welfare regime context (*M*), and where, in addition to the partial direct effect of education (*X*) on well-being (*Y*), education also has an effect on occupation (*Z*), which in turn has an effect on well-being in a mediated relationship. The gradient shading of the arrows going from *X* to *Y* (and *X* to *Z* to *Y*) shows the potential "change of strength or direction of the casual effect" (Wu & Zumbo, 2008, p. 370) depending on the educational welfare regime context.

In order to test these alternative mechanisms, mediation analyses are conducted on pooled and EWR group-level data using the Karlson-Holm-Breen (KHB) method (Kohler, Bernt Karlson, & Holm, 2011). The KHB method describes the degree to which control variables – in this study, occupational sector (*Z*) – mediate or explain the relationship between educational credentials (*X*) and well-being (*Y*). In other words, the effect of education on well-being is decomposed into direct, indirect, and total effects.

This approach has the added benefit of "separating changes in coefficients due to rescaling [for example, in logistic regression models] from changes due to the introduction of more variables in the model, " (Iannelli, 2013, p. 913) extending the decomposition properties of linear models to non-linear models. It does this by "ensuring that crude and adjusted coefficients are measured on the same scale, thereby allowing for the separation of confounding from scaling bias" (Qvist, 2018, p. 210). Thus, the KHB approach takes into account the degree to which *X* (education) and *Z* (occupational status) are correlated, and the

extent to which *Z* (occupational status) has an effect on *Y* (well-being) independently of the effects of *X* (education) (Kohler et al., 2011).

This approach was developed within the domain of quantitative sociological research, and has been applied to numerous research problems. For example, it has been used to study: the reproduction of social inequality in the labor market through quantifying "how much of the differences in occupational outcomes between graduates with different levels of parental education is (statistically) explained by years of higher education, type of institution attended and field of study" (Triventi, 2013, p. 57); "the extent to which secondary school curricula account for social class differences in the chances of entering into the service class and avoiding a low-skilled occupation" (Iannelli, 2013, p. 907); and differences in "secular and religious volunteering among immigrants and natives in Denmark" and to what extent they are explained by indirect effects via 'religiosity' (Qvist, 2018, p. 202).

Furthermore, moving beyond a general discussion of these mediation effects, how these direct and indirect effects of education differ amongst educational welfare regimes is investigated by conducting separate KHB analyses by regime groupings. In essence, these analyses examine how the mediating effects are *moderated* by EWR (variable '*M*' in *Figure 59*). That is, it is hypothesized that EWR context modifies the causal effect presumed to exist between education and well-being through both direct and indirect pathways. In this case, the aim is to examine how much of the differences in well-being outcomes between individuals with different levels of post-secondary education is due to mediation – or we can also term this confounding – by effects on occupational sector *within* different educational regimes in comparative perspective. Finally, how the results of these KHB analyses relate to the country-level measures of post-secondary educational stratification and decommodification is examined, adapting the two-step approach outlined above.

3.2.5. Robustness checks

3.2.5.1. Well-being

Several measures of well-being are compared in order to see to what extent the study findings are robust to different operationalizations of well-being. As described Chapters 1 and 2, the effects of education on well-being are often argued to be negligible when hedonic evaluative operationalizations are used (Becchetti & Pelloni, 2013). Thus, the relationship between education and both a single-item evaluative conceptualization of well-being, operationalized as 'satisfaction with life' (SWL), and a multi-item hedonic measure of well-being, operationalized as 'subjective well-being' (SWB), are compared with the multi-dimensional eudaimonic construct of well-being as a capability-informed measure of *flourishing*.

These models take the form:

$$WB_{ij} = \beta_{0j} + \beta_{1j}\text{VET}_{ij} + \beta_{2j}Tertiary_{ij} + \cdots + \varepsilon_{ij} \tag{6}$$

$$WB_{ij} = \beta_{0j} + \beta_{1j}VET_{ij} + \beta_{2j}ETWR_{ij} + \beta_{3j}ETWR_{ij} * VET_{ij} + \cdots + \varepsilon_{ij} \tag{7}$$

where *WB* is the well-being item or scale, *VET* is the dummy variable representing vocational education or training credential, and *EWR* is the dummy variable representing the educational welfare regime. These variables are reproduced for each combination of VET and tertiary education by EWR-grouping, and stage-wise control variables (specified in the tables) are also included in the regression equations.

3.2.5.2. Education

Two measures of education are compared in order to further test the robustness of the findings: the categorical measure of three dummy variables for highest formal educational credential completed, and a continuous measure of years of formal schooling completed.[29]

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[29] A measure incorporating *non-completed* years of education as well was not available.

These two measures of education allow for different interpretations, with years providing greater nuance and the categorical variable capturing qualitatively different levels of education. The models take the form:

$$WB_{ij} = \beta_{0j} + \beta_{1j}EDYRS_{ij} + \cdots + \varepsilon_{ij} \qquad (8)$$

$$WB_{ij} = \beta_{0j} + \beta_{1j}EDYRS_{ij} + \beta_{2j}ETWR_{ij} + \beta_{3j}ETWR_{ij} * EDYRS_{ij} + \cdots + \varepsilon_{ij} \qquad (9)$$

where *WB* is the well-being item or scale, *EDYRS* is the continuous variable representing years of formal schooling completed, and *EWR* is the dummy variable representing the educational welfare regime. These variables are reproduced for each combination of years of schooling by EWR-grouping, and stage-wise control variables (specified in the tables) are also included in the regression equations.

However, it is arguable whether years of education likely show a linear effect, as differences between years in terms of mathematical distances are unlikely to be constant (for example, the difference between participating in the first year of a post-secondary diploma and completing it are unlikely to be same in terms of effects on income and occupational outcomes). These 'tipping points' in years of education are termed 'sheepskin' effects in the economic literature, which are commonly defined as "disproportionately large increases in returns to schooling after the completion of certain years that usually entail a degree" (Park, 1999, p. 238). Indeed, for this reason, degrees have often been argued to be a "more important indicator of individuals' educational attainment than the number of years spent in school" (Park, 1999, p. 237). This is also the reason why years of education are included here as a robustness check, and not in the central findings of the study, where categorical measures of highest credential attained are employed.

3.2.5.3. Multi-level models

Multi-level models are arguably not the best option for the analysis of the present data, due to the small number of countries under examination (20). There is a lack of consensus in the literature, with some researchers accepting as little as 10 level-2 groups as an appropriate threshold for conducting multi-level analyses, while others assert that at least 30 are necessary in order to correctly estimate standard errors (Austin, 2010; Bryan & Jenkins, 2016). Despite these contradictory positions, preliminary models are useful to refer to as a robustness check.

Thus, to complement the single-level OLS models, multi-level hierarchical linear models (HLM) are conducted to further confirm the results. The HLM regressions regression equations take the following form:

Level 1:

$$WB_{ij} = \beta_{0j} + \beta_{1j}E_{ij} + \beta_{2j}X_{ij} + \cdots + \varepsilon_{ij} \tag{10}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \tag{11}$$

$$\beta_{1j} = \gamma_{10} + \mu_{1j}$$

$$\beta_{2j} = \gamma_{20}$$

where WB_{ij} is the dependent variable measuring wellbeing for individual i in country j, E_{ij} are the independent variables measuring individual-level education, X_{ij} are the other individual-level control variables, and ε_{ij} is the individual-level random component. The fixed components are γ_{00}, γ_{10}, and γ_{20}, while the country-level random components are μ_{0j} and μ_{0j}. Initial analyses use an unstructured covariance matrix allowing for random intercepts in the first models (random intercept models), and further models build on these by allowing slopes to covary (random slope models) in the later models.

3.2.6. Sensitivity checks

3.2.6.1. Country-level educational characteristics

Finally, sensitivity checks are used to compare the extent to which results are similar when using different measurement scales for key variables. The EWR country groupings necessarily represent a coarsened version of the educational stratification and decommodification data: Thus, analyses are replicated using continuous measurement scales for these variables. The analysis of individual educational characteristics by country is also performed as a sensitivity test by examining the 'second-step' effects of individual country characteristics, as described in the 'two-step' process outlined above.

3.2.6.2. Well-being

A 'threshold' account of well-being as high capability achievement is examined in logistic regression models predicting the presence or absence of a high level of capability attainment and a high level of *flourishing*. All previous models are repeated and select models are discussed to bring to light important differences in findings when these contrasting approaches to examining well-being are mobilized. As mentioned above, the analysis of individual well-being items is also a type of sensitivity test, and is performed throughout the all stages of analysis.

4.   The impact of education on individual well-being

We now begin to examine the results of analyses. To examine the direct relationship between education and well-being, the overarching association for individuals across all countries is considered. Next, how the direct relationship differs among individual countries is explored,

and how the country-level educational analytical dimensions explain these findings is investigated. First, however, we return briefly to the central arguments of the study.

4.1. *Revisiting the proposed causal mechanism*

As presented in Chapter 1, this study does not posit that it is the job of educational institutions to produce 'satisfied' graduates, rather, the central argument is that these institutions, within societal contexts, succeed to greater or lesser extents to build capabilities in students that can then be put to use in constructing the lives that these individuals have reason to value (Olympio, 2012; Olympio & Di Paola, 2018; Verhoeven et al., 2007). This means that students may or may not experience well-being during their studies, as a certain amount of "troubling" may be necessary for capability development (Gibbs, 2014). The view taken here is more long-term, focusing on the 'future selves' of students, as is argued to be most coherent with the emphasis on freedom within the capability approach (Garnett Jr., 2009; Saito, 2003).

Education is linked to a plethora of later outcomes, both occupational and personal (Gambetta, 1987; Pallas, 2000; Vila, 2000; Woessmann & Schuetz, 2006). The proposed causal mechanism between schooling and these outcomes mirrors the assumption made in the economic literature concerning schoolings' impacts on later productivity. The wide assortment of experience, knowledge, and skills learned through education do not solely impact an individual's behaviour at work: They become (learned) traits of the individual that permeate all parts of his or her life (Grossman, 2005; Schwartz, 1982). Thus, this research can be seen as proposing an alternative measure of 'educational quality': one that is not primarily concerned with labour market outcomes or scores on international standardized assessments of specific skills, but rather one that looks at the extent to which individuals have

been able to develop the central capabilities necessary to build a life that they have reason to value (Verhoeven et al., 2009).

Furthermore, this relationship is proposed to differ across institutional contexts as conceptualized by welfare regimes. Indeed, in the line reasoning developed in this research, "welfare regimes are not only social policy arrangements that aim at redistributing economic resources, but are also patterns of institutionalised solidarity and social justice beliefs that are historically and culturally embedded in their institutions," which are also "able to influence individuals' perceptions of their own opportunity structures" (Ejrnæs & Greve, 2017, p. 209). Of course, the institution focused on here is education, which has been theorized in this manner by other researchers (Rubenson & Desjardins, 2009; Saar et al., 2014). Thus, educational welfare contexts are presumed to be either 'capability-enhancing' or 'capability-inhibiting' (Germain & Olympio, 2012; Olympio & Di Paola, 2018; Verhoeven et al., 2009). Indeed, they determine a large part of both the resources and the environmental conversion factors that shape student learning and the transfer of these diverse skills and knowledge to life (Verhoeven et al., 2009).

4.2. The education-well-being relationship across Europe

4.2.1. Examining composite scale measures

Beginning with a review of the descriptive statistics discussed in Chapter 5, we see that levels of *flourishing*, as well as the sub-components of *psycho-social well-being* and *thriving*, are significantly different across educational categories for the pooled sample as whole (see *Figure 60*). Thus, we see preliminary evidence of an education gradient in well-being, or – depending on our perspective – *inequalities* in well-being by educational category.
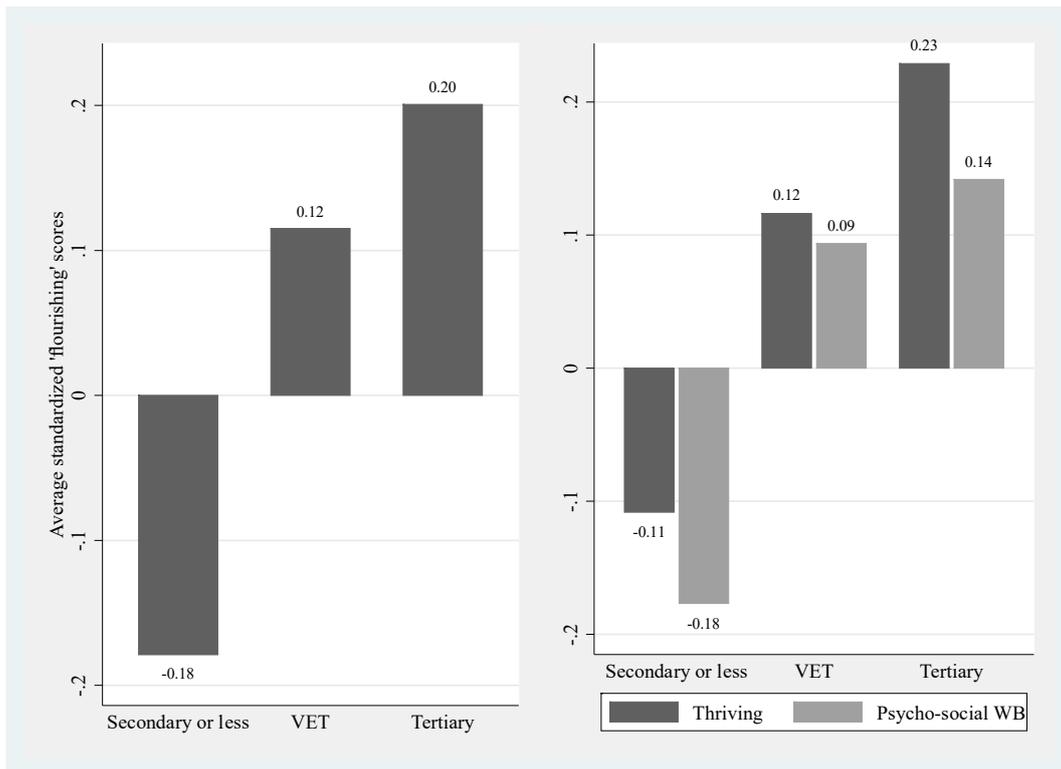
Figure 60. Average levels of standardized *flourishing* scales by educational attainment

Note: The scores are standardized for the sample as a whole (thus, grand mean centered), which is why some scores are negative. Those with secondary education or less score 0.18 standard deviations (SD) below the overall mean on the *flourishing* measure, while those with VET and tertiary education score 0.12 SD and 0.20 SD, respectively, above the average for the sample as a whole.

Next, we move from these descriptive analyses into inferential models with controls. Model 1, illustrated in Table *31*, examines the bivariate relationship between educational attainments and the capability-informed measure of *flourishing* across all countries. Without the inclusion of additional controls, both levels of post-secondary education significantly correlate with increased levels of *flourishing*. Compared to the reference group of those with secondary education or less, individuals with VET education credentials self-report 0.29 standard deviations higher levels of well-being. The size of the education coefficient grows at the tertiary credential level, with individuals holding a tertiary self-reporting the highest levels of *flourishing* (β=0.38, SE=0.04, *p*<.01). Education is positively associated with this measure of well-being as capability development.

Table 31. *Capability-informed measure of flourishing regressed on educational variables*

| | Flourishing | | |
	Model 1	**Model 2**	**Model 3**
Secondary or less	*reference category*		
VET	0.29***	0.20***	0.14***
	(0.04)	(0.03)	(0.03)
Tertiary	0.38***	0.23***	0.14**
	(0.04)	(0.04)	(0.04)
Controls		*demographic*	*demographic & occupational*
Intercept	-0.18**	-0.48***	-0.45***
	(0.05)	(0.04)	(0.08)
Observations	23448	23173	23173
R^2	0.03	0.09	0.12
Adjusted R^2	0.03	0.09	0.12

Source: ESS Wave 6 (Version 2.3)
Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, those with post-secondary education report a level of *flourishing* that is 0.14 SD higher than those with secondary education or less in the final model with all controls.
$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Model 2 introduces demographic controls, including gender, marital status, presence or absence of children in the household, income, and age. In comparing Models 1 and 2, all educational levels continue to exert a significant influence on *flourishing*; however, the coefficients diminish by 30% to 40%. These coefficients are now quite similar across VET and tertiary education, suggesting that some of the difference between these two categories was due to differences in demographic factors, such as earnings.

Once occupational controls, including occupational sector, unemployment, being in school, and being retired, are introduced, the coefficients remain significant but decrease by another 20% for both VET and tertiary education. The coefficients for VET and tertiary education are now identical. These results suggest that the effects of education are mediated by these variables, as explored later in this chapter. Furthermore, this appears to be more so the case for those with tertiary education. However, it is also apparent that post-secondary education has a significant association with *flourishing* even once control variables underscored in the literature as important have been accounted for in the models. This

provides preliminary evidence supporting the first hypothesis of this study, namely, that post-secondary education has a significant direct effect on well-being *ceteris paribus*.

When we look more specifically at the two sub-components of *flourishing* found in the data, which group into *psycho-social well-being* and *thriving*, we find broadly similar results. Again, both VET and tertiary educational credentials are significantly associated with the measures of well-being, with larger effects for tertiary education without controls and with controls for *thriving*, but with larger effects for VET when *psycho-social well-being* is examined with controls (β=0.12, SE=0.04, p<.05). As with the overall *flourishing* models, these coefficients diminish as controls are added, reducing to 30% to 40% of their original value for *psycho-social well-being* and 40% to 50% of their original value for *thriving*. Thus, we find evidence for both direct (H_1) and indirect effects of post-secondary educational attainments on well-being, as predicted in the first two hypotheses (H_2).

Table 32. *Sub-components of flourishing scale regressed on educational variables*

	Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Secondary or less	*reference category*					
VET	0.27***	0.16***	0.12**	0.22***	0.17***	0.11**
	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
Tertiary	0.32***	0.15***	0.09**	0.34***	0.25***	0.14*
	(0.03)	(0.03)	(0.03)	(0.06)	(0.05)	(0.06)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.18*	-0.56***	-0.48***	-0.11**	-0.28***	-0.30**
	(0.07)	(0.05)	(0.07)	(0.03)	(0.03)	(0.08)
Observations	23828	23538	23538	23733	23440	23440
R^2	0.02	0.10	0.12	0.02	0.04	0.06
Adjusted R^2	0.02	0.09	0.12	0.02	0.04	0.06

Source: ESS Wave 6 (Version 2.3)
Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; thus, coefficients can be interpreted as standard deviation (SD) changes in well-being. For example, those with VET report a level of *thriving* that is 0.11 SD higher than those with secondary education or less.
$^+ p < 0.10, ^* p < 0.05, ^{**} p < 0.01, ^{***} p < 0.001$

Furthermore, when we examine the number of capabilities for which individuals show a high level of capability and the presence or absence of a high level of capability attainment, both by each sub-component of *flourishing* and for all ten central capabilities as a list, as

described in the last chapter, these trends are confirmed. The odds of reporting a high level of *flourishing* are 1.20 and 1.25 times higher for individuals with VET and those with tertiary education, respectively, net of controls, as compared to those with secondary education or less (see Table *33*).

In contrast to the continuous scales, when we examine the odds of reporting high levels of *psycho-social well-being* and *thriving*, those with VET do not have significantly higher odds of reporting high levels of *psycho-social well-being* than individuals with secondary education or less once controls are added to the regression equation (see Table *33*). However, both individuals with VET and those with tertiary education have higher odds of reporting high levels of *thriving* (1.25 and 1.34, respectively). These findings further bolster the argument that post-secondary education does indeed have a significant impact on well-being as measured through Nussbaum's list of central capabilities. Moreover, it would seem that this effect is particularly strong for the aspects of well-being that externally focused and related to 'environmental mastery.'

What is more, these results suggest that as demographic and occupational control variables are added to the analyses, the effects of VET and tertiary education become more similar. This is evidence for mediating effects that may operate more strongly for those with higher levels of education. That is, demographic and occupational factors account for more of the association between education and well-being for those with the highest levels credentials. These controls also improve model fit: Education alone accounts for only about three percent of the variance in well-being scores, while demographic variables explain a further six percent, and occupational variables add another two to three percent of variance explained to the model (for a total R^2 of approximately 12%).

In Chapter 1, it was argued that, based on the evidence concerning the non-market outcomes of education from a human capital approach and the theoretical argumentation in

the capability approach, post-secondary education has a direct effect on well-being (H_1).
Taking into the account the eudaimonic well-being literature, it was asserted that education is
significantly associated with *eudaimonic* well-being (H_4). Here we see that there is strong
evidence that education does indeed have a direct impact on individual well-being as
measured through a eudaimonic framework constructed using the capability approach. Thus,
consistent with previously published research, it is found that there is indeed a robust
significant relationship between eudaimonic well-being as measured by *flourishing* and
educational credentials (Jongbloed, 2018).

Table 33. *Reporting a high level of flourishing regressed on educational variables*

	Flourishing			Psycho-social Well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	1.49***	1.30**	1.20*	1.47**	1.25*	1.19	1.40**	1.33**	1.25*
	(0.15)	(0.11)	(0.11)	(0.18)	(0.12)	(0.12)	(0.14)	(0.12)	(0.11)
Tertiary	1.81***	1.46***	1.25*	1.60***	1.24***	1.16**	1.71***	1.56***	1.34*
	(0.15)	(0.11)	(0.14)	(0.10)	(0.05)	(0.06)	(0.16)	(0.13)	(0.15)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.36***	0.22***	0.23***	0.45***	0.26***	0.28***	0.39***	0.31***	0.28***
	(0.04)	(0.02)	(0.03)	(0.06)	(0.02)	(0.03)	(0.02)	(0.01)	(0.03)
Observations	23448	23173	23173	23828	23538	23538	23733	23440	23440

Source: ESS Wave 6 (Version 2.3)

Note: Exponentiated coefficients. Robust standard errors in parentheses. The coefficients are thus interpreted as changes in the odds of reporting a high level of well-being on each measure. For example, those with VET in Model 3 are more likely to report a high level of *flourishing* than those with secondary education or less ($p<0.05$). More specifically, those with VET have 20% higher odds of reporting a high level of *flourishing* as compared to those with secondary education or less. For those with tertiary education, as compared to those with secondary education or less, the corresponding difference in odds is 25%.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

4.2.2. Examining individual items

Following the lead of Sen (Sen, 1981) and Seligman (Forgeard et al., 2011), individual items are also analyzed in a well-being 'vector' or 'dashboard' approach in order to tease out the complexities in the broader relationships. First, we examine the *psycho-social well-being items* individually. Once again, the descriptive statistics from Chapter 5 provide preliminary evidence that post-secondary education has a consistently positive association with well-being across all items, although this association clearly differs in magnitude (see *Figure 61*).
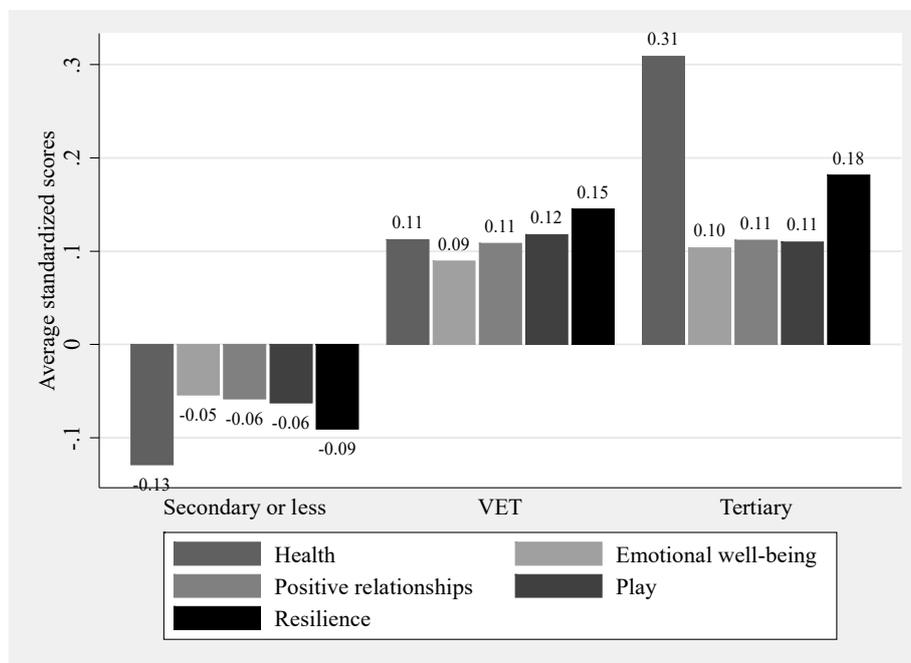
Figure 61. Average levels of standardized *psycho-social well-being* items by educational attainment.
Note: The scores are standardized for the sample as a whole (thus, grand mean centered), which is why some scores are negative. Those with secondary education or less score 0.13 standard deviations (SD) below the overall mean on the *subjective physical health* measure, while those with VET and tertiary education score 0.11 SD and 0.31 SD, respectively, above the average for the sample as a whole.

When examining the *psycho-social well-being* indicators, we see that differences in physical health and resilience are much more pronounced than differences in emotional well-being, play, or positive relationships. Indeed, the differences between the effects of VET and tertiary education are small or non-existent on these latter three items. However, those with

VET do report having more time to enjoy life than those with tertiary education, which is consistent with the literature summarized in Chapter 2 (for example, Nikolaev, 2018) and the results reported in the previous chapter.
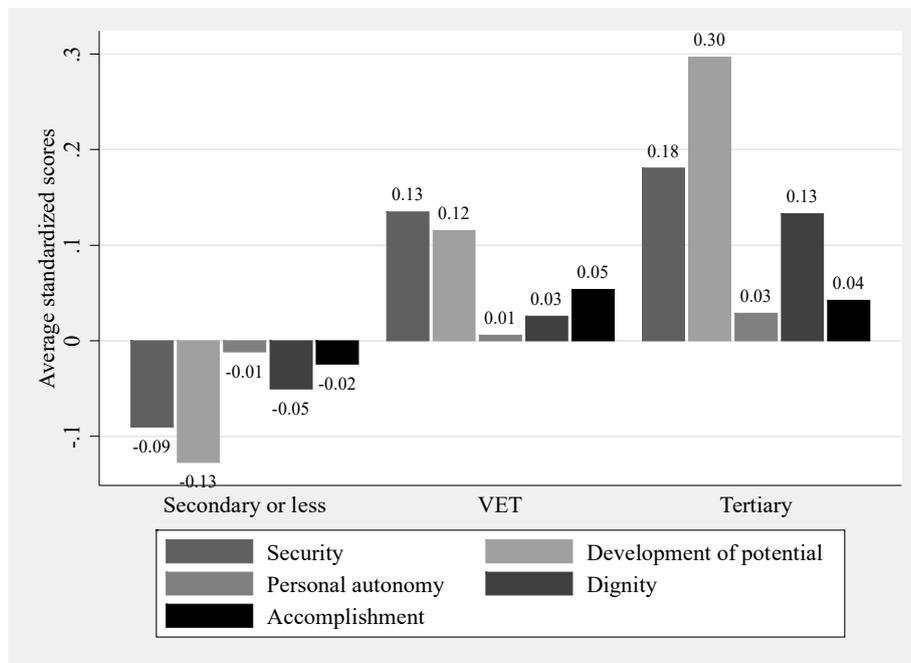

Figure 62. Average levels of standardized *thriving* items by educational attainment.
Note: The scores are standardized for the sample as a whole (thus, grand mean centered), which is why some scores are negative. Those with secondary education or less score 0.13 standard deviations (SD) below the overall mean on the *development of potential* measure, while those with VET and tertiary education score 0.12 SD and 0.30 SD, respectively, above the average for the sample as a whole.

When we turn to the *thriving* items (see *Figure 62*), we see clear differences for three of the items (security, development of potential, and dignity), smaller differences on one item (accomplishment), and very little difference for one item (personal autonomy). These latter two findings are surprising. One expects, in particular based on the capabilities literature, that education should broaden life choices and one's ability to guides one's own life, as well as one's ability to engage in fulfilling work and other activities. These results will be further scrutinized in the models that follow, but may be related to the limitations in the contexts in which these capabilities are put to use (for example, the workplace) or the subjective nature of the data and the information used by respondents to make these judgments. Indeed, it may

be argued that those with more education may have a more 'accurate' view of their own autonomy and ability to make their own choices, as well as higher aspirations in these areas (Becchetti & Pelloni, 2013).

When we examine the significance of these differences in regression analyses, the association with education also differs strongly by capability, or dimension within the capability-informed measure of *flourishing* to operationalize well-being (see Table *34* and Table *35*). Regarding physical health, we see that tertiary post-secondary education has by far the largest association with this capability (β=0.18, SE=0.03, *p<.01*). The coefficient is double that of VET, and the explanatory power of these models is highest, although education alone explains only three percent of the variance in self-reported health and the model with controls explains 15%. The link between education and health is very robust in the literature, although the direction of causality is contested (Lynch & Hippel, 2016).

The item measuring the capability of resilience also shows clear significant education effects across all three models, but in this case, once all controls are included, VET has a larger impact than tertiary education (β=0.12, SE=0.02, *p<.01*). VET predicts a standardized resilience score 0.12 standard deviations higher than those with secondary education or less, while tertiary educational attainments predict a 0.08 SD advantage over this same reference category. The same is true of social relationships, where VET again predicts slightly higher scores (β=0.08, SE=0.02, *p<.05*). Thus, those with post-secondary education report taking less time to get back to normal after things go wrong and feeling less lonely than those with secondary education or less, and this difference is slightly more pronounced for those with VET.

Concerning emotional well-being and play, the last two capabilities in the *psycho-social well-being* sub-component, post-secondary education shows a significant impact alone, but this association loses significance when controls variables are included. This is not

surprising, considering the small magnitude of the differences seen in the descriptive analyses. These results are also consistent with findings in the literature that hedonic well-being as measured by emotional affect is not significantly linked to education when controls are included in the models (Nikolaev & Rusakov, 2016), and that those with higher levels of education report having less free time to enjoy life (Nikolaev, 2018; Pallas, 2000). This is likely intricately linked with types of occupations and work structures (Fahlén, 2013). This provides preliminary evidence for differences in the significance of education effects between hedonic and *eudaimonic* measures of well-being.

Table 34. *Individual items from the flourishing scale regressed on educational variables*

	Health			Emotional well-being			Positive relationships			Play			Resilience		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
Secondary or less	*reference category*														
VET	0.24***	0.13***	0.09**	0.14**	0.07+	0.04	0.17***	0.10***	0.08**	0.18*	0.11+	0.09	0.24***	0.17***	0.12***
	(0.03)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)	(0.02)	(0.08)	(0.05)	(0.06)	(0.03)	(0.03)	(0.02)
Tertiary	0.44***	0.25***	0.18***	0.16***	0.05*	0.02	0.17***	0.08*	0.05*	0.17**	0.06+	0.04	0.27***	0.17***	0.08***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.05)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.13*	-0.05	0.06	-0.05	-0.38**	-0.34***	-0.06	-0.48**	-0.43***	-0.06	-0.18*	-0.15	-0.09*	-0.34**	-0.33**
	(0.05)	(0.06)	(0.04)	(0.06)	(0.03)	(0.05)	(0.05)	(0.08)	(0.07)	(0.10)	(0.06)	(0.11)	(0.04)	(0.06)	(0.09)
Observations	24178	23866	23866	24108	23802	23802	24116	23811	23811	24067	23765	23765	24077	23773	23773
R^2	0.03	0.11	0.15	0.01	0.05	0.06	0.01	0.06	0.07	0.01	0.03	0.04	0.02	0.04	0.06
Adjusted R^2	0.03	0.11	0.15	0.01	0.05	0.06	0.01	0.06	0.07	0.01	0.03	0.04	0.02	0.04	0.06

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; thus, coefficients can be interpreted as standard deviation (SD) changes in well-being. For example, those with VET report a level of *health* that is 0.09 SD higher than those with secondary education or less, *ceteris paribus*.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 35. *Individual items from the flourishing scale regressed on educational variables (cont.)*

	Security			Development of potential			Personal autonomy			Dignity			Accomplishment		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**	**Model 15**
Secondary or less	*reference category*														
VET	0.23**	0.16**	0.12*	0.24***	0.21***	0.13**	0.02	-0.02	-0.02	0.08	0.07	0.04	0.08	0.05	0.03
	(0.07)	(0.05)	(0.06)	(0.06)	(0.05)	(0.03)	(0.02)	(0.02)	(0.03)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)
Tertiary	0.27***	0.18***	0.12*	0.42***	0.37***	0.20***	0.04	-0.03	-0.02	0.18***	0.18***	0.13**	0.07	0.02	-0.04
	(0.05)	(0.04)	(0.05)	(0.06)	(0.04)	(0.04)	(0.05)	(0.05)	(0.06)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.09	-0.30**	-0.31**	-0.13+	-0.05	-0.16	-0.01	0.04	0.06	-0.05	-0.22*	-0.27**	-0.02	-0.25**	-0.17+
	(0.08)	(0.07)	(0.09)	(0.07)	(0.07)	(0.11)	(0.05)	(0.07)	(0.12)	(0.06)	(0.08)	(0.09)	(0.06)	(0.08)	(0.08)
Observations	24115	23807	23807	24095	23792	23792	24160	23852	23852	23986	23680	23680	24102	23793	23793
R^2	0.01	0.04	0.05	0.03	0.04	0.07	0.00	0.01	0.02	0.01	0.02	0.02	0.00	0.01	0.03
Adjusted R^2	0.01	0.04	0.05	0.03	0.04	0.07	0.00	0.01	0.01	0.01	0.02	0.02	0.00	0.01	0.03

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; thus, coefficients can be interpreted as standard deviation (SD) changes in well-being. For example, those with both tertiary education and VET report a level of *security* that is 0.12 SD higher than those with secondary education or less, *ceteris paribus*.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Moving on to the items capturing the capabilities included in the sub-component of *thriving*, we see strong effects for post-secondary education on security and development of potential, with VET and tertiary education predicting equally higher scores on the security item ($\beta=0.12$, SE=0.06, $p<.05$) and tertiary education providing a further advantage over VET on the development of potential ($\beta=0.20$, SE=0.04, $p<.01$). Thus, those with tertiary education report scores on learning new things each day that are 0.20 standard deviations higher than those with secondary education or less. Likewise, for the dignity capability item, measuring whether someone is treated with respect in their daily lives, only tertiary education significantly predicts higher scores in comparison with those with secondary education or less ($\beta=0.13$, SE=0.04, $p<.01$). Finally, consistent with the descriptive evidence, personal autonomy and accomplishment do not vary significantly with post-secondary educational attainments in any of the models, even those capturing only the bivariate relationship between education and well-being. Thus, surprisingly, individuals with more education do report having more freedom to decide how to live their lives, nor feeling more of a sense of accomplishment from the tasks that they complete each day.

The findings from the inferential analyses conducted thus far are summarized in Table *36*. These results show that post-secondary education enhances self-reported capabilities in an unequal manner, potentially providing greater benefits for some capabilities than others. Tertiary education appears to be strongly linked to health, security, development of potential, and dignity, while VET provides greater advantages in terms of resilience and social relationships. These findings are largely consistent with the literature explored in Chapters 1 and 2, although the non-significance of the autonomy and accomplishment items is unexpected based on the well-being literature.

Table 36. *Summary of the significance of education effects on measures of well-being*

Measure of well-being	Highest educational attainment		
	Secondary or less	VET	Tertiary education
Flourishing		***	**
Psycho-social well-being		**	**
Thriving		**	*
High level of *flourishing*		*	*
High level of *psycho-social well-being*	reference category		**
High level of *thriving*		*	*
Number of capabilities		***	***
Physical health		**	***
Emotional well-being			
Positive relationships		**	*
Play			
Resilience		***	***
Security		*	*
Development of potential		**	***
Autonomy			
Dignity			**
Accomplishment			

Source: ESS Wave 6 (Version 2.3)
Note: The results reported here are from the final models with all individual-level controls (both demographic and occupational). The signs are positive, unless otherwise noted.
$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

These differences are consistent with the study hypotheses, although they run counter to some suggestions in the literature that the overall trends in the education-well-being relationship are fairly constant (Clark & Senik, 2011). However, we do see that education effects on composite scales are consistent across measures, with the sole exception of VET and high levels of *psycho-social well-being*. Furthermore, while these relationships hold true for the sample of individuals as a whole across Europe, there are likely important differences in the 'payoffs' of education across country contexts, as the next section explores.

4.3. *The within-country associations between education and well-being*

Next, the direct relationship between education and well-being within individual countries is assessed. The first models, shown in *Figure 63*, separately examine the bivariate relationship between education and *flourishing* for each country. Across most countries, education level has a significant positive relationship with self-reported well-being. Nevertheless, there is no

significant relationship at the VET level in 6 countries (notably, in Poland, Italy, and Slovakia), although all coefficients by country at the tertiary level are significant. Comparing across countries, findings show that the strength of the relationship between well-being and education varies considerably. The coefficient representing tertiary credentials is largest in Hungary (β=0.94, SE=0.08, *p*<.001) and smallest in Denmark (β=0.18, SE=0.06, *p*<.01).

Generally, the coefficients representing the relationship between VET education and well-being are smaller. Still, the difference between the effects of a tertiary degree versus a VET diploma is narrow or non-existent in several countries (for example, Norway, Switzerland and Germany) with overlap in the confidence intervals in many countries. Finally, the explanatory power of this first set of models, as illustrated by the R^2 reported in Table *37*, ranges from .01 in France, Finland, Norway, and Sweden to .10 in Hungary. Thus, we already see that education plays a more important role in predicting individual well-being in some countries than others.
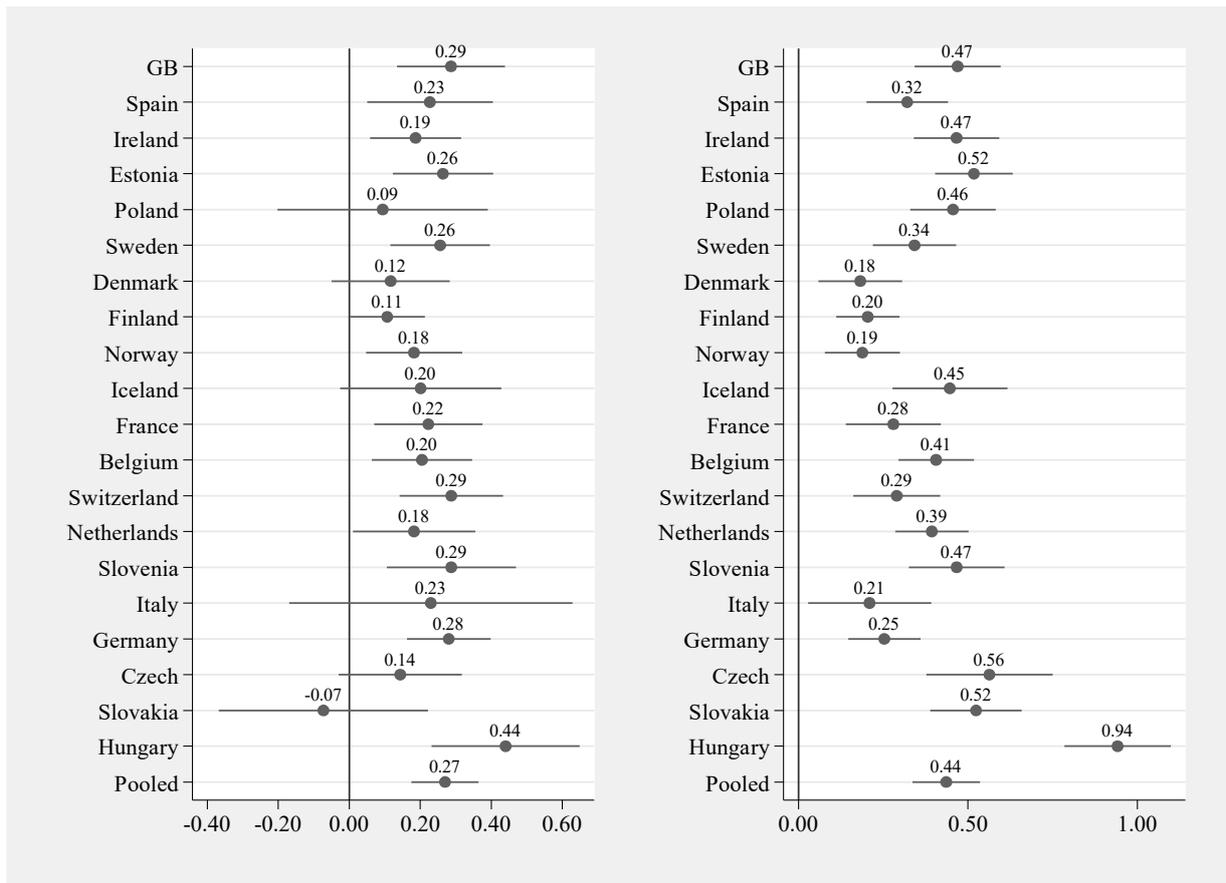
Figure 63. Coefficients regressing educational attainment on *flourishing* by country

Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *flourishing* scale on the educational variables. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at $p<0.05$) in the model. For example, in Germany, the coefficient for VET is 0.28 (interpreted as those with VET report a level of *flourishing* that is 0.28 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and highly significant (relatively far from zero).

As shown in *Figure 64*, tertiary education continues to have a significant but reduced influence on *flourishing* in many countries with the addition of demographic and employment controls. A few exceptions exist: the coefficient measuring tertiary attainments is no longer significant in the Denmark, Finland, Norway, Poland, Italy, and Germany, and the coefficients measuring VET education are only significant in six countries (Great Britain, Ireland, Switzerland, Sweden, Germany, and Slovakia). Indeed, there is no significant relationship between well-being and VET in 14 countries, nor at the tertiary level in nine countries (Spain, Poland, Finland, Denmark, Norway, France, Italy, Germany, and the Czech Republic). However, as in the previous models without controls, education at the tertiary level results in greater levels of *flourishing* in most countries, largest in Hungary (β=0.50, SE=0.10, *p*<.001) and smallest in Belgium (β=0.15, SE=0.07, *p*<.05). As the R^2 indicates, the explanatory power of these models ranges from .06 in Finland to .24 in Hungary.

Based on these patterns, it appears that, counter-intuitively, VET education effects are generally strongest in the Anglophone countries (where the education gradient in well-being is the most striking overall in these models), while tertiary education effects are generally significant in all but the Nordic countries. However, some important unique cases should be noted: Poland, Italy, France, Spain and the Czech Republic stand out with insignificant effects for both levels, Slovakia exhibits *negative* effects for VET education,[30] and Germany stands alone as a case with significant positive effects for VET, but not tertiary, education. Furthermore, although the association between education and well-being is generally insignificant in the Nordic countries, we see that this is in fact not the case for Sweden and Iceland, where both VET and tertiary education have a positive effect on *flourishing*.

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[30] However, this finding should be viewed with caution, as the number of individuals with VET in Slovakia is very small in the ESS sample.
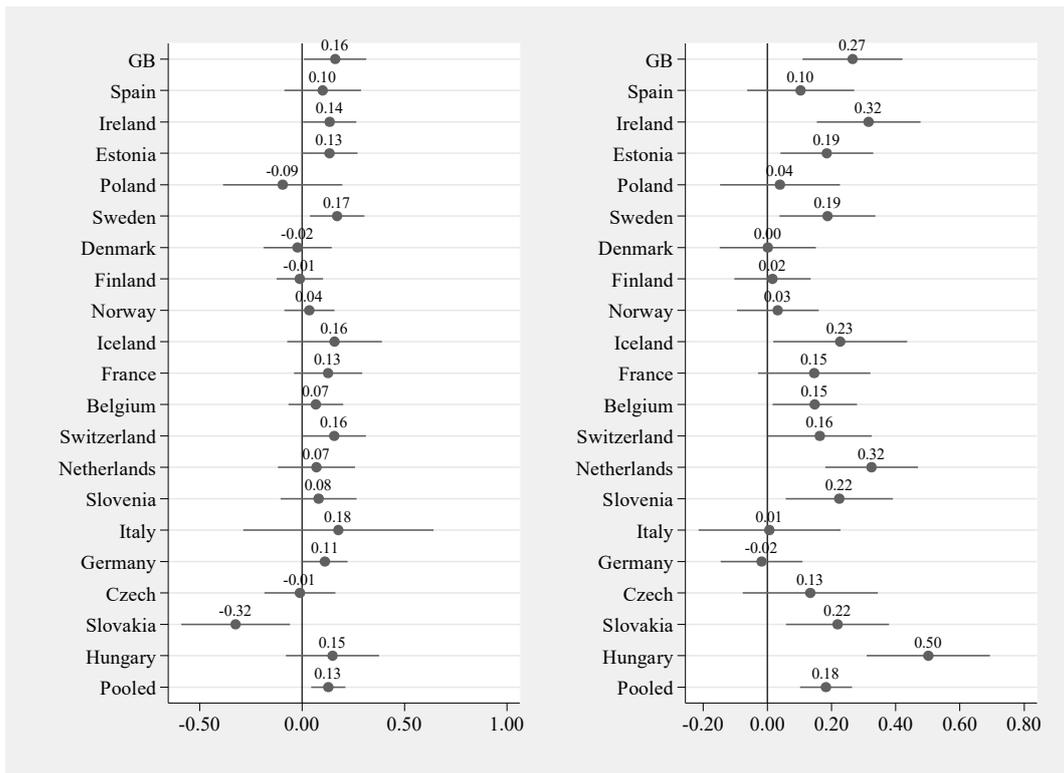
Figure 64. Coefficients regressing educational attainment on *flourishing* with all controls
Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *flourishing* scale on the educational variables with demographic and occupational control variables included in the model. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at *p*<0.05) in the model. For example, in Sweden, the coefficient for VET is 0.17 (interpreted as those with VET report a level of *flourishing* that is 0.17 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (because it does not overlap the line representing zero).

Table 37. *Regressing standardized flourishing scores on educational variables within each country sample with all controls*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
Secondary or less (*ref.*)										
VET	0.16*	0.13+	-0.09	0.14*	0.10	0.07	0.16*	0.07	0.13	0.08
	(0.08)	(0.07)	(0.15)	(0.07)	(0.10)	(0.07)	(0.08)	(0.10)	(0.08)	(0.09)
Tertiary	0.27***	0.19*	0.04	0.32***	0.10	0.15*	0.16*	0.32***	0.15	0.22**
	(0.08)	(0.07)	(0.10)	(0.08)	(0.09)	(0.07)	(0.08)	(0.07)	(0.09)	(0.09)
Controls (*all*)										
Intercept	6.73***	6.12***	6.36***	6.66***	6.24***	6.31***	6.55***	6.59***	6.52***	6.69***
	(0.11)	(0.14)	(0.14)	(0.13)	(0.11)	(0.12)	(0.16)	(0.14)	(0.14)	(0.18)
Observations	1321	1384	1166	1724	1238	1175	951	1205	1252	783
R^2	0.16	0.18	0.17	0.11	0.10	0.19	0.12	0.19	0.10	0.16
Adjusted R^2	0.14	0.17	0.15	0.10	0.08	0.18	0.10	0.17	0.08	0.13

|	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
Secondary or less (*ref.*)										
VET	-0.02	-0.01	0.04	0.17*	0.16	0.11*	-0.01	0.15	0.18	-0.32*
	(0.08)	(0.06)	(0.06)	(0.07)	(0.12)	(0.06)	(0.09)	(0.12)	(0.24)	(0.14)
Tertiary	0.00	0.02	0.03	0.19*	0.23*	-0.02	0.13	0.50***	0.01	0.22**
	(0.08)	(0.06)	(0.06)	(0.08)	(0.11)	(0.07)	(0.11)	(0.10)	(0.11)	(0.08)
Controls (*all*)										
Intercept	7.20***	7.12***	6.78***	6.76***	6.84***	6.28***	5.76***	6.01***	5.98***	6.09***
	(0.16)	(0.11)	(0.23)	(0.17)	(0.26)	(0.13)	(0.18)	(0.13)	(0.26)	(0.13)
Observations	980	1385	1076	1115	442	1842	1119	1250	537	1228
R^2	0.15	0.08	0.14	0.15	0.18	0.15	0.21	0.25	0.09	0.17
Adjusted R^2	0.13	0.06	0.12	0.14	0.14	0.14	0.19	0.24	0.04	0.16

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Turning to the sub-component of *psycho-social well-being*, we see that the patterns are largely similar for the bivariate relationship between education and well-being (without controls). Across most countries, tertiary education has a significant positive relationship with self-reported well-being. However, there is no significant relationship at the VET level in eight countries (see *Figure 65*), and some coefficients are no longer significant at the tertiary level (notably, in Denmark and Italy). Once again, findings show that the strength of the relationship between well-being and education varies considerably between countries. The coefficient representing tertiary credentials is largest in Hungary (β=0.57, SE=0.06, *p*<.001) and smallest in Finland and Norway (β=0.11, SE=0.05, *p*<.05). The explanatory power of these models, as illustrated by the R^2 reported in Table *38*, is low, ranging from 0.00 to 0.06. Thus, this subcomponent is generally more poorly explain by individual education variables than the overall *flourishing* scale.

Furthermore, once control variables are introduced, education has a reduced influence on *psycho-social well-being* (see *Figure 66*). VET education is now only a significant predictor in Spain and Denmark, while tertiary education remains significant in only eight countries (Spain, Ireland, Estonia, France, Belgium, the Netherlands, Slovenia, and Hungary). The effects of tertiary education are still largest in Hungary (β=0.29, SE=0.07, *p*<.001) and smallest in Estonia and Slovenia (β=0.12, SE=0.06, *p*<.05). The explanatory power of these models as indicated by the R^2 ranges from .07 in Finland to .21 in Hungary.
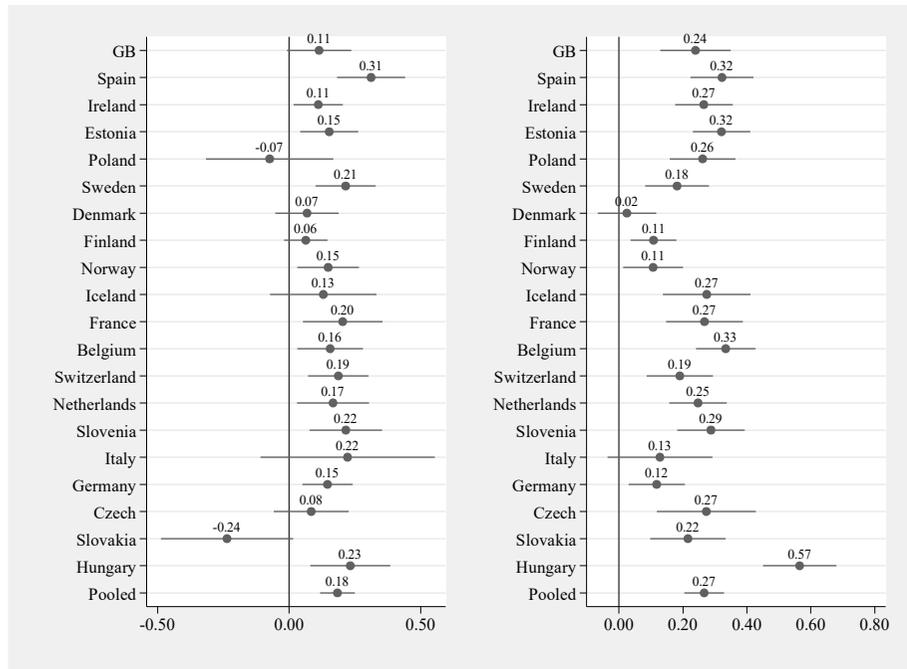
Figure 65. Coefficients regressing educational attainment on *psycho-social well-being* by country

Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *psycho-social well-being* scale on the educational variables. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at *p*<0.05) in the model. For example, in Slovenia, the coefficient for VET is 0.22 (interpreted as those with VET report a level of *psycho-social well-being* that is 0.22 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and highly significant (relatively far from zero).
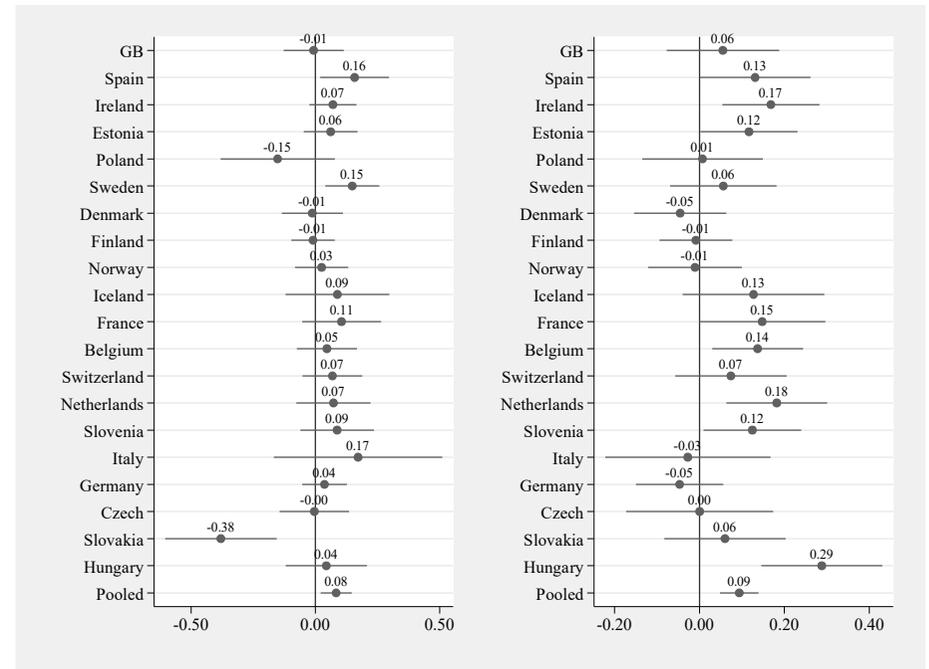
Figure 66. Coefficients regressing educational attainment on *psycho-social well-being* with all controls

Note: These graphs again show the beta coefficients of VET, on the left, and tertiary education, on the right, with the beta coefficients shown as points, the 95% confidence intervals (CIs) shown as lines. These estimates are from models with all controls (demographic and occupational).

Table 38. *Regressing standardized psycho-social well-being scores on educational variables within each country sample with all controls*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
Secondary or less (*ref.*)										
VET	-0.01	0.06	-0.15	0.07	0.16*	0.05	0.07	0.07	0.11	0.09
	(0.06)	(0.06)	(0.12)	(0.05)	(0.07)	(0.06)	(0.06)	(0.08)	(0.08)	(0.08)
Tertiary	0.06	0.12*	0.01	0.17**	0.13*	0.14*	0.07	0.18**	0.15^{+}	0.12*
	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.05)	(0.07)	(0.06)	(0.08)	(0.06)
Controls (*all*)										
Intercept	5.12***	4.81***	4.86***	5.12***	4.70***	4.86***	5.05***	5.11***	4.88***	5.10***
	(0.10)	(0.11)	(0.12)	(0.09)	(0.09)	(0.10)	(0.13)	(0.12)	(0.12)	(0.14)
Observations	1346	1417	1209	1752	1266	1179	956	1214	1267	790
R^2	0.14	0.14	0.17	0.09	0.13	0.18	0.15	0.19	0.14	0.14
Adjusted R^2	0.13	0.13	0.15	0.08	0.11	0.17	0.13	0.17	0.13	0.12

	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
Secondary or less (*ref.*)										
VET	-0.01	-0.01	0.03	0.15**	0.09	0.04	-0.00	0.04	0.17	-0.38***
	(0.06)	(0.04)	(0.05)	(0.06)	(0.11)	(0.05)	(0.07)	(0.08)	(0.17)	(0.11)
Tertiary	-0.05	-0.01	-0.01	0.06	0.13	-0.05	0.00	0.29***	-0.03	0.06
	(0.06)	(0.04)	(0.06)	(0.06)	(0.08)	(0.05)	(0.09)	(0.07)	(0.10)	(0.07)
Controls (*all*)										
Intercept	5.51***	5.49***	5.19***	5.29***	4.97***	4.89***	4.58***	4.71***	4.54***	4.86***
	(0.12)	(0.09)	(0.21)	(0.13)	(0.22)	(0.11)	(0.15)	(0.10)	(0.22)	(0.11)
Observations	989	1391	1080	1122	451	1852	1181	1282	544	1250
R^2	0.11	0.09	0.14	0.14	0.21	0.14	0.16	0.22	0.09	0.13
Adjusted R^2	0.09	0.07	0.12	0.13	0.17	0.13	0.14	0.21	0.05	0.11

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Examining the final sub-component, *thriving*, we see that the educational associations are more robust than those with *psycho-social well-being*. Across almost all countries tertiary education has a significant positive relationship with *thriving*. The standardized coefficients are also much higher in magnitude for this sub-component. However, the associations with VET education in almost half of the countries are insignificant (see *Figure 67*), and two coefficients are no longer significant at the tertiary level (France and Italy).

These findings further illustrate differences in the relationship between well-being and education between countries. The coefficient for VET credentials is largest in Hungary ($\beta=0.68$, SE=0.17, *p*<.001), although it is also large in Great Britain ($\beta=0.47$, SE=0.11, *p*<.001) and Germany ($\beta=0.45$, SE=0.08, *p*<.001), and smallest in Finland ($\beta=0.15$, SE=0.08, *p*<.05). The coefficient representing tertiary credentials is again largest in Hungary ($\beta=1.36$, SE=0.12, *p*<.001) and smallest in Spain ($\beta=0.22$, SE=0.09, *p*<.05).

Even when control variables are introduced, education has a significant relationship with *thriving* in many countries. These effects are stronger for tertiary than VET education, which remains a significant predictor in only six countries, while tertiary education remains significant 12 of the 20 countries (see *Figure 68*). The effects of tertiary education are still largest in Hungary ($\beta=0.75$, SE=0.15, *p*<.001) and smallest in Belgium ($\beta=0.18$, SE=0.10, *p*<.05). The explanatory power of these models varies from 0.00 to 0.18. The R^2 is close to zero in Spain, France and Italy, while it is 0.17 and 0.18 in the Czech Republic and in Hungary respectively. Thus, we already see strong evidence that education is more important in explaining well-being outcomes of individuals in some countries than others. In particular, we see that the effects of education are particularly strong in the Anglophone and Central and Eastern European countries, which were grouped into the Liberalized and Polytechnic regimes, respectively, by their educational system characteristics in Chapter 4.
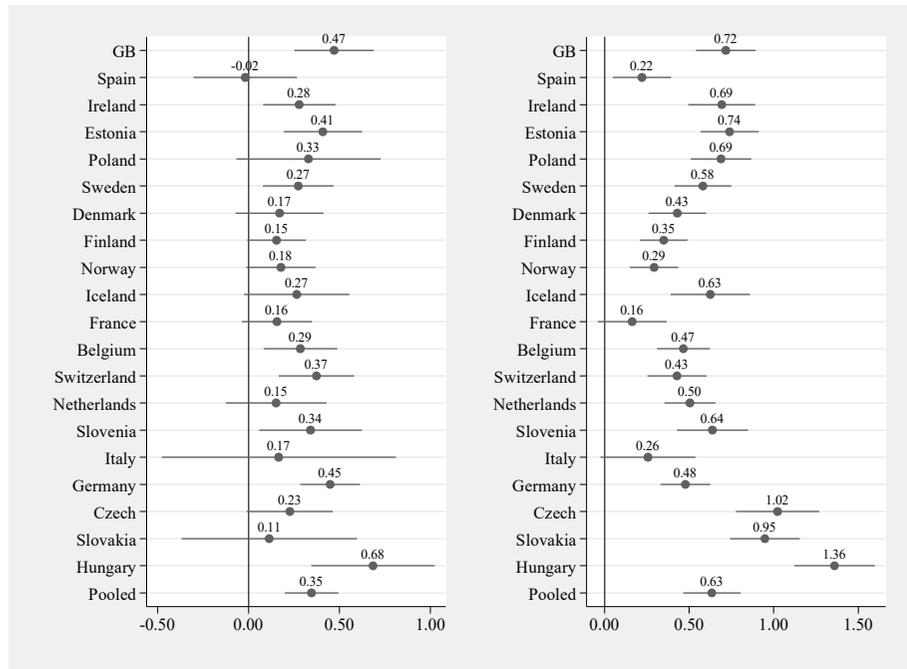
Figure 67. Coefficients regressing educational attainment on *thriving* scores by country

Note: These graphs again show the beta coefficients of VET, on the left, and tertiary education, on the right, with the beta coefficients shown as points, the 95% confidence intervals (CIs) shown as lines.
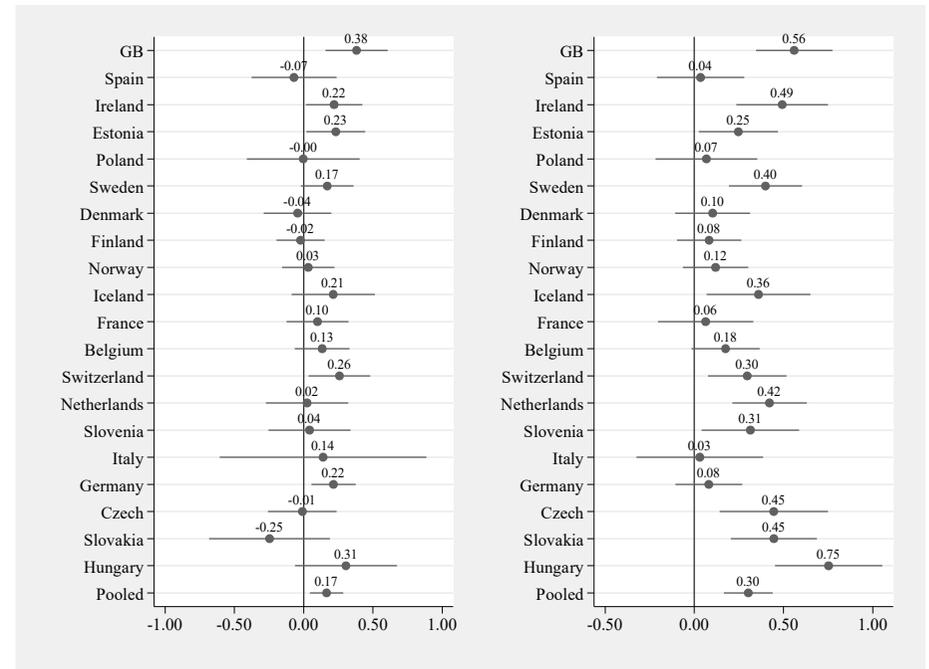
Figure 68. Coefficients regressing educational attainment on *thriving* scores with all controls

Note: These graphs again show the beta coefficients of VET, on the left, and tertiary education, on the right, with the beta coefficients shown as points, the 95% confidence intervals (CIs) shown as lines. These estimates are from models with all controls (demographic and occupational).

Table 39. *Regressing standardized thriving scores on educational variables within each country sample with all controls*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
Secondary or less (*ref.*)										
VET	0.38***	0.23*	-0.00	0.22*	-0.07	0.13	0.26*	0.02	0.10	0.04
	(0.11)	(0.11)	(0.21)	(0.10)	(0.16)	(0.10)	(0.11)	(0.15)	(0.11)	(0.15)
Tertiary	0.56***	0.25*	0.07	0.49***	0.04	0.18+	0.30**	0.42***	0.06	0.31*
	(0.11)	(0.11)	(0.15)	(0.13)	(0.13)	(0.10)	(0.11)	(0.11)	(0.14)	(0.14)
Controls (*all*)										
Intercept	8.27***	7.23***	7.78***	8.10***	8.03***	7.77***	8.14***	8.02***	8.25***	8.27***
	(0.17)	(0.22)	(0.20)	(0.20)	(0.17)	(0.17)	(0.24)	(0.21)	(0.20)	(0.27)
Observations	1326	1409	1192	1735	1245	1180	956	1208	1257	788
R^2	0.12	0.14	0.13	0.10	0.04	0.12	0.08	0.11	0.04	0.12
Adjusted R^2	0.11	0.12	0.11	0.09	0.02	0.10	0.05	0.09	0.02	0.10

	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
Secondary or less (*ref.*)										
VET	-0.04	-0.02	0.03	0.17+	0.21	0.22**	-0.01	0.31	0.14	-0.25
	(0.12)	(0.09)	(0.10)	(0.10)	(0.15)	(0.08)	(0.13)	(0.19)	(0.38)	(0.22)
Tertiary	0.10	0.08	0.12	0.40***	0.36*	0.08	0.45**	0.75***	0.03	0.45***
	(0.11)	(0.09)	(0.09)	(0.10)	(0.15)	(0.10)	(0.15)	(0.15)	(0.18)	(0.12)
Controls (*all*)										
Intercept	8.84***	8.42***	8.47***	8.02***	8.63***	7.46***	6.73***	7.14***	7.83***	7.05***
	(0.22)	(0.20)	(0.25)	(0.25)	(0.34)	(0.20)	(0.25)	(0.22)	(0.38)	(0.21)
Observations	984	1390	1079	1119	445	1846	1197	1278	558	1248
R^2	0.15	0.06	0.08	0.13	0.13	0.12	0.18	0.19	0.04	0.15
Adjusted R^2	0.13	0.04	0.06	0.11	0.08	0.10	0.17	0.18	-0.00	0.14

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 40. *Summary of the significance of education effects on well-being scales*

Country	Secondary or less	Flourishing		Psycho-social well-being		Thriving	
		VET	Tertiary education	VET	Tertiary education	VET	Tertiary education
Great Britain		*	***			***	***
Estonia		+	*		*	*	*
Ireland		*	***		**	*	***
Spain				*	*		
Poland							
Sweden		*	*	**		+	***
Denmark							
Finland	*reference category*						
Norway							
Iceland			*				*
France					+		
Belgium			*		*		+
Switzerland		*	*			*	**
Netherlands			***		**		***
Slovenia			**				*
Italy							
Germany		*				**	
Czech Republic							**
Slovak Republic		(-)*	**	(-)***			***
Hungary			***		***		***
Pooled		***	**	**	**	**	*

Source: ESS Wave 6 (Version 2.3)
Note: The results reported here are from the final models net of all individual-level controls (both demographic and occupational). The signs are positive, unless otherwise noted.
$^{+} p < 0.10$, $^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Examining a summary of this country trends (see Table *40*), we see that patterns in the significance of education effects are, however, not completely neat across regime groupings. The Liberalized countries in general show a significant gradient in well-being by education, which can be interpreted as a marker of educational inequalities in well-being, net of controls, but Poland separates itself as a special case with no significant differences. We find almost no significant differences in the Universalist countries, with the exception of Sweden, where education impacts well-being across most measures and categories of education, and Iceland, where tertiary education plays a significant role in predicting *thriving*. The Conservative countries generally show more significant effects for tertiary education than VET. The Polytechnic countries show the most mixed results: Italy shows no significant

gradient, while Germany only shows significant effects for VET and the other countries show significant coefficients for tertiary education.

These differences are not necessarily surprising. The countries were grouped by educational system characteristics, and not by levels of well-being. The fact that some general trends emerge (despite the exceptions in each group), already provides some tentative preliminary evidence that patterns in the distribution of well-being across educational categories – an education gradient in well-being – exist and can be compared across country groupings. These patterns will be more fully explored in the following sections.

5. The impact of educational context on well-being

5.1. Comparing EWR effects

Taking into account these differences between countries, this study explores how educational context, as captured by the 'educational welfare regime' (EWR) groupings developed in Chapter 4, influence both overall levels of well-being and the relationship between educational credentials and well-being. As outlined in Chapter 3, welfare regimes shape the social well-being of nations, and educational systems, which are viewed as an important component of the welfare regime, are involved in this distribution (Busemeyer & Nikolai, 2010). Patterns of decommodification and stratification in post-secondary education structure not only individuals' outcomes in terms of educational attainments and occupational prospects, but also well-being outcomes related to areas of life outside of the workplace. Family, health, recreation and social choices are all influenced by education, which is framed and determined by a context that is not only defined by the educational content, but also by the accessibility and prevalence of post-secondary education in a society. Thus, some educational welfare contexts are more 'capability-building' than others (Olympio, 2013; Verhoeven et al., 2009).

5.1.1. Examining composite scale measures

To begin to understand the effects of educational welfare regimes on individual well-being, variables representing the EWRs are introduced in OLS regressions with robust standard errors. The initial findings for the *flourishing* variable are clear: Well-being is lower in all regimes as compared to the Universalist EWR (see Table *41*). The introduction of control variables increases the overall fit of the model, but does not reduce the EWR coefficients. Both VET and tertiary education remain important predictors across all models, although the magnitude of these coefficients does decrease with the inclusion of controls, in contrast with the country-level variables. These findings are consistent across the two sub-components of *flourishing* (see Table *42*).

This finding is supported in the literature, where researchers have found that "education systems with a lower degree of institutional differentiation not only provide more educational equality but are also marked by higher levels of educational quality," in terms of "the degree to which they help individuals develop capabilities necessary for their successful social integration" (Pfeffer, 2012, p. 2).[31] Indeed, the countries with Universalist educational welfare regimes are most readily identified by their long common core curriculum and lack of streaming or tracking, either within or between schools (Olympio, 2012; Verhoeven et al., 2007), and also show the highest levels of capability-informed *flourishing*.

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[31] Institutional differentiation is included in the analytical dimension of post-secondary educational stratification used in the creation of the country groupings. In comparative research, "institutional differentiation is typically defined as the way in which educational opportunities are differentiated between and within educational levels through formal tracking or streaming as well as the timing and rigidity of student selection [at] the secondary level" (Pfeffer, 2012, p. 11).

Table 41. *Capability-informed measure of flourishing scale regressed on educational variables and EWR*

	Flourishing		
	Model 1	**Model 2**	**Model 3**
Secondary or less	*reference category*		
VET	0.27***	0.19***	0.13***
	(0.03)	(0.03)	(0.03)
Tertiary	0.36***	0.22***	0.12**
	(0.03)	(0.03)	(0.03)
Universalist	*reference category*		
Liberalized	-0.38**	-0.34**	-0.33**
	(0.12)	(0.11)	(0.10)
Conservative	-0.32**	-0.29**	-0.29**
	(0.08)	(0.08)	(0.07)
Polytechnic	-0.48***	-0.43**	-0.43**
	(0.12)	(0.12)	(0.11)
Controls		*demographic*	*demographic & occupational*
Intercept	0.21**	-0.14+	-0.12
	(0.07)	(0.08)	(0.09)
Observations	23448	23173	23173
R^2	0.04	0.10	0.13
Adjusted R^2	0.04	0.10	0.13

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, those with tertiary education report a level of *flourishing* that is 0.12 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 42. *Sub-components of flourishing scale regressed on educational variables and EWR*

	Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Secondary or less	*reference category*					
VET	0.25***	0.15***	0.11**	0.21**	0.16**	0.11*
	(0.04)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)
Tertiary	0.30***	0.14***	0.08***	0.33***	0.25***	0.14*
	(0.03)	(0.03)	(0.02)	(0.05)	(0.04)	(0.05)
Universalist	*reference category*					
Liberalized	-0.35**	-0.32**	-0.31**	-0.32***	-0.29**	-0.27***
	(0.10)	(0.10)	(0.09)	(0.08)	(0.08)	(0.07)
Conservative	-0.28**	-0.25**	-0.26**	-0.25**	-0.23**	-0.23**
	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.06)
Polytechnic	-0.46**	-0.41**	-0.41**	-0.34**	-0.31**	-0.30**
	(0.14)	(0.12)	(0.12)	(0.10)	(0.10)	(0.09)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	0.19**	-0.23**	-0.17*	0.19**	-0.01	-0.04
	(0.06)	(0.08)	(0.07)	(0.06)	(0.08)	(0.11)
Observations	23828	23538	23538	23733	23440	23440
R^2	0.03	0.10	0.13	0.03	0.05	0.07
Adjusted R^2	0.03	0.10	0.13	0.03	0.05	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in the sub-component of *flourishing* for each independent variable as compared to the reference category for that variable. For example, those with VET report a level of *psycho-social well-being* that is 0.11 SD higher than those with secondary education or less in the final model with all controls.

[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

5.1.2. Examining individual items

These differences are also consistent across individual items as examined in a 'dashboard' or 'vector' approach (see Appendix 3). The only items where significant differences by EWR are not seen are play, development of potential, and dignity. These items are also less strongly impacted by levels of education in pooled models. These differences are examined in more detail by comparing levels across EWRs in a later section.

5.2. *Comparing levels of well-being using a 'two-step' approach*

Next, the nature of these relationships is further clarified by examining overall levels of well-being across countries and regressing country-level characteristics related to EWR groupings on the fitted country well-being intercepts. These fitted intercepts, which are the sum of the overall regression equation intercept and each country effect in a fixed effects model, allow for the comparison of countries in terms of 'average' well-being scores net of individual-level demographic and occupational controls. These fitted country intercepts are then regressed on country-level predictor variables in a second regression model, as described in the methods section above.

5.2.1. Educational stratification and decommodification

Analyses begin with the two analytical dimensions used in the construction of the EWR groupings, namely: post-secondary educational stratification and post-secondary educational decommodification. *Figure 69* plots the fitted *flourishing* intercepts from pooled fixed-effects models with controls (on the vertical axis) by the level of post-secondary educational stratification (on the horizontal axis). First, descriptively, we see that there is a clear negative relationship between educational stratification and average *flourishing*. Net of demographic

and employment controls, the negative correlation between educational stratification and the average level of *flourishing* is statistically significant and explains almost half of the variance in scores (R^2=.44).[32] These findings suggest that countries with less stratified educational system characteristics (i.e. later streaming, a lower number of distinct programs in secondary school, a higher percentage of the population participating in post-secondary education) generally have higher average levels of *flourishing*, *ceteris paribus*.[33]

We also see that the countries group quite neatly into the EWR categories on this graph: the Polytechnic countries are found on the bottom right, with high stratification and low overall levels of *flourishing*, while the Liberalized and Universalist countries group together at the top left, with low stratification and high average well-being, and the Conservative countries find themselves between the two, with moderate scores on both of these measures. Thus, although only post-secondary educational stratification and decommodification were used in grouping the countries according to EWR, the patterns in findings related to overall well-being and its relation to educational system characteristics remain consistent with the country groupings.

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[32] Cohen's f^2 for this effect size is thus very large at 0.79.

[33] This use of "all other things being equal" (*ceteris paribus*) refers to controls at the individual level. These analyses do not include country-level control variables. However, when control-level control variables are included for average income, income inequality, and overall public spending, the analytical dimensions remain the most significant predictors in the model and the R^2 increases to 80%. This complicates interpretation of the country groupings across the scatterplots though: As expressed by Achen (2002) in his "A Rule of Three (ART)," statistical specifications with more than three explanatory variables become difficult to interpret. Indeed, with "more than three independent variables," it is more challenging "to ensure that the model specification is accurate and that the assumptions fit as well as the researcher claims" (Achen, 2002, p. 446).
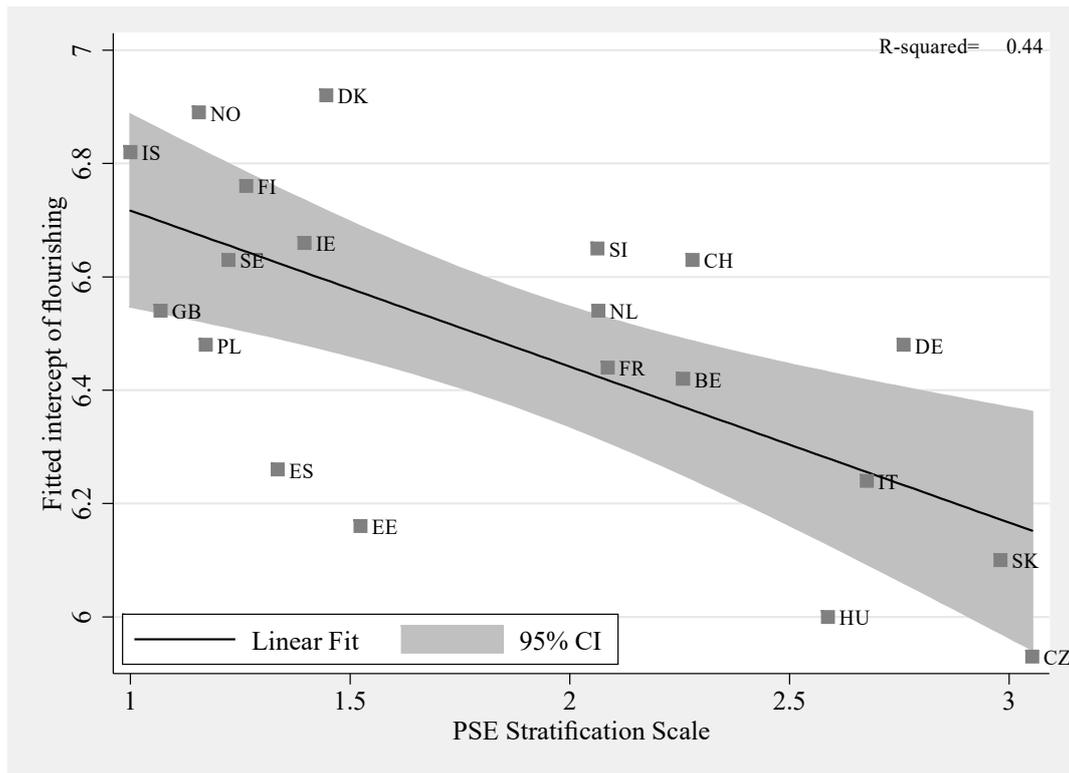
Figure 69. Fitted country *flourishing* intercepts regressed on PSE stratification.
Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions. Here, post-secondary educational stratification significantly predicts fitted *flourishing* intercepts, explaining 44% of the variation in scores.

Figure 70 plots the fitted *flourishing* intercepts from pooled fixed-effects models with controls (on the vertical axis) by the level of post-secondary educational decommodification (on the horizontal axis). This time, we see that there is a clear positive relationship between educational decommodification and average *flourishing*. Net of demographic and employment controls, the positive correlation between educational decommodification and the average level of *flourishing* is statistically significant and again explains almost half of the variance in scores (R^2=.46).[34] These findings suggest that countries with greater public investment in education (i.e. higher funding as a percentage of GDP, a higher ratio of public

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[34] These analyses do not include country-level control variables. However, when control-level control variables are included for average income, income inequality, and overall public spending, the analytical dimensions remain the most significant predictors in the model and the R^2 increases to 66%.

to private spending, and higher overall investment in education) are associated with higher average levels of *flourishing*.
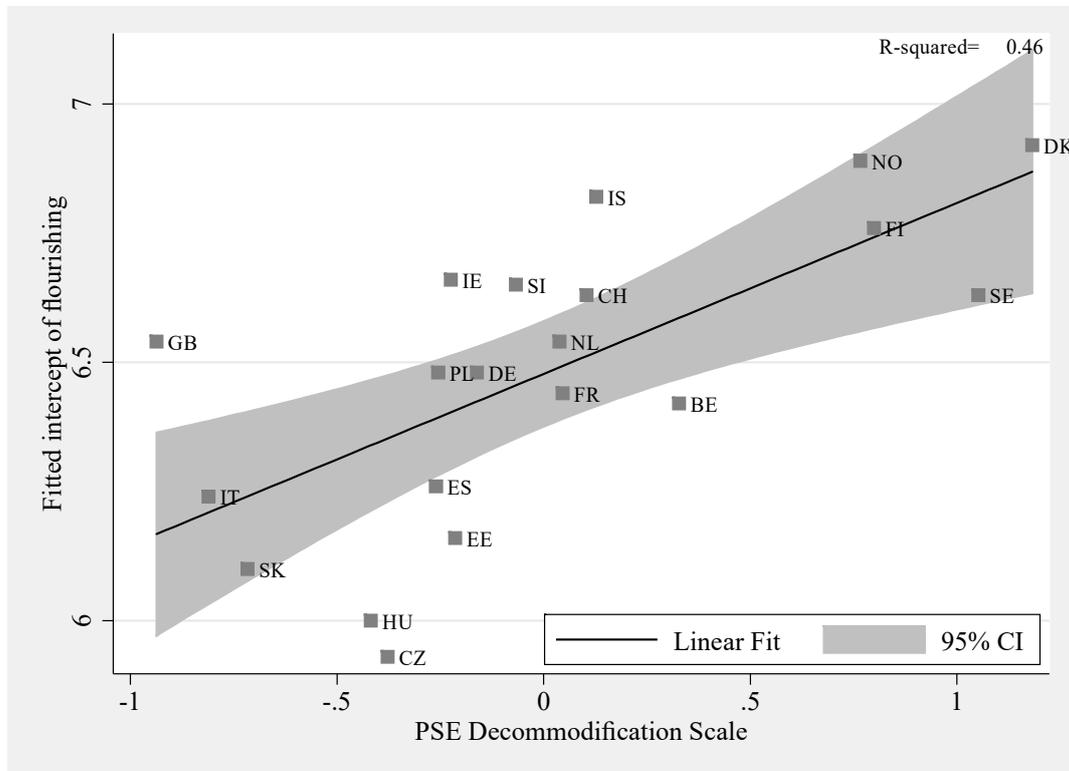
Figure 70. Fitted country *flourishing* intercepts regressed on PSE decommodification.
Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions. Here, post-secondary educational decommodification significantly predicts fitted *flourishing* intercepts, explaining 46% of the variation in scores.

We again see that the country groupings of EWR categories can be found on this graph: the Universalist countries are found at the top right, with high decommodification and high overall levels of *flourishing*, while the Polytechnic and Liberalized countries group together in the bottom left, with fairly low decommodification and varying levels of average well-being. The Conservative countries again find themselves between the two, with moderate scores on both of these measures.

When examining the two sub-components of *flourishing*, we find consistent results to the overall *flourishing* fitted intercepts. All correlations are significant; however, it is

apparent that the strongest relationship in terms of explanatory power is that between *psycho-social well-being* and post-secondary educational decommodification (R^2=0.47). [35] This relationship primarily hinges between the Universalist countries on the right, and the Polytechnic countries mainly on the left, along with the Liberalized countries. The Conservative EWR falls in the middle of these two extremes.

The predictive power of all models is very good, with large Cohen's f^2 values for the effect sizes of all models. Furthermore, while these analyses do not include country-level control variables, when control-level control variables for average income, income inequality, and overall public spending are included, the analytical dimensions remain the most significant predictors in the models and the R^2 of each model increases (despite the fact that only income per capita is a significant predictor, as will be examined in later regression analyses incorporating country-level controls). Thus, in terms of both analytical dimensions and both *flourishing* subcomponents, there appears to be a statistically and substantively significant association at the country level. Moreover, the patterns remain consistent with the country groupings developed in Chapter 4.

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[35] These analyses do not include country-level control variables. However, when control-level control variables are included for average income, income inequality, and overall public spending, the analytical dimensions remain the most significant predictors in the model and the R^2 increases to 72%.
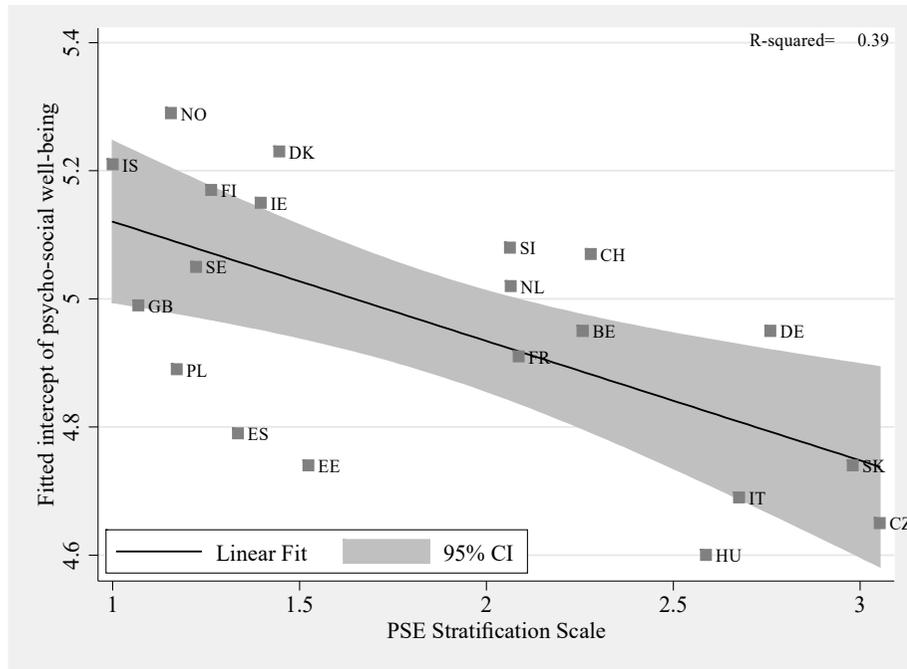
Figure 71. Fitted country *psycho-social well-being* intercepts regressed on PSE stratification.

Note: These scatterplots show the fitted *psycho-social well-being* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions.
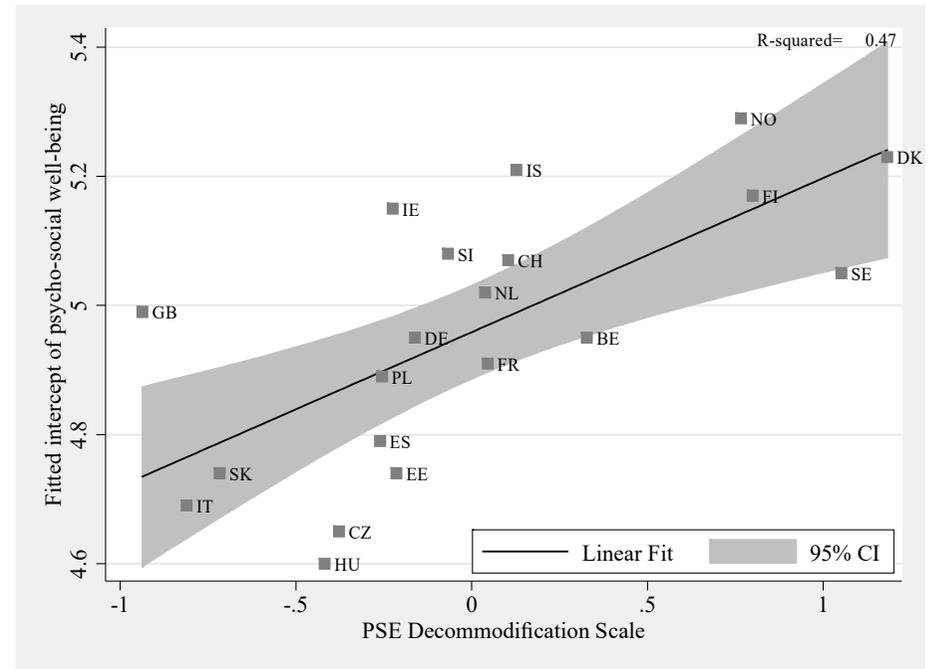
Figure 72. Fitted country *psycho-social well-being* intercepts regressed on PSE decommodification.

Note: These scatterplots show the fitted *psycho-social well-being* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions.
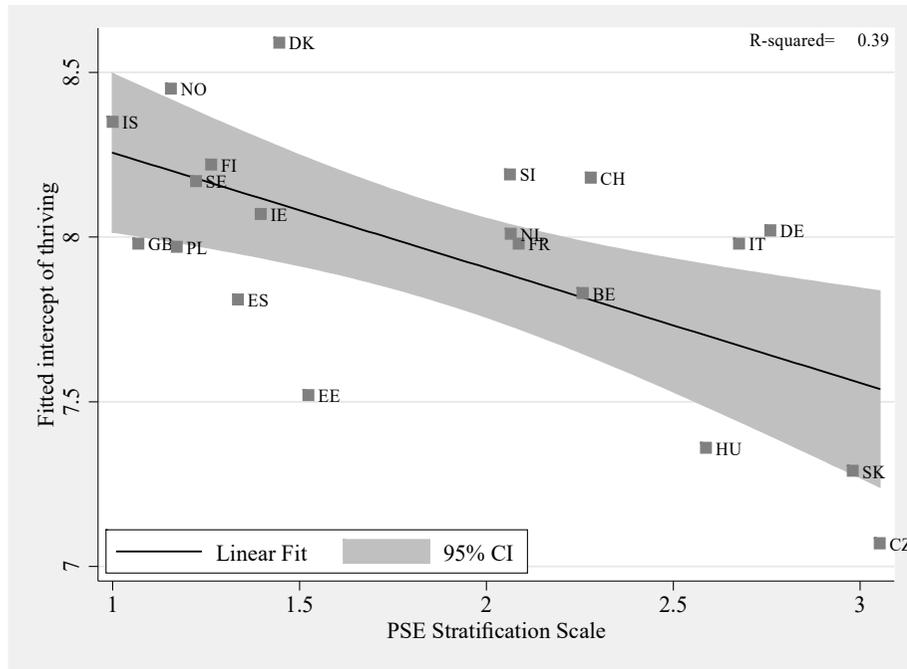
Figure 73. Fitted country *thriving* intercepts regressed on PSE stratification.
Note: These scatterplots show the fitted *thriving* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions.
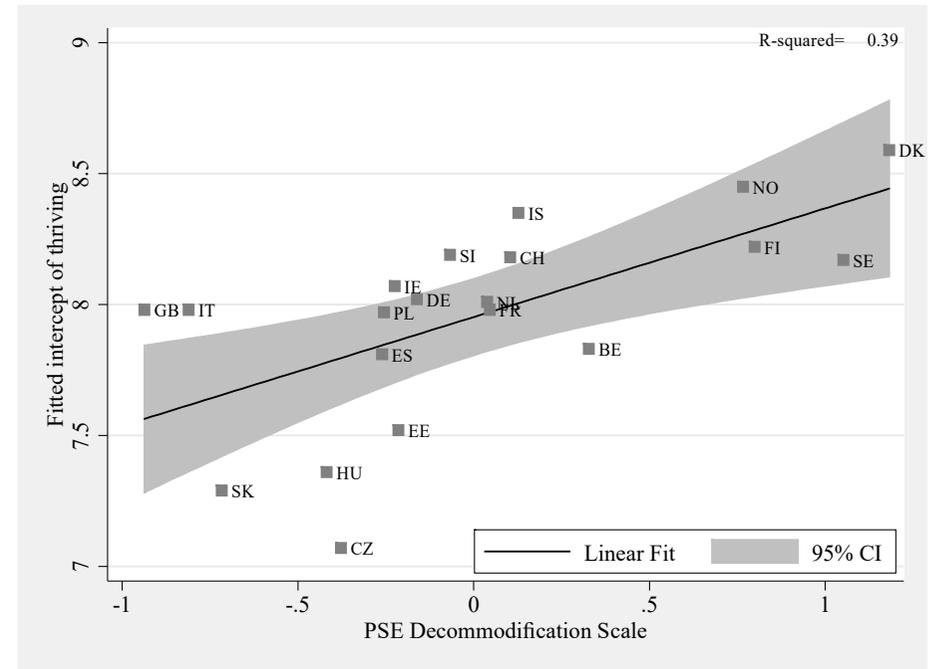
Figure 74. Fitted country *thriving* intercepts regressed on PSE decommodification.
Note: These scatterplots show the fitted *thriving* intercepts (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions.

In Chapter 4, the EWR groupings created through empirical analyses led to the hypothesis that country-level variables related to educational stratification and decommodification are associated with overall well-being (H_{10}). Within this hypothesis were two sub-arguments: that higher overall levels of education are linked to greater overall well-being, and that overall well-being is greater where educational stratification is lower and educational decommodification is higher. Strong evidence has now been found supporting these hypotheses using the 'two-step' method (regressing fitted country intercepts on country-level variables). Specifically, countries with lower levels of post-secondary educational stratification show higher overall levels of well-being, and countries with higher levels of post-secondary educational decommodification also show higher average levels of well-being as measured by the capability-informed measure of *flourishing*.

These 'two-step' analyses provide descriptive bivariate analytical support for the notion that welfare regimes impact overall levels of well-being within a country. These findings are consistent with previous findings in the literature (outlined in Chapter 3) that people in a universal welfare state, as exemplified by the Nordic countries, report higher levels of well-being (Helliwell & Huang, 2008; Pacek & Radcliff, 2008; Rothstein, 2010). However, a key role of the welfare state is not just increasing overall well-being, but enhancing the equitable *distribution* of well-being, which is explored in the next section.

5.2.2. Dispersion in well-being scores

The standard deviation and inter-quartile range are two common measures of dispersion, capturing the average distance from the mean and the spread between the 25th and 75th percentiles, respectively (Kalmijn & Veenhoven, 2005). Inspecting the relationship between overall average levels of well-being in countries with controls and the variation in well-being scores in these same countries, we find a very strong negative association, as was discussed

in Chapter 5 as well (see *Figure 75*). Countries with higher fitted intercepts for *flourishing* show lower variation in well-being scores as measured by both the standard deviation of *flourishing* and the inter-quartile range. The explicative value of these models is very high: the R^2s are 0.54 and 0.73, respectively. Thus, where overall well-being is higher, well-being inequalities are also generally lower.
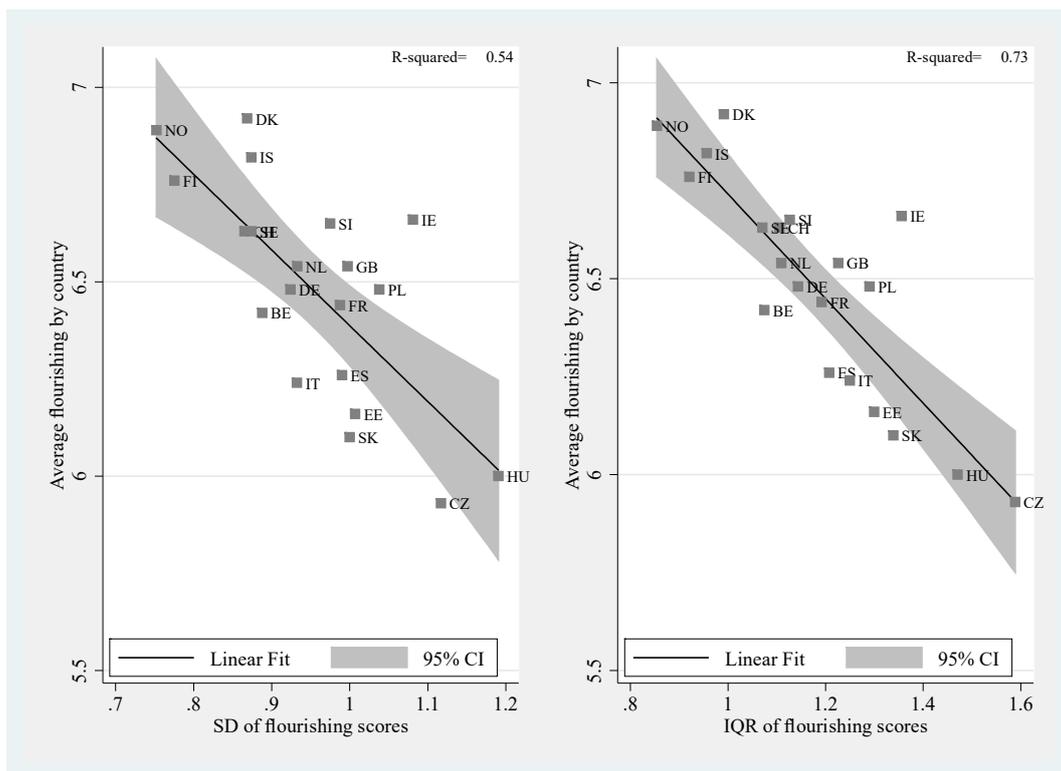
Figure 75. Fitted intercepts of *flourishing* regressed on measures of the variation in scores.
Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country measures of the dispersion in well-being scores. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by these measures of dispersion in scores.

While this may seem somewhat tautological from a statistical perspective, it has substantive implications: Consistent with prior research findings, higher average levels of well-being act as a rising tide, lifting all boats (Fahey & Smyth, 2004; Ovaska & Takashima, 2010). This confirms prior research finding that countries with higher levels of well-being also exhibit less well-being inequality (Ott, 2005). We find the EWR groupings mapped out

horizontally in these graphs as well: the Universalist countries on the left and the Polytechnic countries on the right, with the Liberalized and Conservative countries fairly close together in the center of the graph, although the Conservative countries generally show less variation than the Liberalized countries (and are therefore found further to the left on the graph in *Figure 75*).

Furthermore, when we examine these measures of well-being inequality in relation to post-secondary educational stratification and decommodification, we see that the associations between well-being inequality and the educational grouping analytical dimensions are also highly significant for all but the association between educational stratification and the standard deviation of *flourishing*. There is a positive relationship between educational stratification and variation in well-being scores in terms of the inter-quartile range and a negative relationship between educational decommodification and variation in well-being scores in terms of both the standard deviation and inter-quartile range. Educational decommodification better explains the levels of variation in well-being than stratification in these models (R^2=.45).[36]

These findings are consistent with research suggesting that these institutional characteristics of educational systems have important repercussions on the distribution of later adult outcomes. Indeed, prior research has shown that "the nature and intensity of student selection into different educational tracks and school types," included here in the measure of educational stratification, has "clear, consistent, negative effects on educational equality" independent of "other institutional and macroeconomic features" (Pfeffer, 2012, p. 31). Within these multi-item analytical dimensions, we see that individual measures, such as the percentage of the population with a tertiary degree and public spending on education as a

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[36] These analyses do not include country-level control variables. However, when control-level control variables are included for average income, income inequality, and overall public spending, the analytical dimensions remain significant in models predicting the inter-quartile range, and the R^2 of the models increases to 74% and 66%, respectively.

percentage of GDP mirror these significant associations, further bolstering the results. This is consistent with prior research finding that "higher shares of highly educated individuals" within a society "significantly reduce happiness inequality by affecting both tails of the happiness distribution" (Becchetti & Pelloni, 2013). What is more, we see that the country groupings created from the analytical taxonomy can be clearly found in each graph, both for overall levels of education and educational spending within a country (see Appendix 3).
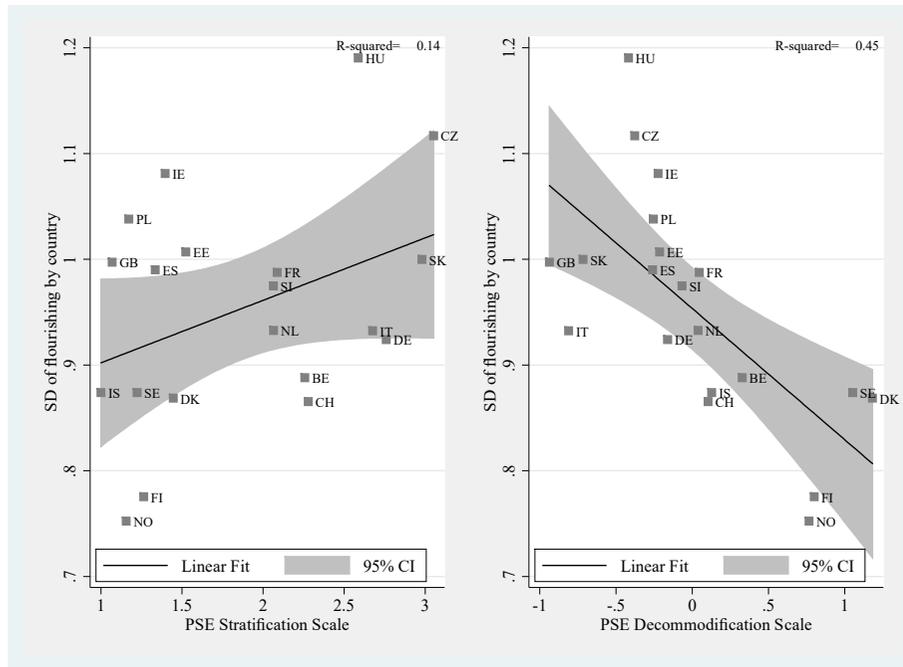
Figure 76. Standard deviations of *flourishing* regressed on the post-secondary educational stratification and decommodification scales.
Note: These scatterplots show country measures of well-being dispersion plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this dispersion that is explained by the analytical dimensions.
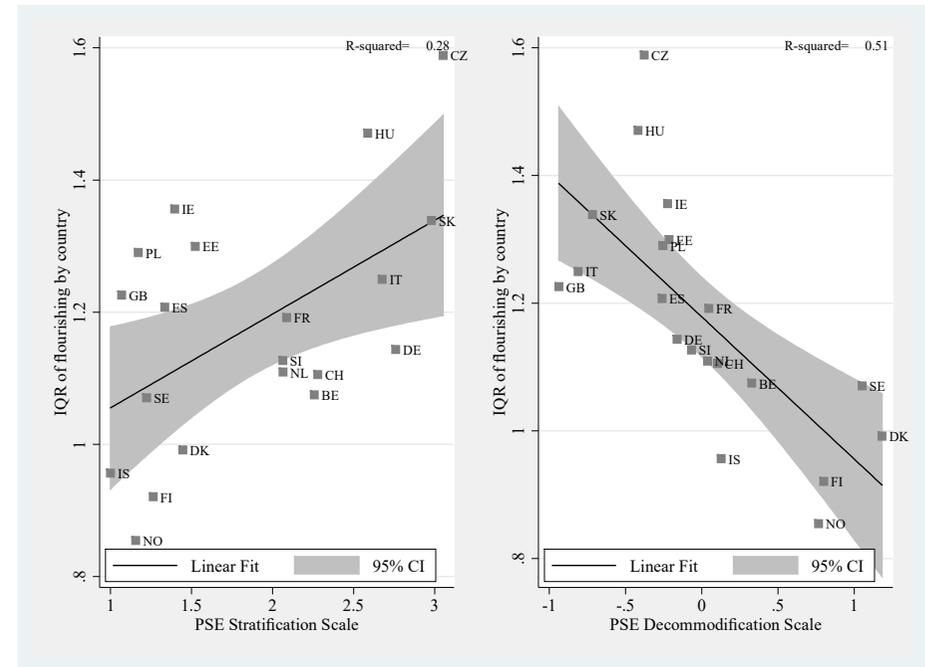
Figure 77. Inter-quartile ranges of *flourishing* regressed on the post-secondary educational stratification and decommodification scales.
Note: These scatterplots show country measures of well-being dispersion plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this dispersion that is explained by the analytical dimensions.

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The significance of the association between the analytical dimensions and well-being inequality remains consistent when we examine the dispersion coefficient of countries. The dispersion coefficient is a measure of how homogenous or heterogeneous countries are in terms of individual scores on the well-being scale across their respective samples. It is calculated by dividing the standard deviation (SD) by the arithmetic average and multiplying it by 100 (Murdoch, 2002), as was explained in Chapter 5. We see that, in particular regarding educational stratification, the countries groupings are clearly delineated (see *Figure 78*); however, the Polytechnic grouping shows the greatest variability in levels of dispersion. Indeed, by these measures of well-being inequality, Germany and Italy are more similar to the countries in the Conservative grouping.
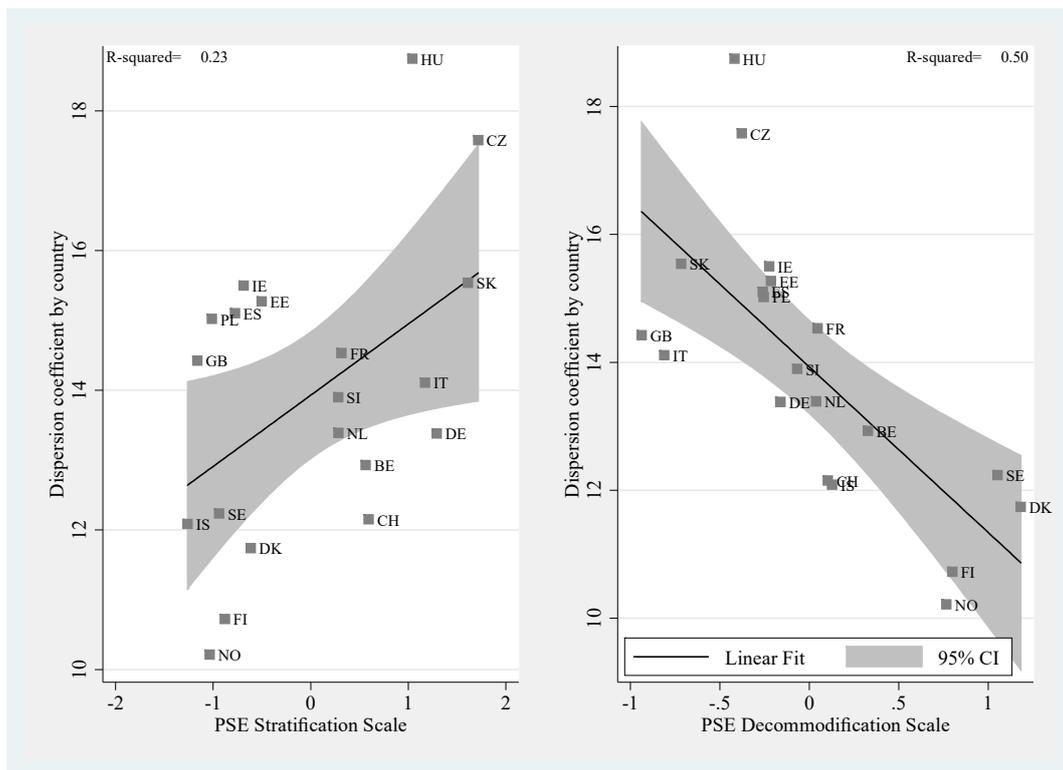
Figure 78. Dispersion coefficient of *flourishing* regressed on the post-secondary educational stratification and decommodification scales.
Note: These scatterplots show country dispersion coefficients, that is, the standard deviation (SD) divided by the mean and multiplied by 100 (Murdoch, 2002), plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this average score that is explained by the analytical dimensions.

Likewise, if we change the measure of inequality to examine the average well-being of the least advantaged group in the society in terms of education (in this case, those with secondary education or less), we see that the results are strongly significant (see *Figure 79*). This measure is based on the Rawlsian difference principle, which argues that we can justify inequality insofar as it benefits the least advantaged in society (Rawls, 1971).[37] It has been used in prior welfare state research as a measure of well-being inequality in terms of income (Gainer, 2013).
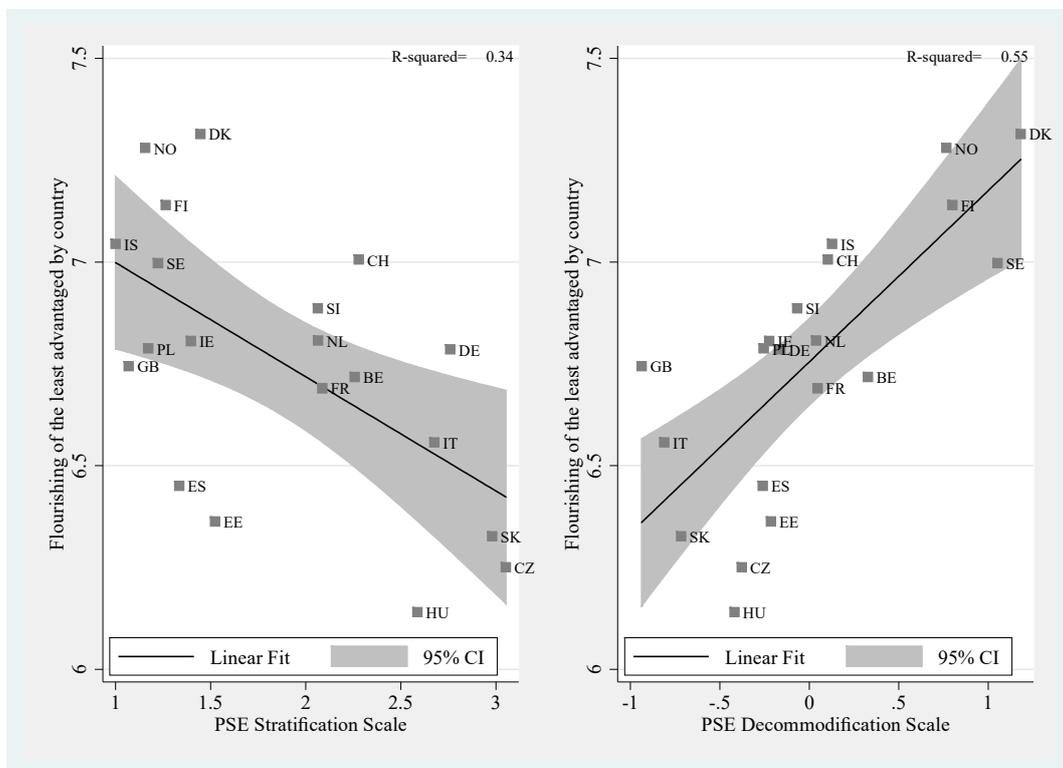
Figure 79. Average *flourishing* of the least advantaged regressed on the post-secondary educational stratification and decommodification scales.
Note: These scatterplots show country measures of the average well-being of least advantaged in terms of education within a society plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this average score that is explained by the analytical dimensions.

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[37] The use of this principle as applied to education and schools is not consistent with Rawls' original theorization, but has been argued to also be applicable in this setting (Verhoeven et al., 2007).

We see that this measure shows the expected negative relationship with educational stratification and positive relationship with educational decommodification. Moreover, these results are highly significant. This is consistent with prior research finding that outcomes of education are more or less apparent along their distribution: The "negative effects of high differentiation are… stronger at the bottom of the distribution than at the top," resulting in "higher penalties of institutional differentiation at the bottom" (Pfeffer, 2012, p. 27, 30). Due to the fact that institutional differentiation forms an important part of the educational stratification analytical dimension, these results can be seen as confirmation of these findings across types of educational outcomes (in this case, literacy – as found by Pfeffer (2012) – and capability-informed well-being).

The significance of these additional measures of inequality bolsters the claim that educational welfare regimes impact not only average levels of well-being across countries, but also the distribution of well-being in these countries. However, what remains to be seen is if this variation in the distribution of well-being, which differs significantly by levels of educational stratification and decommodification, translates into significantly different relationships between individual educational attainment and *flourishing*. Educational stratification and decommodification are associated with differing levels of well-being and dispersion in well-being scores across countries, but do they determine how education impacts the well-being of individuals across institutional contexts?

6.   The impact of educational context on the education-well-being association

While comparisons across countries allow a first glimpse into important differences in how education functions in the distribution of well-being, further models are necessary to test the significance of these differences parametrically. In order to do so, these relationships are next modeled separately by EWR groupings, modeled together using cross-level interaction terms

in regression models on the individual-level data, and modeled across 'second-step' country-level regression models that predict the country-level educational coefficients with all individual-level controls. In these models, EWR groupings are seen as moderating the education-well-being association (Aguinis et al., 2005; Brambor et al., 2006).

6.1. *Within individual education and training welfare regimes (EWR)*

When looking at the standardized scores from the entire sample, the first finding that is evident is that those with secondary education or less in the Universalist countries report higher levels of *flourishing* than those with higher levels of education in any of the other EWR. As indicated earlier, levels of *flourishing* are significantly higher in the countries in this EWR. However, the direction of the association between education and well-being is consistent across countries in all EWR. Those with post-secondary education report higher levels of *flourishing* than those without post-secondary credentials.

The Polytechnic countries show one interesting difference from the other three regimes on preliminary examination: Those with VET report higher well-being than those with tertiary education (see *Figure 80*).[38] When examining *psycho-social well-being* and *thriving* separately, we see that this difference for VET in the Polytechnic countries is mainly due to the first sub-component, *psycho-social well-being*, while differences in *thriving* show the expected patterns consistent with the other regimes. Thus, from a bivariate standpoint, education provides similar advantages in terms of well-being across EWR, with the possible exception of VET in the Polytechnic countries. However, it remains unclear if these relationships differ significantly in magnitude, and if they remain similar with the addition of demographic and occupational controls.

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[38] We saw in the previous section that this grouping also has the largest percentage of the population with a VET credential as their highest credential. However, this effect may be mainly due to the inclusion of Germany within this group. As we saw in a previous section, the VET, but not tertiary, educational coefficients were significant for the German sample.
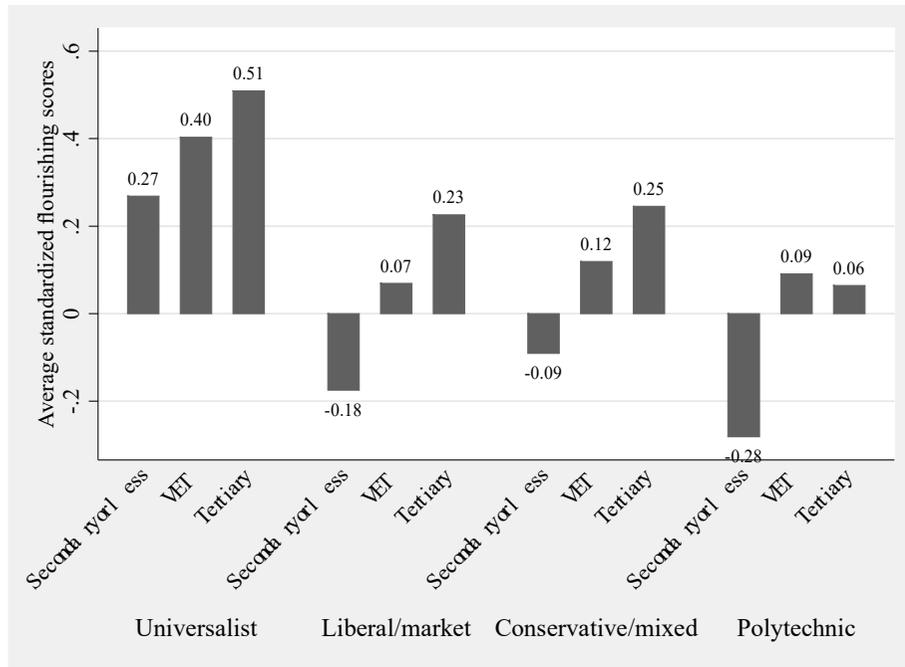
Figure 80. Average standardized levels of *flourishing* by EWR and educational attainment.
Note: The scores are standardized for the sample as a whole (thus, grand mean centered), which is why some scores are negative. Those with secondary education or less in the Universalist countries score 0.27 standard deviations (SD) *above* the overall mean for the entire sample on the *flourishing* measure, while those with VET and tertiary education score 0.40 SD and 0.51 SD, respectively, above the average for the sample as a whole.
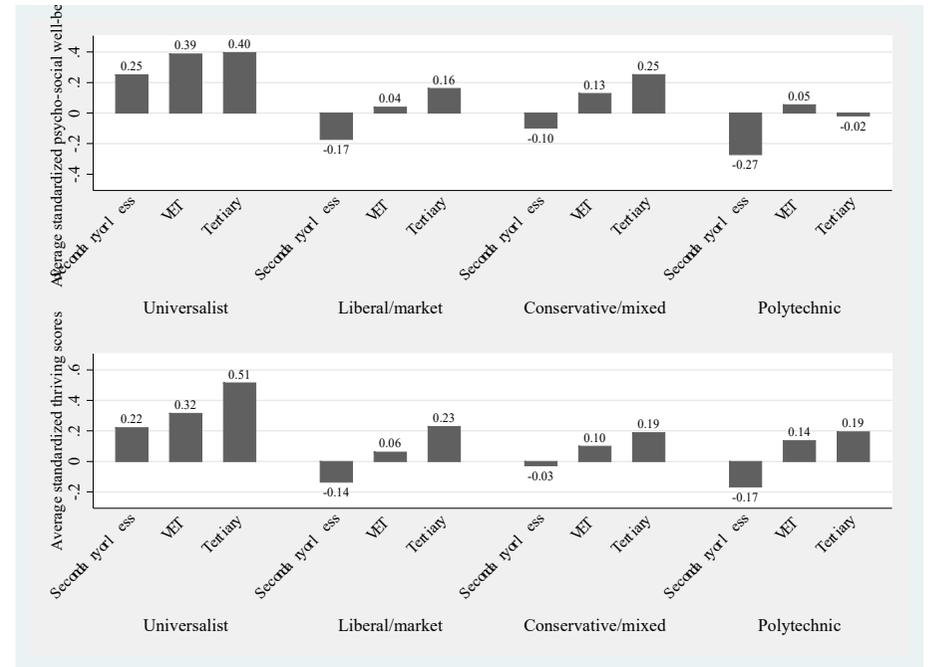
Figure 81. Average standardized levels of *psycho-social well-being* and *thriving* by EWR and educational attainment.
Note: The scores are standardized for the sample as a whole (thus, grand mean centered), which is why some scores are negative. Those with secondary education or less in the Polytechnic countries score 0.27 standard deviations (SD) *below* the overall mean for the entire sample on the *psycho-social well-being* measure, while those with VET score 0.05 SD *above* and those with tertiary education 0.02 SD *below*, respectively, relative to the average for the sample as a whole.

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Results from regression analyses run separately by EWR confirm the descriptive findings. Those in the Universalist regimes report the highest well-being, although the confidence interval (CI) of the prediction overlaps with that of the Liberalized countries once all controls are included in analyses. Indeed, the Liberalized countries show the greatest variation in well-being outcomes of all the regimes, as illustrated in the large 95% confidence interval range. These results provide preliminary support for hypothesis H_6: Levels of well-being differ significantly by EWR.
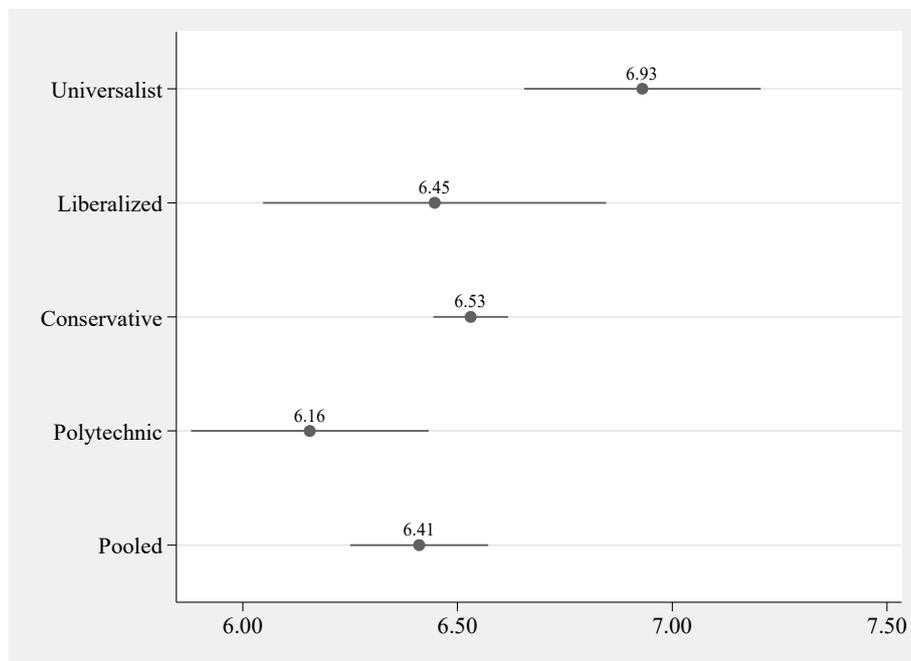
Figure 82. EWR intercepts for *flourishing* scores.
Note: These graphs show the fitted *flourishing* intercepts (net of all individual-level controls), with the point estimates shown as points and the 95% confidence intervals (CIs) shown as lines. Thus, overlap between the lines shows that the intercepts do not significantly differ ($p<0.05$).

Through analyzing the educational coefficients for these groupings (see *Figure 83*), preliminary evidence is also found supporting hypothesis H_7, namely that the effect of education is stronger in some EWR than others. In particular, we see that education is not strongly linked to well-being outcomes in the Universalist countries, where post-secondary systems are less stratified and more decommodified. Rather, the effects of education on

flourishing are strongest in the Conservative EWR, where educational stratification is high. Tertiary education also plays an important role in determining individual well-being outcomes in the 'general skills' Liberalized EWR countries. VET is most determinate in the Polytechnic EWR countries, although this varies amongst the individual countries within the grouping, as seen in the previous section.
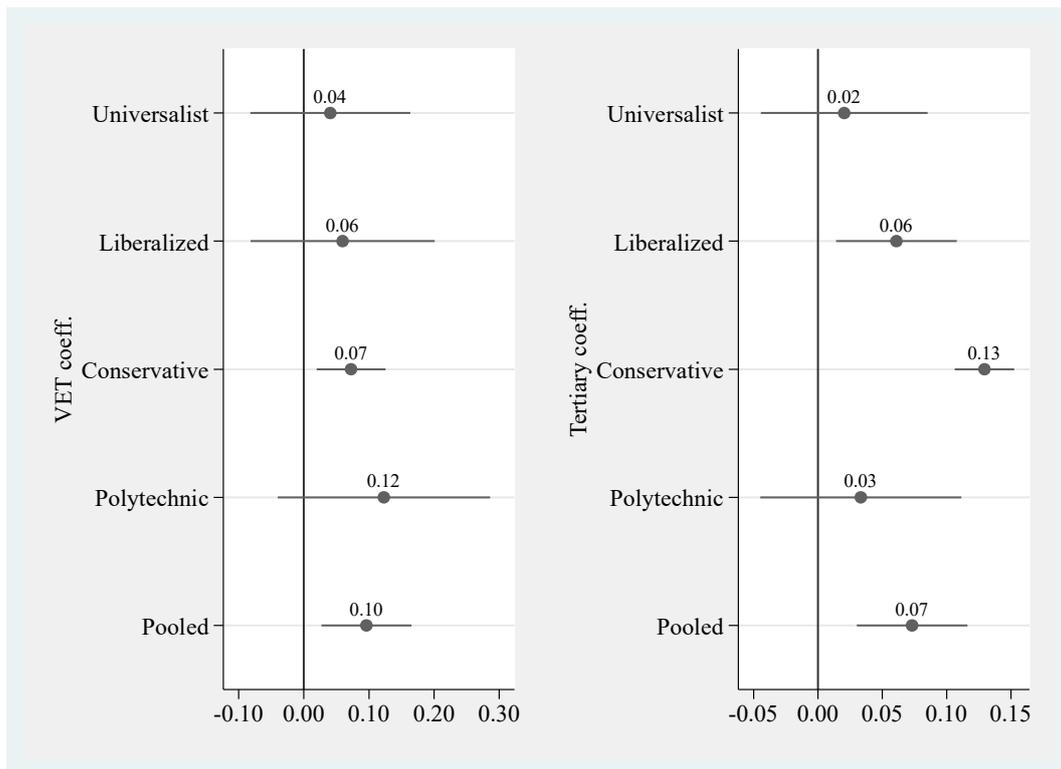
Figure 83. VET and tertiary coefficients for *flourishing* scores by EWR.
Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *flourishing* scale on the educational variables. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at $p<0.05$) in the model. For example, in the Conservative educational welfare regime grouping, the coefficient for VET is 0.07 (interpreted as those with VET report a level of *flourishing* that is 0.07 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (due to the fact that it does not overlap with zero).

When one examines these effects separately for the two sub-components of *flourishing*, *psycho-social well-being* and *thriving*, one discovers that the findings are constant between the overall measure and the first sub-component. Both levels of post-secondary education have no significant impact on well-being outcomes in the Universalist

EWR grouping, while both determine outcomes in Conservative countries. Variation remains high in overall levels of *psycho-social well-being* in the Liberalized countries, as in the overall *flourishing* measure, while the relationship between post-secondary educational credentials and well-being, after controls, is once again strongest in the Conservative EWR, where both VET and tertiary education are determinate of individual well-being outcomes. This is consistent with prior research findings (Jongbloed & Pullman, 2016). Liberalized EWR, where general skills are more highly valued, also show a strong gradient in well-being outcomes, with those with tertiary education more likely to report higher levels of *psycho-social well-being* in their lives.

Levels of *thriving* allow us to see some interesting differences within the *flourishing* measure. Overall levels of *thriving* are quite similar across Universalist, Liberalized, and Conservative EWRs, with only the Polytechnic regimes standing apart. What is more, the relationship between post-secondary educational credentials and this sub-component of well-being, after controls, is less strong across all regimes.[39] Only those with VET in the Conservative and Polytechnic regimes report higher levels of *thriving* than the comparison group of those with secondary education or less. This is likely due to the fact that education is not strongly determinate of personal autonomy and development of potential across the entire sample, despite strong theoretical links between these two aspects people's lives from a capability perspective.[40] However, the significant bivariate differences in *thriving* items across EWR does suggest that although the effect of education on this subcomponent may not differ significantly by educational regime, overall levels and variations in these levels may be shaped by these contextual factors.

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[39] This is despite the fact that this relationship appeared to be stronger in initial bivariate comparisons, suggesting that demographic and occupational variables account for a larger part of these associations.

[40] These aspects of well-being appear to be largely accounted for by demographic and occupational variables, as discussed earlier. For example, 40% to 50% of the value of the education coefficients for *thriving* disappeared with the addition of controls.
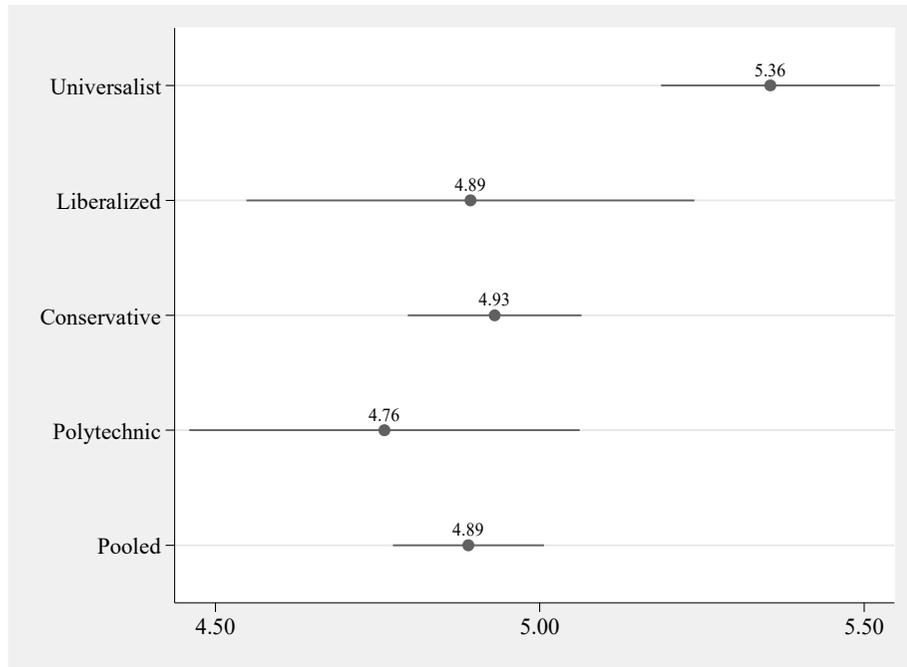
Figure 84. EWR intercepts for *psycho-social well-being* scores.
Note: These graphs show the fitted *psycho-social well-being* intercepts (net of all individual-level controls), with the point estimates shown as points and the 95% confidence intervals (CIs) shown as lines. Thus, overlap between the lines shows that the intercepts do not significantly differ ($p<0.05$).
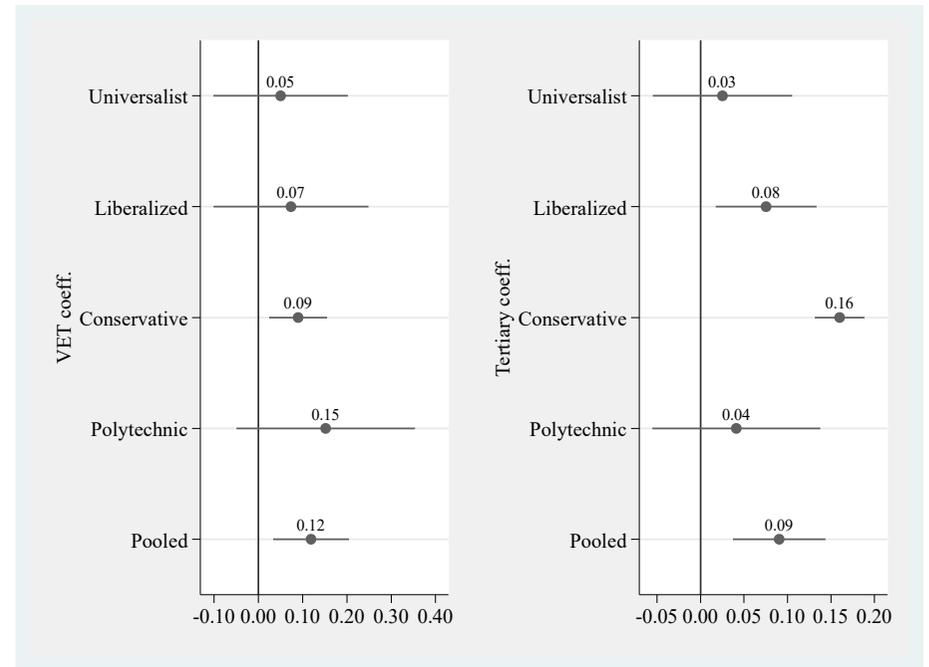

Figure 85. VET and tertiary coefficients for *psycho-social well-being* scores by EWR.
Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *psycho-social well-being* scale on the educational variables. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs).
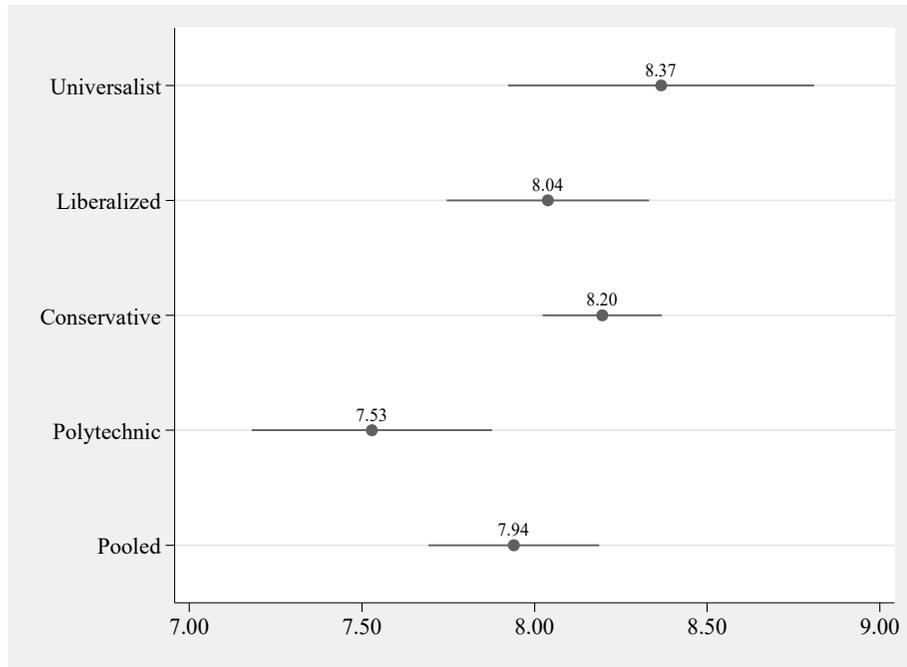
Figure 86. EWR intercepts for *thriving* scores.
Note: These graphs show the fitted *thriving* intercepts (net of all individual-level controls), with the point estimates shown as points and the 95% confidence intervals (CIs) shown as lines. Thus, overlap between the lines shows that the intercepts do not significantly differ ($p<0.05$).
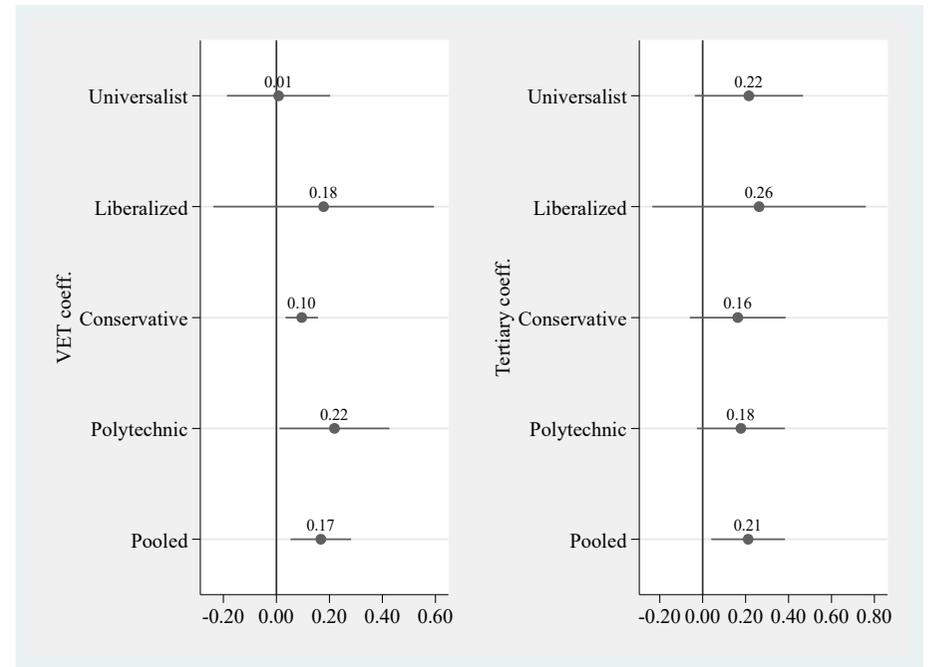
Figure 87. VET and tertiary coefficients for *thriving* scores by EWR.
Note: These graphs show the beta coefficients of VET, on the left, and tertiary education, on the right, in models regressing the *thriving* scale on the educational variables. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs).

6.2. Cross-level interactions between EWR and education

In order to make inter-regime comparisons, the next stage of analysis considers several EWR-education interactions. Pooled statistical models that include an interaction term between each education level and each EWR grouping dummy variable allow us to test the descriptive patterns parametrically. These models examine whether EWR groupings moderate the education-well-being association (Aguinis et al., 2005; Brambor et al., 2006; Ejrnæs & Greve, 2017). Following best practice, all constitutive terms are included in the interaction model specifications (Brambor et al., 2006), although their interpretation changes in these models.

Multiplicative interaction models of this type are symmetric. Therefore, these models cannot "distinguish between the causal story" where EWR modifies the effect of education on well-being from its opposite where education modifies the effect of EWR on well-being (Brambor et al., 2006, p. 72). Due to this fact, the direction of causality must be determined theoretically by the researcher. As argued in Chapter 3, the first causal story appears to be more theoretically accurate: Educational welfare regime characteristics are assumed to shape the relationship between individual-level education and well-being outcomes. However, from an inequality standpoint, we might argue that welfare regimes are most beneficial to the least advantaged groups in society: those with the lowest levels of education. This was introduced with the Rawlsian difference principle earlier in this chapter (Rawls, 1971), and provides potential evidence for reversing the causal story.

As illustrated in Table *43*, an interaction model compares each level of education individually. The interaction terms show how EWR differ in how they shape the effect of education on well-being. Most notable is that significant interaction terms were found even with the addition of all controls and that an overall interaction term of education by EWR is significant (p=.01; not shown). The Polytechnic regimes are the exceptional case: the

association between VET and *flourishing* is significantly stronger, or more positive, in this group as compared to the Universalist regime group, while the patterns of effects in Liberalized and Conservative regimes were similar overall to the Universalist countries. In the Polytechnic grouping, *flourishing* increases by 0.20 of a standard deviation with VET, which is significantly different from the relationship in the Universalist EWR.

We see these results illustrated in the predictive margins for the education-EWR interaction terms in *Figure 88* and *Figure 89*. These figures illustrate how the relationship between education and well-being is moderated by institutional arrangements as captured by the educational welfare regime groupings. The vertical axes show the predicted values for *flourishing* and the horizontal axes show the educational categories. The positive association between individuals' highest educational attainments and *flourishing* is significantly stronger for VET in the Polytechnic countries, as compared with the Universalist reference group. However, predicted average levels are highest across all educational categories in the Universalist countries.

This finding is consistent with previous findings in the research underscoring the rewards of VET in highly stratified educational systems. As Andersen and van de Werfhorst (2010) suggest, VET is associated with greater "rewards, and a university education less rewards, in highly coordinated societies" (p. 340). They also find that "educational institutions make a difference, independent of the institutional context in terms of labour market coordination" (Andersen & van de Werfhorst, 2010, p. 341).[41] These results are also consistent with research showing stronger correlations between individuals' perceived position in society and their happiness scores across welfare regime clusters, in particular in the case of the comparison between Nordic and Eastern European countries (Ejrnæs & Greve, 2017).

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[41] Similar results have been found across a range of outcomes for those with VET in relatively vocationally-specific educational systems (Müller & Shavit, 1997; Shavit & Müller, 1998, 2000a, 2000b).

Table 43. *Flourishing scales regressed on educational variables with cross-level interaction effects*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.13**	0.07	0.03	0.14*	0.07	0.03	0.09*	0.06	0.01
	(0.04)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.03)	(0.04)	(0.04)
Tertiary	0.24***	0.15**	0.05	0.15**	0.03	-0.03	0.29***	0.24***	0.14**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)
Universalist	*reference category*								
Liberalized	-0.44**	-0.39**	-0.37**	-0.42**	-0.37**	-0.36**	-0.36***	-0.31***	-0.30***
	(0.12)	(0.12)	(0.10)	(0.12)	(0.13)	(0.11)	(0.07)	(0.08)	(0.07)
Conservative	-0.36***	-0.31**	-0.31**	-0.35**	-0.30**	-0.31**	-0.25**	-0.21*	-0.21**
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.09)	(0.07)	(0.08)	(0.07)
Polytechnic	-0.55***	-0.49**	-0.48**	-0.52**	-0.46**	-0.46**	-0.39**	-0.34**	-0.34**
	(0.13)	(0.13)	(0.13)	(0.15)	(0.14)	(0.14)	(0.11)	(0.11)	(0.10)
Universalist by secondary or less	*reference category*								
Liberalized by VET	0.11	0.10	0.09	0.07	0.05	0.04	0.10	0.10	0.09
	(0.07)	(0.06)	(0.06)	(0.09)	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)
Liberalized by tertiary	0.16*	0.10+	0.10	0.19***	0.13*	**0.13****	0.07	0.04	0.02
	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	**(0.04)**	(0.10)	(0.10)	(0.10)
Conservative by VET	0.08	0.04	0.03	0.09	0.04	0.04	0.03	0.02	-0.00
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)
Conservative by tertiary	0.10+	0.04	0.04	0.20***	0.14**	**0.15*****	-0.08	-0.11	-0.12
	(0.05)	(0.06)	(0.05)	(0.04)	(0.04)	**(0.03)**	(0.08)	(0.08)	(0.08)
Polytechnic by VET	0.24***	0.21**	**0.20****	0.19*	0.16+	0.15	0.21*	0.19*	**0.18***
	(0.06)	(0.06)	**(0.06)**	(0.09)	(0.09)	(0.09)	(0.08)	(0.08)	**(0.07)**
Polytechnic by tertiary	0.11	0.07	0.08	0.11+	0.08	0.08	0.07	0.04	0.04
	(0.07)	(0.08)	(0.07)	(0.06)	(0.06)	(0.05)	(0.09)	(0.10)	(0.08)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.27**	-0.10	-0.08	0.25**	-0.19+	-0.12	0.22**	0.01	-0.03
	(0.08)	(0.09)	(0.10)	(0.08)	(0.09)	(0.09)	(0.07)	(0.08)	(0.11)
Observations	23448	23173	23173	23828	23538	23538	23733	23440	23440
R^2	0.04	0.10	0.13	0.03	0.11	0.13	0.03	0.05	0.07
Adjusted R^2	0.04	0.10	0.13	0.03	0.10	0.13	0.03	0.05	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
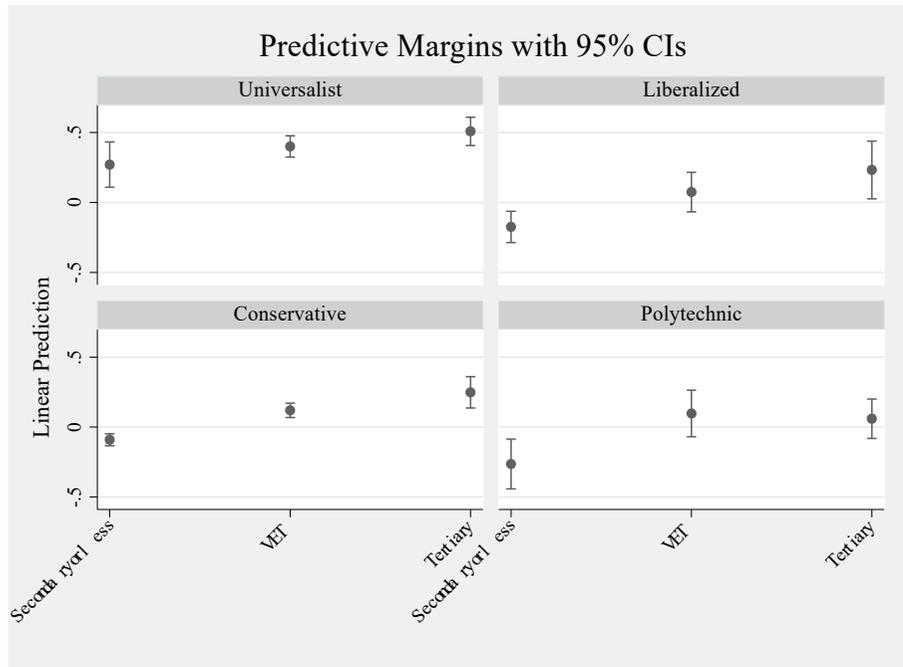
Figure 88. Margins plot by education level and EWR.
Note: These graphs show the fitted *flourishing* intercepts (net of all individual-level controls), with the point estimates shown as points and the 95% confidence intervals (CIs) shown as lines. Thus, overlap between the lines shows that the intercepts do not significantly differ (*p<0.05*).
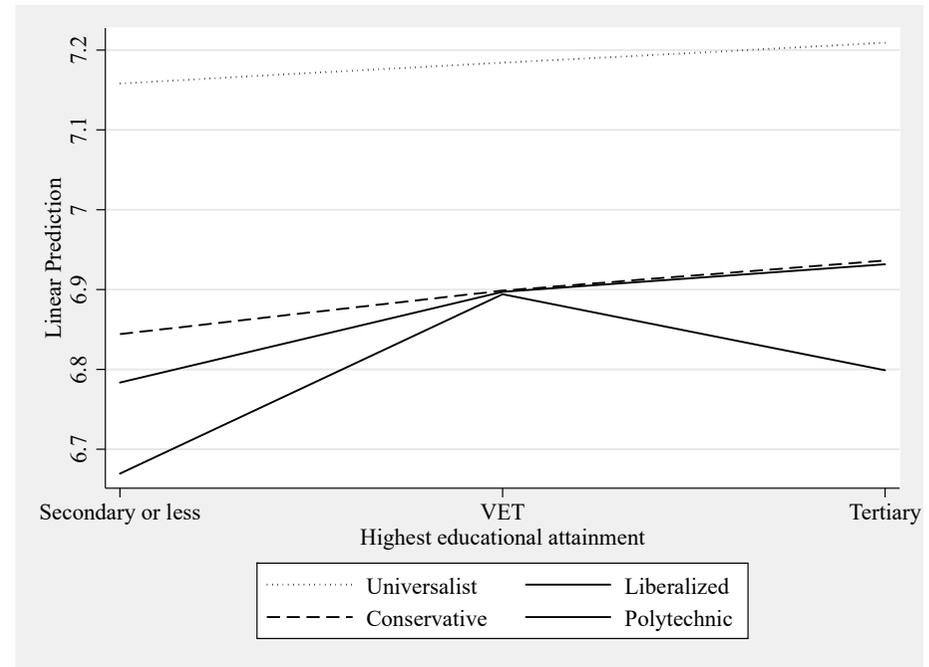

Figure 89. Predictive margins of EWR by educational level for *flourishing*.
Note: This graph shows the predicted *flourishing* values (net of all individual-level controls) across educational categories. Thus, the slope of the lines shows the direction of and differences in the association by EWR. We see that the fitted values are much higher in the Universalist than in the other regimes, but that the direction of the association (a small positive association) is the same in the Conservative and Universalist regimes. There is some suggestion that this relationship is stronger (steeper) in the Liberalized regimes. Furthermore, the relationship is non-linear in the Polytechnic countries: We see that VET exhibits a stronger positive effect on *flourishing* than tertiary post-secondary education, as compared to the Universalist regimes.

When we examine the two sub-components of *flourishing, psycho-social well-being* and *thriving*, other important differences are uncovered. This time, the Liberalized and Conservative regimes are the significant groups: the association between tertiary credentials and *psycho-social well-being* is significantly stronger, or more positive, in these groups as compared to the Universalist regime group. Specifically, *flourishing* increases by 0.13 and 0.15 of a standard deviation, respectively, with tertiary education in these contexts, which is significantly different from the relationship in the Universalist EWR. Furthermore, the overall interaction term is highly significant ($p<.01$; not shown).

In terms of *thriving*, the Polytechnic countries are again the exceptional case with significant effects for VET. VET has a significantly more positive effect on *thriving* in these countries than in the Universalist countries. Indeed, *thriving* increases by 0.18 of a standard deviation with VET in Polytechnic regimes, a significant difference as compared to Universalist EWR. As mentioned above, these results are consistent with previous findings highlighting the rewards of VET in highly differentiated educational systems (Andersen & van de Werfhorst, 2010; Shavit & Müller, 2000b).

We also see that the direct effect of education is no longer significant in these models. This finding needs to be interpreted in the context of the model, however, because the coefficient on the education term cannot be interpreted as the average effect of a change in education on well-being as it was in the linear-additive regression models above (Brambor et al., 2006). This coefficient is only capturing the effect of education on well-being when the EWR variable is zero, that is, for the Universalist regimes; while the EWR coefficient, in the same way, is only capturing the effect when education is zero, that is, secondary or less (Brambor et al., 2006). Thus, only the effect of tertiary education on *thriving* is significant in the Universalist countries, while those with secondary education or less score significantly

lower on all three well-being measures in all other EWR as compared to those with secondary education or less in the Universalist grouping.

Interaction effects differ for the individual items that make up these scales (shown in Appendix 3). Most notable is that significant interaction effects are found for all regimes. For example, the association between tertiary education and emotional well-being (measured as a reversed score of time spent feeling sad) is significantly stronger, or more positive, in the Liberalized, the Conservative, and the Polytechnic countries as compared to the Universalist regime grouping. As another example, the association between tertiary education and security (measured as being able to deal with important problems in life) is significantly stronger, or more positive, in the Liberalized, the Conservative, and the Polytechnic countries as compared to the Universalist regime grouping. Significant interaction effects are found for all items other than health and dignity, where no significant interaction terms are found (and thus the relationships are similar in direction and magnitude across all EWR). What is more, significant *negative* interaction effects are found for those with tertiary education in the Conservative grouping for both the development of potential and accomplishment. This suggests that this relationship is in fact weaker in this context than in the Universalist countries, with less of an education gradient on this capability item.

In general, the interaction effects support the welfare-regime differences found above in the descriptive comparison of educational coefficients, a point that will be examined further below.[42] When examining these interactions, we might also ask ourselves how the analytical dimensions used in the construction of the country groupings interact directly with education across countries. Thus, in the sensitivity checks included later in this chapter, the interaction between level of education and values on the scale of post-secondary educational stratification and decommodification are investigated directly across countries.

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[42] Furthermore, these conclusions are conservatively interpreted: It is possible for marginal effects to be significant for substantively relevant values even when the coefficient on interaction term is insignificant (Brambor et al., 2006).
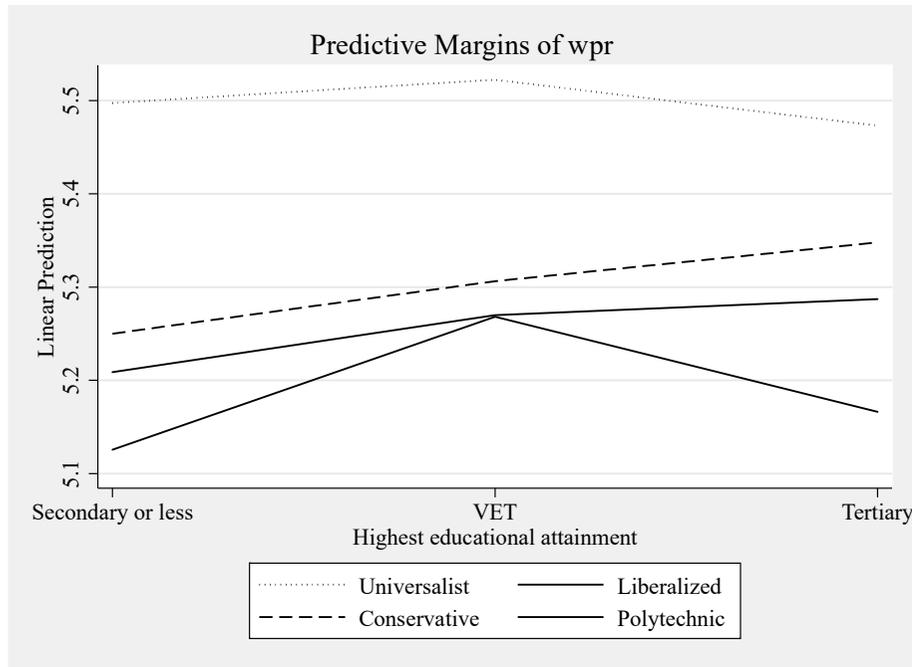
Figure 90. Margins plot by education level and EWR for *psycho-social well-being.*
Note: This graph shows the fitted *psycho-social well-being* values (net of all individual-level controls) by educational category. Thus, the slope of the lines shows the direction of and differences in the association by EWR.
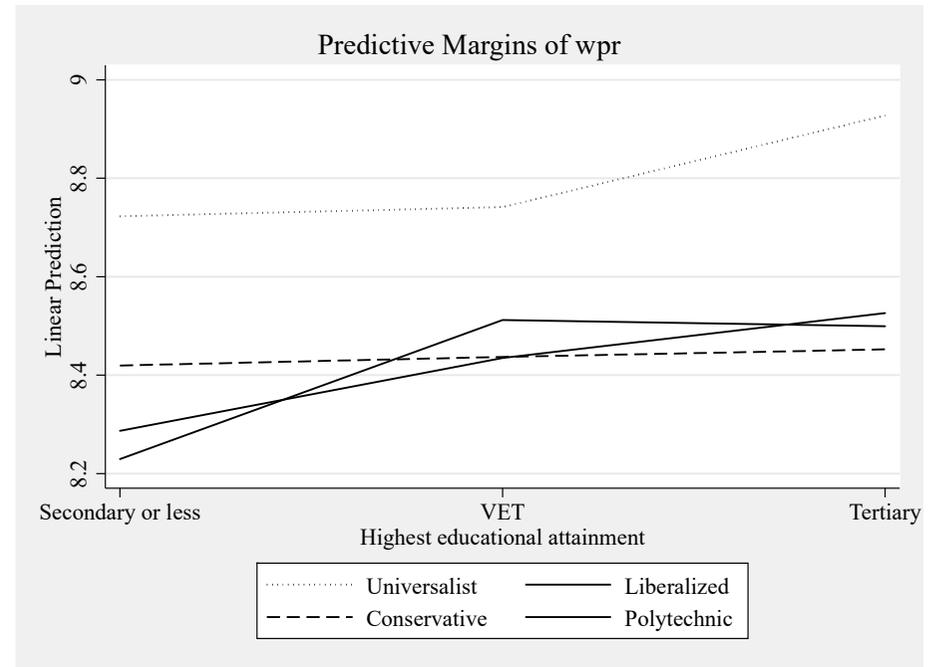
Figure 91. Margins plot by education level and EWR for *thriving.*
Note: This graph shows the fitted *thriving* values (net of all individual-level controls) by educational category. Thus, the slope of the lines shows the direction of and differences in the association by EWR.

This study, while informed by the welfare regime approaches outlined in Chapter 3 and incorporating the concepts of 'decommodification' and 'stratification' central to these approaches, focuses primarily on post-secondary educational institutional context. However, some might argue that other aspects of welfare state policies, such as overall spending and labour market coordination should be included in the country-level analyses (Ejrnæs & Greve, 2017; Fahey & Smyth, 2004; Ovaska & Takashima, 2010). Informed by the existing research on the effects of the welfare state on overall well-being and on social stratification, country-level control variables were incorporated in analyses to see if the results operate independently of these variables.

Two important macro-structural features that potentially affect the outcomes of education are "economic development and social inequality" (Pfeffer, 2012, p. 14). GNI per capita-PPP (gross national income converted to international dollars using purchasing power parity rates) and the GINI coefficient (the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution) are country-level control variables commonly incorporated in the literature. The inclusion of these variables will help to determine if the moderating effect of EWR is biased by varying levels of economic development and/or economic inequalities amongst countries (Fahey & Smyth, 2004; Pfeffer, 2012).

With the addition of controls for these country-level characteristics, the relationships remain consistent. Both income per capita by country and the Gini coefficient measuring income inequality are potentially influential country-level variables that may co-vary with both the post-secondary educational stratification and decommodification variables and overall levels of well-being in a country (Jongbloed & Pullman, 2016; Samuel & Hadjar, 2016). However, we see that these variables alone do not have a significant effect on individual *flourishing* across the pooled sample of countries.

Once EWR variables are included in the model, and when both of these variables (Gini and income per capita) are added to the regression equation, income per capita becomes the sole significant predictor. Thus, the combination of these variables is important in predicting *flourishing*, and income per capita has the strongest direct effect.[43] This significant but small effect is consistent with prior research suggesting that "economic conditions strongly and positively affect life satisfaction up to a certain level of socio-economic development but the effect flattens off after that" (Fahey & Smyth, 2004, p. 23). Post-secondary educational attainments remain significant in these models at both the VET and tertiary levels.

Once the interaction terms are re-introduced, the key findings are confirmed: the Polytechnic countries are an exceptional case, with lower levels of well-being overall, and the impact of education on well-being differs significantly in the Liberalized and Polytechnic countries. Specifically, compared to those in the Universalist EWR, individuals with secondary education or lower experience the greatest *flourishing* 'penalty' in the Polytechnic countries. However, although those individuals living in the Polytechnic EWR have the greatest well-being disadvantage overall, *flourishing* increases by 0.13 of a standard deviation with VET in this context, which is significantly different from the relationship in the Universalist EWR. Thus, VET has the greatest individual 'benefit' in this context.[44] This is also the case for those with tertiary education in the Liberalized countries, although living in a Liberalized country is not associated with significantly lower *flourishing* levels for those with secondary education or less with the inclusion of all individual- and country-level controls (as compared to the Universalist countries).

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[43] However, it is interesting to note that the Gini coefficient and income per capita do not add to the explanatory power of the model, as measured by the R^2, while the inclusion of the EWR variables do add to the variance explained.

[44] However, this can also be interpreted in terms of inequality: Those with secondary education or less are the most disadvantaged in this context, as is the population as a whole. Those with VET simply get closer to attaining the average levels in other educational welfare regimes.

These findings confirm the 'general skills' advantage of tertiary education in the Liberalized regimes, and the 'specific skills' advantage in the Polytechnic countries, consistent with prior research (Estevez-Abe, Iversen, & Soskice, 2001b). They also lend some support to the view that "the advantages associated with vocational education are most pronounced in countries where vocational secondary education is specific rather than general," but that these advantages remain inferior to those gained through academic tertiary education more generally (Shavit & Müller, 2000, p. 29).[45] These commonalities with previous research suggest that trends in the stratification of economic and non-economic outcomes are relatively similar in comparative context.

These results support the position that the effects of the educational welfare regime are independent from the effects of other country-level economic factors, corroborating previous research "demonstrating that educational institutions moderate the education effect" across European countries (Andersen & van de Werfhorst, 2010, p. 349) and justifying a "primary focus on educational institutions" (p. 351). They also confirm, as suggested in the literature, that overall prosperity as measured by per capita income lessons the effects of welfare regime groupings on well-being, but does not explain away all effects (Samuel & Hadjar, 2016).

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[45] It has also been found that "obtaining a university degree typically results in a much higher occupational status in CEE [Central and Eastern European] countries" (Andersen & van de Werfhorst, 2010, p. 348).

Table 44. *Flourishing scale regressed on country-level variables and interaction terms*

	Individual and Country-level Controls			EWR Controls Added			Interaction Terms Added		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less				*reference category*					
VET	0.14***	0.12***	0.12***	0.13***	0.12***	0.11***	0.03	0.04	0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.05)	(0.05)	(0.05)
Tertiary	0.14**	0.14**	0.14**	0.13**	0.12**	0.12**	0.05	0.05	0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Country Gini Score	-0.95		-0.89	-0.27		-2.90	-0.14		-2.78
	(1.86)		(1.39)	(2.22)		(1.86)	(2.20)		(1.85)
Income per Capita		0.00	0.00		0.00	**0.00***		0.00	**0.00***
		(0.00)	(0.00)		(0.00)	**(0.00)**		(0.00)	**(0.00)**
Universalist				*reference category*					
Liberalized				-0.31$^+$	-0.22*	0.02	-0.36*	-0.26*	-0.03
				(0.17)	(0.10)	(0.15)	(0.17)	(0.11)	(0.16)
Conservative				-0.28*	-0.25**	-0.13	-0.31*	-0.26**	-0.15
				(0.11)	(0.07)	(0.09)	(0.12)	(0.08)	(0.10)
Polytechnic				-0.43*	-0.35**	-0.22	-0.48*	-0.40**	**-0.27$^+$**
				(0.16)	(0.11)	(0.13)	(0.17)	(0.13)	**(0.15)**
Universalist by secondary or less				*reference category*					
Liberalized by VET							0.09	0.04	0.02
							(0.06)	(0.06)	(0.06)
Liberalized by tertiary							0.10$^+$	0.10	**0.10$^+$**
							(0.06)	(0.06)	**(0.06)**
Conservative by VET							0.03	0.01	0.00
							(0.05)	(0.05)	(0.05)
Conservative by tertiary							0.04	0.04	0.03
							(0.05)	(0.05)	(0.05)
Polytechnic by VET							0.20**	0.17*	**0.13***
							(0.06)	(0.06)	**(0.06)**
Polytechnic by tertiary							0.08	0.08	0.07
							(0.07)	(0.07)	(0.08)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	6.70***	6.03***	6.30***	6.82***	6.35***	6.98***	6.83***	6.39***	6.98***
	(0.54)	(0.27)	(0.50)	(0.56)	(0.25)	(0.51)	(0.55)	(0.25)	(0.50)
Observations	23173	23173	23173	23173	23173	23173	23173	23173	23173
R^2	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13
Adjusted R^2	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13

Source: ESS Wave 6 (Version 2.3); World Bank, 2006-2009 *Note:* Robust standard errors in parentheses $^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Thus, this study finds that the link between education and *flourishing* is weakest in the Universalist EWR even when controlling both for income per capita and the Gini coefficient, and stronger in the Liberalized and Polytechnic countries, where post-secondary educational stratification is higher and levels of post-secondary educational decommodification are lower. This provides evidence supporting H_{12}, which proposed that these analytical dimensions shape the impact of education on well-being across country contexts. The lack of a significant difference between the Conservative and Universalist countries is of note, and will be explored in more depth in the 'two-step' analyses that follow.

6.3. *Examining the education-well-being relationship using the 'two-step' approach*

Next, the intricacies of these relationships are further brought to light by regressing country-level characteristics related to EWR groupings on the VET and tertiary educational coefficients with all controls. In order to do so, an adaption of the two-step approach is used. A separate regression of each well-being measure on the education variables and controls is estimated for each of the 20 countries. Using the results from these models, the coefficients for both *VET* and *Tertiary* are collected from the within-country regressions and used as the dependent variable in the 'second step' of the analyses. The country-level variables serve as the independent variables in these analyses.

6.3.1. Educational stratification and decommodification

Through this method, the extent to which post-secondary educational stratification and post-secondary educational decommodification influence the relationship between education and *flourishing* is examined. *Figure 92* illustrates the conditional effect of credential level by plotting the educational coefficients from models with all controls (on the vertical axis) by

both post-secondary educational stratification and post-secondary educational decommodification country scores (on the horizontal axis). Across all countries, net of demographic and employment controls, the correlation between VET education and well-being in a country is slightly less positive when levels of stratification are higher, but the correlation is insignificant; however, this effect is greatly impacted by the Czech Republic and Slovakia, where average levels of *flourishing* are fairly low. Indeed, when they are excluded from the analyses, the relationship is significant and positive, with relatively low predictive power shown by an R^2 of 0.09.[46] However, these findings provide limited support the hypothesis that the effect of education is more positive in countries with higher levels of stratification (H_{11})

The same is true at the tertiary level. Net of demographic and employment controls, the correlation between tertiary educational credentials and well-being in a country is slightly more positive when levels of stratification are higher, but in this case these differences are not significant. Although the effect of education was expected to be significantly more positive in countries with higher levels of stratification, support for this hypothesis (H_{11}) was not found.

Next, turning to educational decommodification, the correlation between VET education and well-being in a country does not appear to change when levels of decommodification are higher. In contrast, at the tertiary level, net of demographic and employment controls, the correlation between tertiary educational credentials and well-being in a country is significantly more negative when levels of decommodification are higher, but the predictive power of the model as measured by the R^2 is again relatively modest at 0.11.[47] Thus, this confirms that only limited support for the notion that the effect of education is significantly less positive in countries with higher levels of decommodification (H_{11}) is found.

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[46] Cohen's f^2 for this effect size is thus 0.10, which is a small-to-medium effect size.
[47] Cohen's f^2 for this effect size is thus 0.12, which is a small-to-medium effect size.
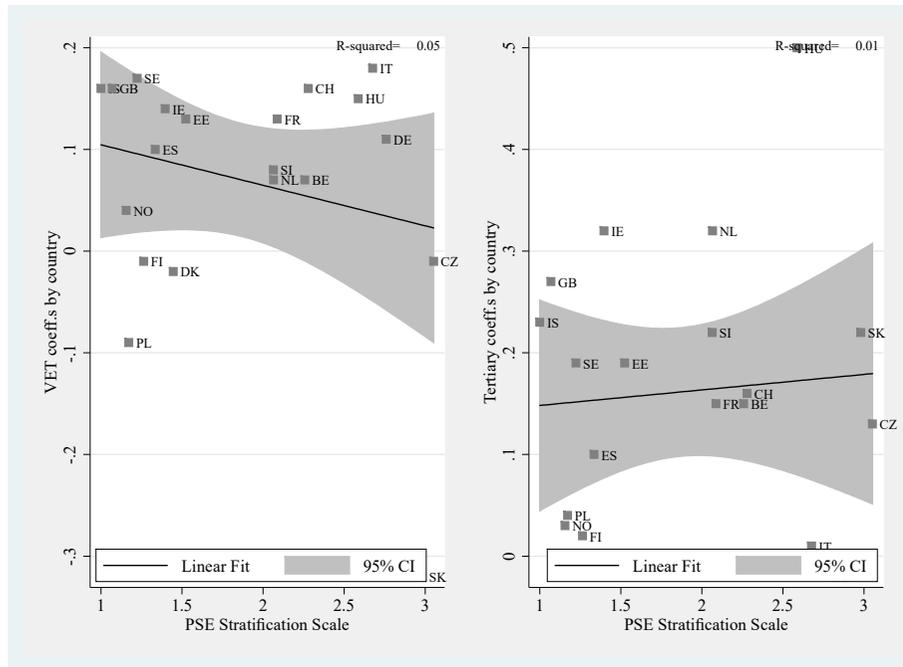
Figure 92. Country VET and tertiary education coefficients for *flourishing* regressed on PSE stratification.
Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against country scores on the analytical dimensions developed in Chapter 3. The *R²*, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions.
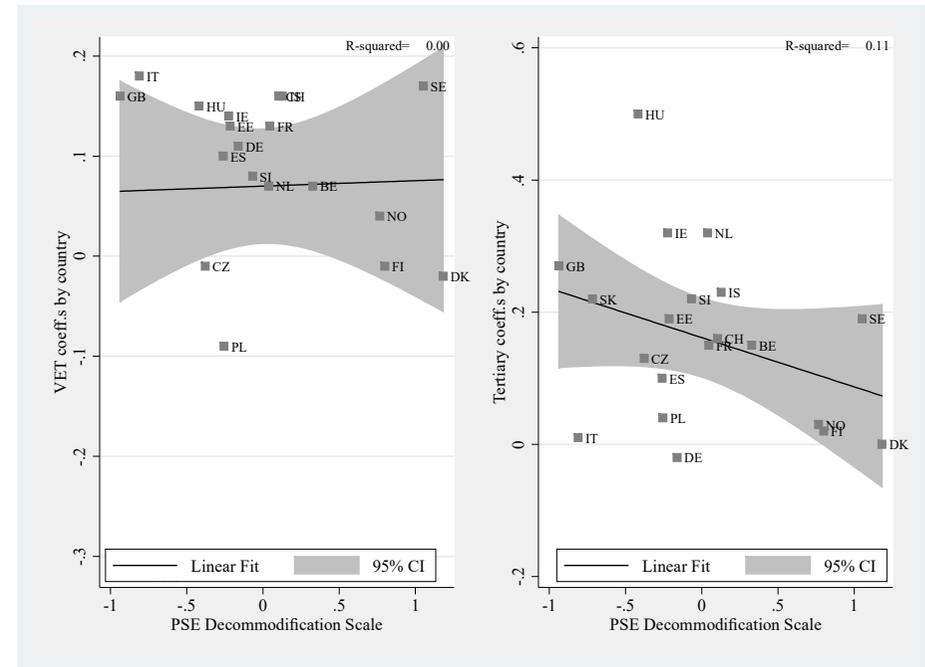
Figure 93. Country VET and tertiary education coefficients for *flourishing* regressed on PSE decommodification.
Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against country scores on the analytical dimensions developed in Chapter 3. The *R²*, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by the analytical dimensions, in this case, 11%.

In the introduction to this research, it was asserted that education and training welfare regime (EWR) contexts shape the impact of education on individuals' well-being (*H9*). Looking at the effects of education both across EWR and in cross-level interaction effects in this chapter shows that these relationships are significantly different in some cases. For example, the effect of VET on *flourishing* is significantly stronger in the Polytechnic countries, and the effect of tertiary education on *psycho-social well-being* in the Liberalized and Conservative educational regimes.

'Two-step' analyses provide some (weaker) bivariate analytical support for the notion that welfare regimes impact the relationship between education and well-being within a country, bolstering the OLS regression models with robust standard errors that showed significant effects for all regimes as compared to the Universalist grouping. These findings are consistent with studies showing that people in more comprehensive welfare states, as exemplified by the Nordic countries, report more equality levels of well-being across social categories (Gainer, 2013; Ono & Lee, 2013; Ovaska & Takashima, 2010).

6.3.2. Sensitivity checks

Finally, the individual measures of the percentage of the population with a tertiary degree and public spending on education as a percentage of GDP are examined to see if the overall analytical dimensions are hiding more specific country-level associations. There is only limited evidence that where VET credentials are scarcer, they have an elevated impact on well-being.[48] Furthermore, at the tertiary level, we see that no significant association exists between the overall prevalence of individuals with higher levels of education and the impact of education on well-being as measured by the regression coefficients net of controls (see Appendix 3). These findings are consistent with those of the overall analytical dimensions

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[48] However, these results should be regarded with caution, as Slovakia is a significant outlier and the effect is no longer significant when this country is excluded from analyses.

and further question whether educational context, as measured by post-secondary educational stratification and decommodification, consistently influences the education-well-being relationship within countries.

6.3.3. Average level and range of well-being scores

In order to further uncover to what differences in the VET and tertiary educational coefficients on *flourishing* are due, the extent to which the country-level average, standard deviation, and inter-quartile range in *flourishing* influence the relationship between education and well-being are briefly examined. Prior research has indicated that the effects of "education are not as strong in countries with higher average levels of life satisfaction" (Fahey & Smyth, 2004, p. 20), which may extend to the *eudaimonic* conception of well-being used in the present study. Indeed, more generally, countries with higher levels of well-being have been shown to exhibit less well-being inequality (Ott, 2005).

The following figures illustrate the conditional effect of educational credential level by plotting the VET and tertiary educational coefficients from models with all controls (on the vertical axis) by the average level of *flourishing* (see *Figure 94*), the variability in *flourishing* in the country as measured by the standard deviation (see *Figure 95*; on the horizontal axis). Net of demographic and employment controls, there is no significant correlation between the average level of *flourishing* and the educational coefficients. This is in contrast to previous research finding that the effects of education "are not as strong in countries with higher average levels of life satisfaction" (Fahey & Smyth, 2004, p. 20), suggesting differences based on the dependent variable. [49] However, there is a positive correlation between education and the standard deviation of *flourishing* within a country that

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[49] These differences would appear to be due to the fact that a *eudaimonic* measure of well-being is used here, while previous research used a hedonic operationalization. This possibility is further examined in the robustness checks at the end of the chapter.

is significant at the tertiary credential level (R^2=.34). [50] This links stronger educational inequalities in well-being to more elevated overall inequalities in well-being than general average levels of well-being.

A smaller, but still significant, relationship exists between education and the inter-quartile range in *flourishing*, a positive correlation at the tertiary level (R^2=.17; see Appendix 3). [51] This significant result for tertiary education is replicated when examining the country dispersion coefficients – that is, the standard deviation (SD) divided by the mean and multiplied by 100 (Murdoch, 2002) – for *flourishing* in each country (see Appendix 3). These findings suggest that more variation in *flourishing* within a country, as measured through its standard deviation and range, strengthens the direct advantage of higher educational credentials in contributing to individual well-being within a country. [52] Otherwise viewed, countries with more overall inequalities in well-being also show more elevated educational inequalities in well-being, in particular at the tertiary education level.

From a capability standpoint, concerning well-being as a sphere of inequality within and across countries, it was predicted that higher overall levels of education are linked to greater equality in well-being outcomes (H_{11}). More specifically, it was suggested that there is less dispersion in well-being outcomes at the individual level where overall levels of education are higher and that there is a weaker association between educational attainments and well-being at the individual level where overall levels of education are higher. This is strongly supported when examining overall levels of education and variation in well-being scores across countries. Also, where overall levels of well-being are higher, variation in well-being scores is also lower, suggesting decreased well-being inequalities in these countries.

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[50] Cohen's f^2 for this effect size is thus 0.52, which is a large effect size.
[51] Cohen's f^2 for this effect size is thus 0.20, which is a medium effect size.
[52] This is consistent with previous findings regarding the impact of educational attainment on life satisfaction across European countries (Fahey & Smyth, 2004).
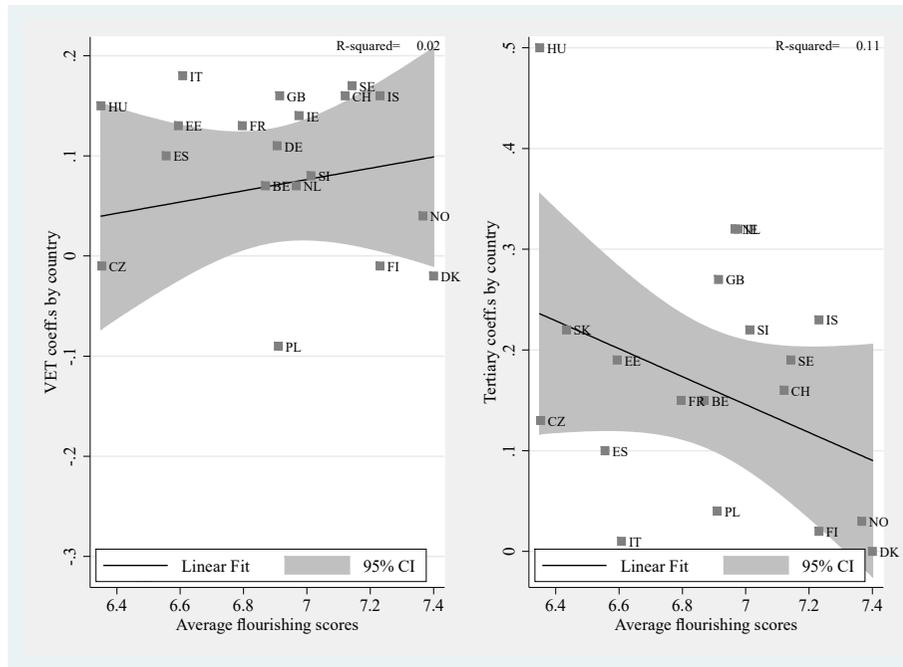
Figure 94. Country VET and tertiary education coefficients for *flourishing* regressed on average *flourishing* scores.
Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against average *flourishing* for each country. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this coefficient that is explained by average levels of *flourishing*.
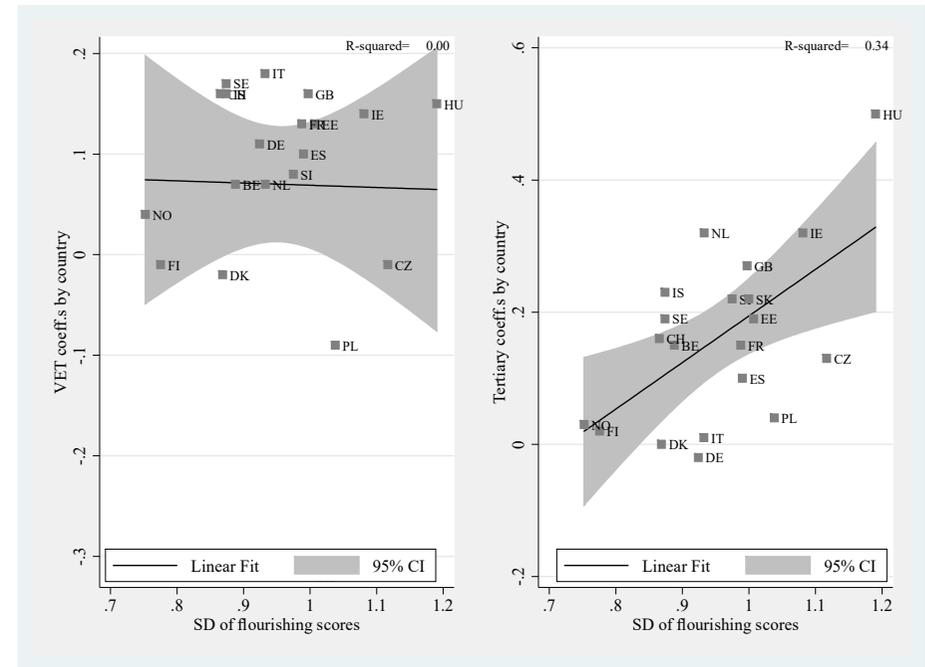
Figure 95. Country VET and tertiary education coefficients for *flourishing* regressed on the standard deviation of *flourishing* scores.
Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against the standard deviation (SD) of *flourishing* for each country. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this coefficient that is explained by the dispersion in *flourishing* scores.

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Levels of stratification and decommodification in post-secondary education were hypothesized to be linked to greater equality in well-being outcomes (H_{10}). It was predicted that there is less dispersion in well-being outcomes at the individual level where educational stratification is lower and educational decommodification is higher, and that there is a weaker association between educational attainments and well-being at the individual level where educational stratification is lower and educational decommodification is higher. Support was found for these hypotheses by examining the effects of education across EWR and through interaction effects, but the 'two-step' analyses failed to provide significant support for this contention when the descriptive patterns were tested parametrically. While the analytical dimensions of educational stratification and decommodification were found to be associated with overall well-being inequality – where levels of stratification are lower and levels of decommodification are higher, variation in well-being is lower – significant differences in the coefficients of educational credential variables, i.e. the relationships between education and well-being, were not found. Furthermore, when country-level standard deviations in educational attainment, inter-quartile ranges in educational attainment, and educational coefficients were regressed onto post-secondary educational stratification and decommodification, only the tertiary education coefficients significantly varied with post-secondary educational decommodification. Thus, the final hypothesis was only partly supported in this study.

7. Disentangling the relationship between education and well-being

While the direct effects of education on the capability-informed measure of *flourishing* have been explored and described across countries, and this relationship has been shown to differ significantly between countries and to a lesser extent between EWR, there is strong theoretical and empirical evidence that education also impacts well-being indirectly through

other life outcomes (Becchetti & Pelloni, 2013). While these indirect effects have been 'controlled out' in the previous analyses, it is also interesting to examine these effects as important in their own right. In particular, occupational status was highlighted in the first chapter as a potential mediating route by which education might influence well-being, either through further capability development within the workplace or through an advantageous social position. In order to respond to the competing hypotheses of a combined human capital-capability approach 'human agency' view and educational 'sorting' perspectives, mediation analyses are employed to uncover how much of the effect of education is due to each of these causal mechanisms.

7.1. *Mediating effects of occupational sector*

Table *45* presents the results of KHB models examining the mediating effect of occupational sector on the relationship between education and well-being as measured by *flourishing*, *psycho-social well-being*, and *thriving*. The total effect shows the additive effect of both the direct effect of education on well-being, net of all controls, and the indirect effect functioning through occupational sector. The results show that, across all countries, occupational sector significantly mediates the relationship between education and well-being, while direct effects of education are also significant across models. Thus, both hypotheses of education as a 'positional good' (mediated through occupational sector) and education as a causal mechanism for enhanced 'capabilities' (direct effects of education) in the prediction of individual well-being are supported in initial models.

When looking at the *flourishing* scale in Model 2, the indirect effect of occupational sector is largest at the tertiary level.[53] Indeed, the direct effect of education forms a slightly larger portion of the total effect for VET than tertiary education in these models. The results

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[53] These effects are net of all other socio-demographic control variables, including household income, which were included in all models.

of Models 1 and 2 establish that alongside a direct relationship between education and well-being, education also indirectly influences well-being by providing access to occupational sectors where a higher quality of life may be more readily available. Thus, although individuals with higher levels of education self-report higher average levels of well-being regardless of their occupational sector, these educational credentials also affect occupational status, which in turn have an impact on well-being.

This is also true when looking at the sub-components of overall well-being. We see the largest indirect effects through occupational sector for *thriving* at the tertiary level (β=0.13, SE=0.03, *p*<.001), although all indirect effects are significant across models. The direct effects of education on *thriving* are larger at the tertiary credential level than for VET, while the direct effects are somewhat larger for VET than tertiary education in regards to *psycho-social well-being.*

The significance of these indirect effects provide evidence for 'critical' educational selection perspectives, which suggest that education contributes to life outcomes through 'sheepskin' effects on one's position in the labour market. The significant direct effects of education confirm the human agency view that education contributes directly to well-being through capability development. Thus, mediating effects of occupational sector do not 'explain away' the relationship between education and well-being, rather, these mediating effects function alongside significant direct effects in all models.

Table 45. *Mediating effects of occupational status on flourishing scales*

	Flourishing	Psycho-social well-being	Thriving
VET			
Total	0.19***	0.12***	0.24***
	(0.03)	(0.04)	(0.05)
Direct	0.15***	0.10**	0.17**
	(0.03)	(0.03)	(0.05)
Indirect	0.05***	0.03***	0.07**
	(0.01)	(0.01)	(0.02)
Tertiary			
Total	0.21***	0.11***	0.34***
	(0.03)	(0.02)	(0.07)
Direct	0.14**	0.07***	0.21**
	(0.04)	(0.02)	(0.08)
Indirect	0.08***	0.04**	0.13***
	(0.02)	(0.01)	(0.03)
Observations	23173	23538	23440

Source: ESS Wave 6 (Version 2.3)
Note: Robust standard errors in parentheses. Total effects are the overall coefficients of the effect of educational categories on *flourishing* scores, net of controls. Direct effects are the effects due to either VET or tertiary education, while indirect effects are the part of the total effect on *flourishing* that is explained by occupational sector variables. Thus, a significant indirect effect shows that the effect of VET or tertiary education on *flourishing* is mediated by differences in levels of occupational status. For example, concerning the effect of VET on *flourishing*, one quarter of the effect is mediated through occupational sector, while the other three-quarters remains unexplained by this factor (even with the addition of all other demographic and occupational control variables).
$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Next, indirect effects by countries and EWR groupings are examined. In nine countries, occupational sector significantly mediates the relationship between education and well-being as measured by *flourishing*.[54] Across most of these countries, the indirect effect of occupational status is largest at the tertiary level, yet there is notable overlap between VET and tertiary levels of education in several countries. Of particular interest, in Germany, the Czech Republic, and Poland, *only* the indirect effects of education are significant, which explains the non-significance of this education variable in the individual-country OLS regression analyses.

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[54] These effects are net of all other socio-demographic control variables, including household income, which were included in all models.

Furthermore, there is notable overlap among credential levels and no significant indirect effect in 10 countries for VET and in 11 countries for tertiary education. However, in some contexts, such as Germany, the Czech Republic, Hungary, and Slovakia, the mediating effect of occupational sector is quite large. Notably, these countries are all members of the Polytechnic EWR grouping. Additionally, we see that the indirect effects of education outweigh the direct effects in Germany and the Czech Republic. This is consistent with prior research finding that countries with extensive tracking, a strong vocational orientation, and limited tertiary enrolment "tend to be characterized by a strong relationship between education and occupational status" (Andersen & van de Werfhorst, 2010, p. 336).

Nonetheless, in most countries with a significant effect, occupational sector mediates the relationship between education and well-being alongside direct relationships between education and well-being. That is, occupational outcomes do not fully explain the relationship between education and well-being. When analyzing *Figure 96* and *Figure 97*, which graphically present the EWR grouping KHB results for VET and tertiary education, we see that all effects, direct and indirect, are smallest in the Universalist countries. This is expected, due to the fact that we find the greatest equality in well-being outcomes in these countries.

Indirect effects through occupational sector are the largest in the Polytechnic groupings for both VET and tertiary education, although these indirect effects are also strong in the Conservative grouping. Direct effects for VET education are also largest in the Polytechnic countries, while the direct effects of tertiary education are largest in the Conservative countries. These findings can be interpreted as evidence for the enhanced rewards of these two types of education in educational institutional contexts that differ not only in terms of educational stratification and decommodification, but also more specifically by levels of vocational specificity and institutional differentiation (Andersen & van de Werfhorst, 2010; Shavit & Müller, 2000a).

These results are consistent with 'selection' theories of the role of education in society, and the fact that they operate more strongly in Polytechnic and Conservative countries aligns with the theoretical bases for these groupings. With more stratification and earlier selection, these countries have been hypothesized in the literature to focus primarily on occupational preparation and to exhibit higher social reproduction (Pechar & Andres, 2011; van de Werfhorst, 2011b; Willemse & de Beer, 2012). However, positive effects do not seem to operate through social mobility: markers of social class, such as father's highest education at age 14 and father's occupational sector at age 14, are not significant in models with demographic or occupational controls, and social mobility, measured by the difference between the respondent's highest educational credential and his or her father's highest educational credential when the respondent was 14 years old or the respondent's occupational sector and his or her father's occupational sector when the respondent was 14 years old, is also not significant with demographic or occupational controls.[55] A word of caution is necessary though: these results are only tentative. These analyses use coarsened educational (three categories) and occupational (eight categories) measures and may thus be less sensitive to these intergenerational social mobility effects, which clearly exist in regards to employment outcomes and have been illustrated across a variety of recent studies (Fabre & Moullet, 2004; Vallet, 2017; Vallet & Selz, 2008).

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[55] The social class and social mobility variables are both significant in bivariate models without demographic or occupational controls, suggesting that income and occupational sector are able to account completely for their effects on well-being in these models. This is consistent across country groupings.
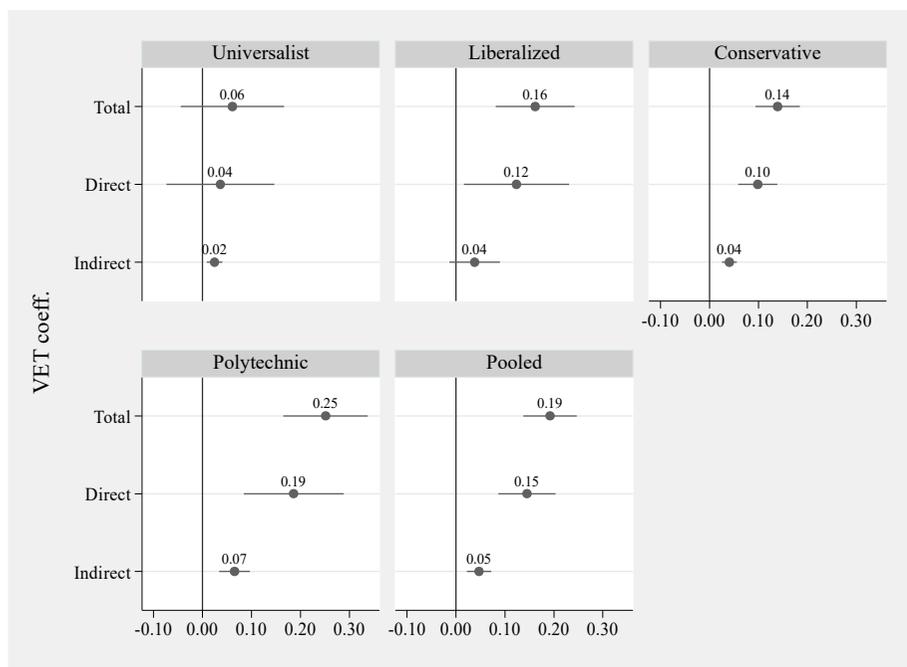
Figure 96. Indirect VET educational effects through occupational sector by EWR.

Note: These graphs show the *total, direct,* and *indirect* effects of VET in terms of regression (beta) coefficients in models regressing the *flourishing* scale on the educational variables, net of controls. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at *p<0.05*) in the model. For example, in the Conservative educational welfare regime grouping, the *total* effect of VET on well-being is 0.14 (interpreted as those with VET report a level of *flourishing* that is 0.14 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (due to the fact that it does not overlap with zero). The large part of this effect is *direct* (0.10 SD), while a significant smaller part operates *indirectly* through occupational status (0.04 SD).
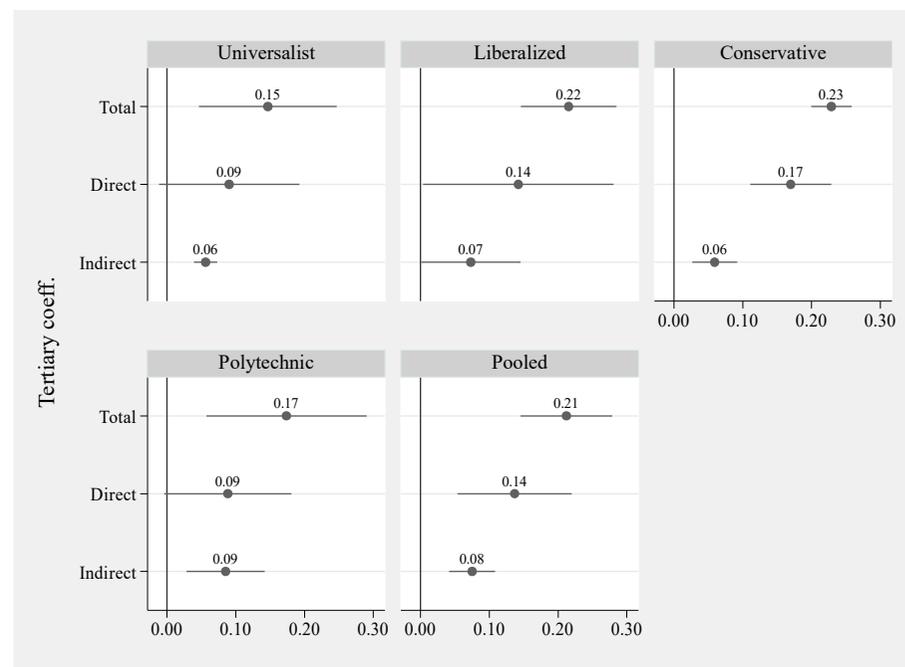
Figure 97. Indirect tertiary educational effects through occupational sector by EWR.

Note: These graphs show the *total, direct,* and *indirect* effects of tertiary education in terms of regression (beta) coefficients in models regressing the *flourishing* scale on the educational variables, net of controls. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at *p<0.05*) in the model. For example, in the Conservative educational welfare regime grouping, the *total* effect of tertiary education on well-being is 0.23 (interpreted as those with tertiary education report a level of *flourishing* that is 0.23 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (due to the fact that it does not overlap with zero). The large part of this effect is *direct* (0.17 SD), while a small but statistically significant part of this effect operates *indirectly* through occupational status (0.06 SD).

Thus, while systems with a focus on tracking individuals into occupational fields earlier in the educational process show larger indirect effects of education on well-being through occupational sector, this does not appear to be reducible to 'social reproduction' or social mobility *per se*. Rather, it would appear that these effects are due to respondent's own experiences inside and outside the labour market herself (and perhaps also to different *types* of learning and socialization linked to the workplace between different tracks in these highly stratified systems). These differences show that EWR groupings differ not only in the size and direction of the direct effects of education, but that VET and tertiary educational credentials also affect well-being in different *indirect* ways across EWR. In order to further test these descriptive differences against EWR grouping characteristics, another modified version of the 'two-step' method is employed in the next section.

7.2. *Examining indirect education effects using the 'two-step' approach*

In a final step, country-level characteristics related to EWR groupings are regressed on the indirect VET and tertiary educational coefficients for occupational sector with all controls. In order to do so, an adaption of the two-step approach is used again. A separate KHB regression model is estimated for each well-being measure for each of the 20 countries. Using the results of these models, the indirect coefficients through occupational sector are collected from the within-country regressions and used as the dependent variable in the second step of the analyses.

Through this method, the extent to which post-secondary educational stratification and post-secondary educational decommodification influence the *indirect* relationships between education and *flourishing*, as mediated by occupational sector, is examined. When we examine the indirect effects of education through occupational sector (see *Figure 98*), we see a significant relationship between the indirect effects of VET education through

occupational sector and post-secondary educational stratification ($p<.01$; $R^2=0.34$). This is not surprising when we notice that all of the countries on the right-hand side of the graph are the Polytechnic countries, which exhibit high post-secondary stratification. These countries also, as we saw in the previous section, show larger indirect effects through occupational sector. These effects are juxtaposed with the low stratification and low indirect effects of education through occupational sector shown in the Universalist countries (on the bottom left-hand portion of the graph). The patterns are similar for tertiary education, but insignificant ($p=0.15$).

When examining the relationship with post-secondary educational decommodification, again only the indirect effects of VET through occupational sector are significantly related to this country-level variable (see *Figure 99*). In this case we see a negative relationship: within those countries exhibiting high decommodification, there are lower indirect effects of VET through occupational sector on individuals' *flourishing*. We also see that this association is again in large part driven by differences between the Universalist countries on the bottom right and the Polytechnic countries on the top left.
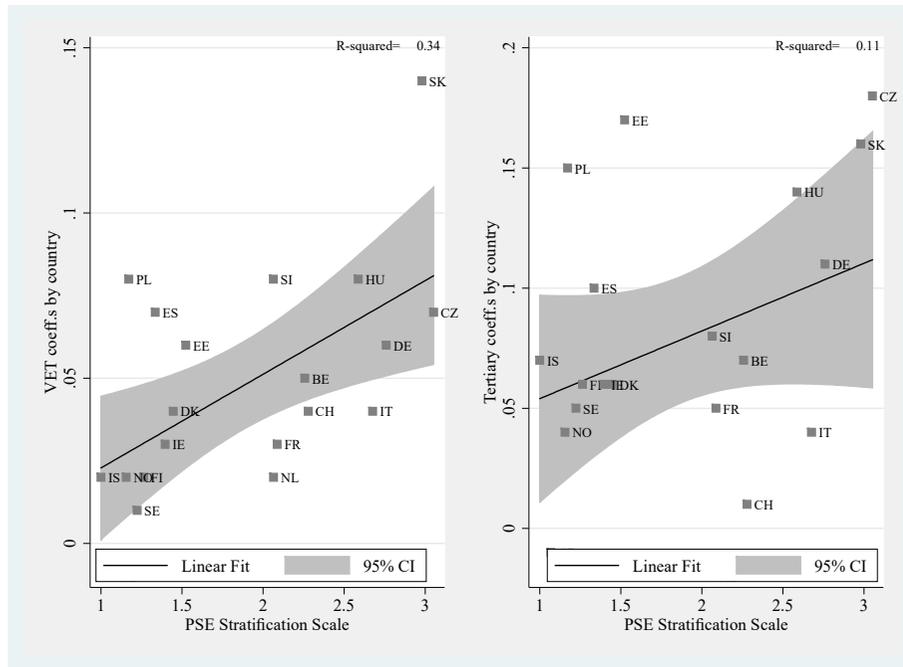
Figure 98. Country VET and tertiary education indirect effects through occupation on *flourishing* regressed on PSE stratification. *Note:* These scatterplots show the *indirect* educational (beta) regression coefficients through occupation (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the beta coefficients that is explained by the analytical dimensions.
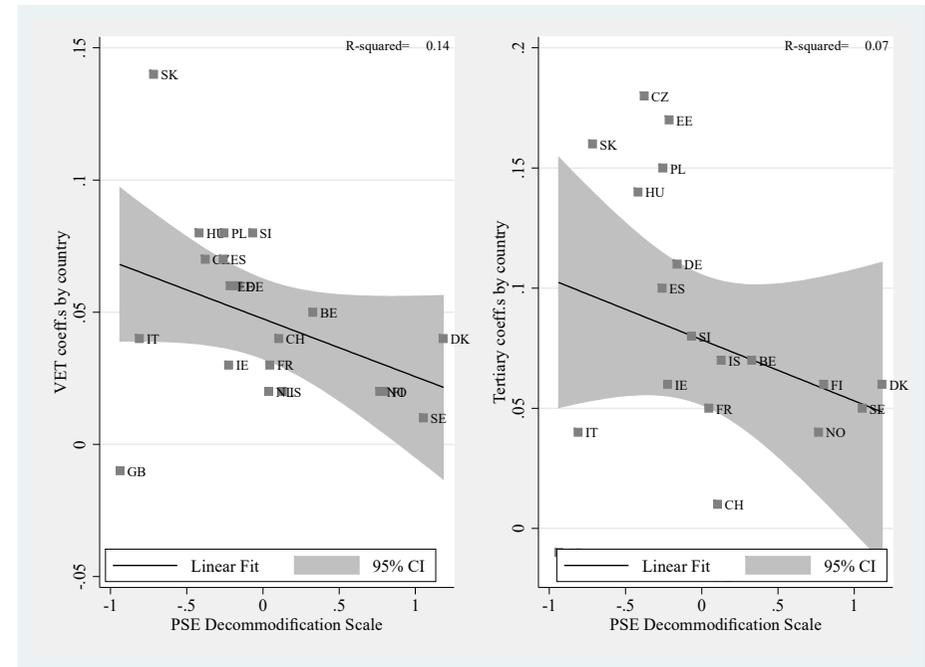
Figure 99. Country VET and tertiary education indirect effects through occupation on *flourishing* regressed on PSE stratification. *Note:* These scatterplots show the *indirect* educational (beta) regression coefficients through occupation (net of all individual-level controls) plotted against country scores on the analytical dimensions developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the beta coefficients that is explained by the analytical dimensions.

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Thus, concerning VET in particular, the indirect effects of education through occupational sector are significantly related to levels of stratification and, to a lesser extent, decommodification of post-secondary education. The country groupings illustrated in these graphs map fairly closely onto the EWR groupings. These associations provide statistical evidence for the hypothesis that there is a weaker association between educational attainments and well-being at the individual level where educational stratification is lower and educational decommodification is higher (H_{11}).[56] However, these findings suggest that this relationship is true only at the VET level in this sample of countries.

The 'critical-institutional' approaches outlined in Chapter 1 argue that education impacts later outcomes mainly through occupational sorting. The mediation models that look at the impact of education through occupational sector test this hypothesis showing that there are indeed significant indirect effects, which in some countries are much greater than the direct effects of education. In particular, VET education appears to play a strong role in predicting well-being through occupational sorting in the Polytechnic countries. This is not surprising, considering that post-secondary educational stratification is high in these countries. However, it is also true that tertiary education is significantly mediated by occupational sorting in all countries, even the Universalist countries. Thus, more generally, education's function as a 'sieve' within the labour market has implications not only for job quality and income, but also on individual levels of *eudaimonic* well-being as well.

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[56] In Chapter 1, it was argued that the human capital approach would suggest that post-secondary education also has an indirect effect on well-being through income. Through additional KHB modeling of indirect effects, it was found that education does indeed have an indirect effect on well-being as measured by *flourishing* through household income. However, the indirect effects through income were much smaller than the direct effects. Thus, although income may be important up to a certain point for well-being, the effects of education on well-being are not well explained solely by additional income gained through educational attainments. Furthermore, due to the limitation that this variable measures *household* income, and not *individual* wages, these analyses are not presented here. The results are available on request.

8. Robustness checks

8.1. *Hedonic versus eudaimonic well-being*

In order to test whether the effects of education on well-being across EWR are robust to other measures of well-being, as discussed in Chapter 2, models regressing two alternative measures of well-being onto educational and control variables, as well as education-EWR interaction terms, are examined. In order to test the hypotheses outlined at the end of Chapter 2, namely that education does not have a direct impact on hedonic evaluative operationalizations of well-being, while it does have a significant direct effect on *eudaimonic* conceptualizations, a single-item life satisfaction measure to capture simple evaluative well-being, and a multiple-item hedonic construct of 'subjective well-being' (SWB) are used. This approach of "comparing models in terms of alternative dependent variables," rather than nested models, is less common in the academic literature, but such studies do exist (Becchetti, Corrado, & Samà, 2016, p. 12).

First, the single-item measure representing satisfaction with life (SWL) is examined. This is the measure most commonly used in the literature to date (Becchetti & Pelloni, 2013; Bjørnskov et al., 2008; Veenhoven, 2005b), but has been critiqued as being too abstract and prey to cultural biases in reporting (Becchetti et al., 2016). We see that only tertiary education has a significant impact on SWL when all individual-level controls are included in the model. The effects of the EWR variables are consistent with the *flourishing* models: All groupings show lower overall SWL with controls than the Universalist regime. This is consistent with previous research (Fahey & Smyth, 2004).

Perhaps most strikingly, the overall trends are similar to, although smaller in magnitude than, those for the eudaimonic well-being measures (see Table *46*). Indeed, there exist some suggestions in the literature that the overall trends in the education-well-being relationship by type of well-being measure are actually fairly consistent (Clark & Senik,

2011). Using the same dataset, but an earlier wave (ESS wave 3, 2006), Clark and Senik

(2011) found that,

> in spite of the vivid debates about the correct notion of well-being, the subjective appreciation
> of life satisfaction, happiness and eudaimonia are similar to each other, and are characterized
> by very similar socio-demographic patterns (for example, the richer and the higher-educated
> are both more happy, more satisfied and have higher eudaimonia scores). (p. 24)

The pooled results appear to support this contention that the effects of education on well-being are robust to the measure of well-being used. However, it appears that these relationships may not be constant across country contexts, as Clark and Senik (2011) also concluded. Indeed, differences in the relationship between education and well-being across regimes appear more pronounced with these hedonic measures of well-being.

Surprisingly, all interaction terms except for Liberalized regime by VET are significant, unlike in the *flourishing* models, where only differences by VET in the Polytechnic and tertiary in the Liberalized and Conservative countries were significant. Furthermore, the direct effect of education becomes *negative* in these models. This finding should not be taken as an unconditional effect, however, because the coefficient on the education term cannot be interpreted as the average effect of a change in education on well-being (Brambor et al., 2006). As mentioned earlier, this coefficient is only capturing the effect of education on well-being when the EWR variable is zero, that is, for the Universalist regimes; while the EWR coefficient, in the same way, is only capturing the effect when education is zero, that is, secondary or less (Brambor et al., 2006). Indeed, with all controls, higher education has a *negative*, although insignificant, impact on satisfaction with life in the Universalist countries (not shown). This provides some evidence of well-being be redistributed from the most to the least advantaged groups in terms of educational attainments in this institutional context (Ono & Lee, 2013).

Table 46. *Satisfaction with life (SWL) regressed on educational variables*

	Individual-level controls			EWR variables			Cross-level interactions		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.20***	0.09**	0.04	0.18***	0.08*	0.03	0.02	-0.05	-0.10**
	(0.04)	(0.03)	(0.02)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
Tertiary	0.33***	0.16***	0.08*	0.32***	0.16***	0.07**	0.07	-0.06	-0.16**
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.06)	(0.06)	(0.05)
Universalist	*reference category*								
Liberalized				-0.46***	-0.42***	-0.42***	-0.55***	-0.49***	-0.49***
				(0.08)	(0.07)	(0.07)	(0.09)	(0.09)	(0.08)
Conservative				-0.51*	-0.48**	-0.49**	-0.62**	-0.58**	-0.59**
				(0.18)	(0.17)	(0.16)	(0.20)	(0.18)	(0.17)
Polytechnic				-0.46**	-0.41**	-0.42**	-0.57**	-0.51**	-0.53***
				(0.14)	(0.12)	(0.12)	(0.15)	(0.14)	(0.13)
Universalist by secondary or less	*reference category*								
Liberal by VET							0.05	0.03	0.03
							(0.05)	(0.04)	(0.04)
Liberal by tertiary							0.25***	0.20**	**0.20****
							(0.06)	(0.06)	**(0.05)**
Conservative by VET							0.20**	0.16**	**0.16****
							(0.07)	(0.05)	**(0.05)**
Conservative by tertiary							0.31***	0.26***	**0.28*****
							(0.07)	(0.06)	**(0.05)**
Polytechnic by VET							0.27***	0.24***	**0.23*****
							(0.05)	(0.05)	**(0.04)**
Polytechnic by tertiary							0.25**	0.25**	**0.26****
							(0.08)	(0.08)	**(0.07)**
Controls		*demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*
Intercept	-0.10	-0.42***	-0.33***	0.35***	-0.00	0.09	0.45***	0.08	0.18+
	(0.07)	(0.09)	(0.08)	(0.07)	(0.09)	(0.08)	(0.08)	(0.10)	(0.09)
Observations	24133	23823	23823	24133	23823	23823	24133	23823	23823
R^2	0.02	0.09	0.12	0.03	0.10	0.13	0.03	0.10	0.13
Adjusted R^2	0.02	0.09	0.12	0.03	0.10	0.13	0.03	0.10	0.13

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in SWL for each independent variable as compared to the reference category for that variable.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

These results are further confirmed by models regressing subjective well-being (SWB), a three-item scale capturing life satisfaction and positive and negative affect described in Chapter 5, on educational, EWR, and control variables. This measure has also been used a number of comparative studies (Balestra & Ruiz, 2014; Samuel & Hadjar, 2016). Consistent with the SWL results, only tertiary education is moderately significant in pooled models with all controls ($p<.10$), all EWR grouping variables show negative effects in comparison to the Universalist regimes, and all interaction terms except the VET by Liberalized regime are positive and significant. Furthermore, the effect of VET and tertiary education are once again significant and negative in these models (that is to say, in the Universalist countries).
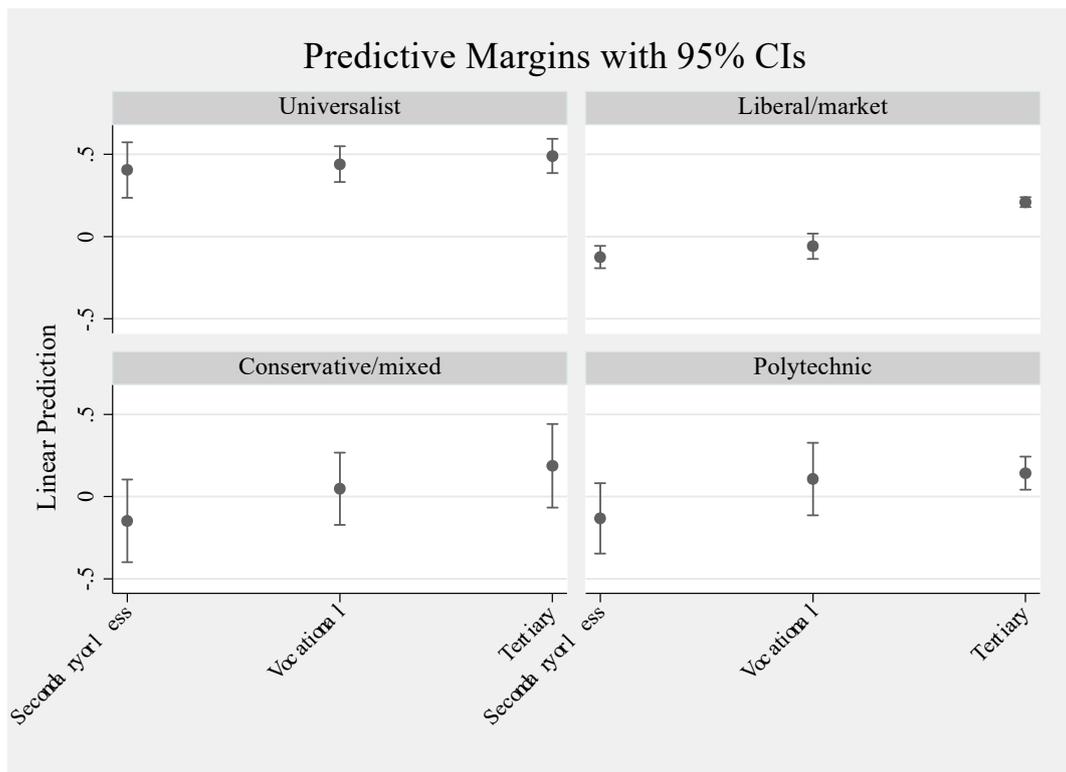
Figure 100. Margins plot of educational credential by EWR for SWB.
Note: These graphs show the fitted SWB intercepts (net of all individual-level controls), with the point estimates shown as points and the 95% confidence intervals (Cis) shown as lines. Thus, overlap between the lines shows that the intercepts do not significantly differ ($p<0.05$).

These findings suggest that educational credentials exhibit a significantly stronger relationship with hedonic well-being in all countries *other than* the Universalist countries, and that the direct effects of education are negative in the Universalist context. For example, those with tertiary education in the Conservative regimes have a level of hedonic well-being that is higher than those with secondary education or less in the same regime, but lower than all educational groups in the Universalist regime, as we see in the margins plots in *Figure 100*, above. In fact, these levels are generally similar to those found for the *flourishing* measure.

These findings are consistent with the literature focusing on inequalities in various welfare state regimes. These regimes are argued to redistribute valued outcomes from the most advantaged to the least advantaged groups, resulting in an overall equalization in outcomes (Gainer, 2013; Ono & Lee, 2013). Universalist-type approaches have been found to more effective than other policy types, such as the means-tested programs often found in more liberalized regimes (Korpi & Palme, 1998). The results shown here suggest that there this indeed a redistribution and equalization in outcomes – without a concurrent decrease in overall average levels of well-being – in Universalist countries. Furthermore, we see that this is true not only for *eudaimonic* conceptualizations of well-being, as was proposed at the beginning of this study, but also for *hedonic* conceptualizations of well-being as well. Indeed, these effects might be interpreted as being even stronger with these operationalizations.

Thus, although in Chapter 2, based on the SWL and SWB literature, it was proposed that post-secondary educational credentials are not significantly associated with hedonic well-being (H_5), here it is found that there are indeed robust relationships. However, the evidence is mixed in regards to the predictions concerning hedonic well-being: VET does not have a significant effect on hedonic well-being once controls are included in models, but tertiary education does have a significant effect on both SWL and SWB.

Table 47. *Subjective well-being (SWB) scale regressed on educational variables*

	Individual-level controls			*ETR variables*			*Cross-level interactions*		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.18***	0.07*	0.02	0.17***	0.07*	0.02	0.03	-0.05	-0.09*
	(0.03)	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
Tertiary	0.31***	0.14**	0.06+	0.30***	0.14***	0.06+	0.08	-0.06	-0.15*
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)	(0.05)
Universalist	*reference category*								
Liberalized				-0.45***	-0.42***	-0.41***	-0.53***	-0.49***	-0.48***
				(0.07)	(0.08)	(0.08)	(0.09)	(0.10)	(0.09)
Conservative				-0.46*	-0.44**	-0.44**	-0.55**	-0.52**	-0.53**
				(0.16)	(0.15)	(0.15)	(0.18)	(0.16)	(0.15)
Polytechnic				-0.46**	-0.42**	-0.42**	-0.56**	-0.51**	-0.51**
				(0.14)	(0.13)	(0.13)	(0.16)	(0.15)	(0.14)
Universalist by secondary or less	*reference category*								
Liberal by VET							0.04	0.03	0.02
							(0.04)	(0.04)	(0.04)
Liberal by tertiary							0.24***	0.20**	**0.20****
							(0.06)	(0.06)	**(0.06)**
Conservative by VET							0.16**	0.12**	**0.12****
							(0.05)	(0.04)	**(0.04)**
Conservative by tertiary							0.25***	0.21**	**0.23****
							(0.06)	(0.06)	**(0.05)**
Polytechnic by VET							0.22***	0.20**	**0.19****
							(0.05)	(0.05)	**(0.05)**
Polytechnic by tertiary							0.20*	0.21*	**0.22***
							(0.08)	(0.08)	**(0.08)**
Controls		*demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*
Intercept	-0.12+	-0.45***	-0.36***	0.32***	-0.04	0.05	0.41***	0.03	0.13
	(0.06)	(0.07)	(0.06)	(0.07)	(0.09)	(0.08)	(0.09)	(0.10)	(0.09)
Observations	23972	23672	23672	23972	23672	23672	23972	23672	23672
R^2	0.02	0.10	0.13	0.03	0.11	0.14	0.03	0.11	0.14
Adjusted R^2	0.02	0.10	0.13	0.03	0.11	0.13	0.03	0.11	0.14

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in SWB for each independent variable as compared to the reference category for that variable. As mentioned above, the *negative* effect of education on individual well-being is due to the interaction effects, which alter the interpretation of the coefficients, and illustrates the overall equalization in hedonic outcomes in the Universalist countries. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.2. Years of education

Next, the robustness of the educational measure is tested by exploring whether changing the operationalization of education from credential to years of education affects the results of the regression analyses. However, bearing in mind the critical scholarship regarding the 'sheepskin' effect of education (van de Werfhorst, 2011b), it seems likely that these two measures will not be entirely consistent. Models taking into consideration the potential quadratic, non-linear nature of the regression line were also tested.[57]

The findings broadly confirm those of levels of educational credentials. There is a small but significant positive impact of years of education on well-being operationalized as *flourishing* across all models except the last. In Chapter 1, it was argued that post-secondary education has a direct effect on well-being (H_1) both as measured by post-secondary educational credentials and years of education, and this contention is supported. However, the effects are stronger for educational credentials. This suggests that not all years of education have equal impacts on well-being, but that there are qualitative differences, with tipping points in benefits, i.e. 'sheepskin' effects. This also implies that there are further indirect effects operating through credentials that were not uncovered in the present study.

The last model includes all controls and interaction terms. The interaction terms in these models are not significant; however, the effects of EWR are significant and negative in comparison with the Universalist countries, consistent with the rest of the findings. Thus, an additional year of schooling is associated with a 0.01 standard deviation higher *flourishing* score across the pooled sample, while living in any group of countries other than the Universalist countries is associated with a 0.29 (in the Conservative countries) to 0.55 standard deviation *lower* well-being score (in the Polytechnic countries). Thus, in terms of the effects of well-being, the regime context appears to play a much more important role than

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[57] Both quadratic and linear models of years of education completed were statistically significant; however, for ease of interpretation, the linear results are discussed here. Effects were equivalent in direction and significance.

an additional year of schooling in these models. Furthermore, the effect of additional years of schooling does not differ between regimes. This is confirmed by examining the predictive margins in *Figure 101*.

Turning to the indirect effects through occupational sector, when examining the results for *flourishing* and each of its subcomponents in KHB models (see Table *49*), we see that half of the total effect is a direct effect through education, while the other half is an indirect effect running through occupational sector. The indirect effects are smaller for *psycho-social well-being*, but greater for *thriving*. In fact, the direct effect of education as measured by years of education on the *thriving* subcomponent is insignificant, but the indirect effect through occupation is significant. This is consistent with the KHB findings for educational credentials: the indirect effects through occupation on *thriving* were also larger than those on the other well-being scales. This was hypothesized to be due to the fact that this dimension taps into more externally-focused well-being items conceptually related to 'environmental mastery' (Ryff & Keyes, 1995; Ryff & Singer, 1998, 2006).

Above, it was suggested that post-secondary education as measured by years of education also has an indirect effect on well-being through occupational sector. Although indirect effects on well-being are significant across models, they are generally smaller than the direct effects, except in the case of *thriving*. Thus, although the effects of education on *flourishing* and *psycho-social well-being* are not well explained solely by occupational status, as gained through additional years of education, they do seem to be 'explained away' for the sub-component of *thriving*. This scale maps onto security, development of potential, autonomy, dignity, and accomplishment, which are central measures in many *eudaimonic* approaches to well-being (Ryff & Keyes, 1995; Ryff & Singer, 1998, 2006).

Table 48. *Flourishing scale regressed on years of education*

	Individual-level controls			EWR variables			Cross-level interactions		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Years of full-time education completed	0.04***	0.02***	0.01*	0.04***	0.02***	0.01*	0.03**	0.02*	0.01
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)
Universalist	reference category								
Liberal				-0.40**	-0.35**	-0.34**	-0.56**	-0.44*	-0.43**
				(0.11)	(0.11)	(0.10)	(0.16)	(0.16)	(0.12)
Conservative				-0.33***	-0.30**	-0.30***	-0.44*	-0.30+	-0.29*
				(0.08)	(0.08)	(0.07)	(0.16)	(0.16)	(0.13)
Polytechnic				-0.52***	-0.45***	-0.44***	-0.76**	-0.59*	-0.55**
				(0.12)	(0.11)	(0.11)	(0.20)	(0.22)	(0.18)
Liberalized by Years of Education							0.01	0.01	0.01
							(0.01)	(0.01)	(0.01)
Conservative by Years of Education							0.01	-0.00	-0.00
							(0.01)	(0.01)	(0.01)
Polytechnic by Years of Education							0.02	0.01	0.01
							(0.01)	(0.01)	(0.01)
Controls		*demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*		*Demo.*	*Demo. & occup.*
Intercept	-0.57***	-0.70***	-0.55***	-0.16	-0.35**	-0.22*	0.01	-0.26	-0.14
	(0.06)	(0.05)	(0.06)	(0.10)	(0.10)	(0.09)	(0.15)	(0.15)	(0.13)
Observations	23459	23191	23191	23459	23191	23191	23459	23191	23191
R^2	0.03	0.08	0.11	0.04	0.09	0.12	0.04	0.09	0.13
Adjusted R^2	0.03	0.08	0.11	0.04	0.09	0.12	0.04	0.09	0.12

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
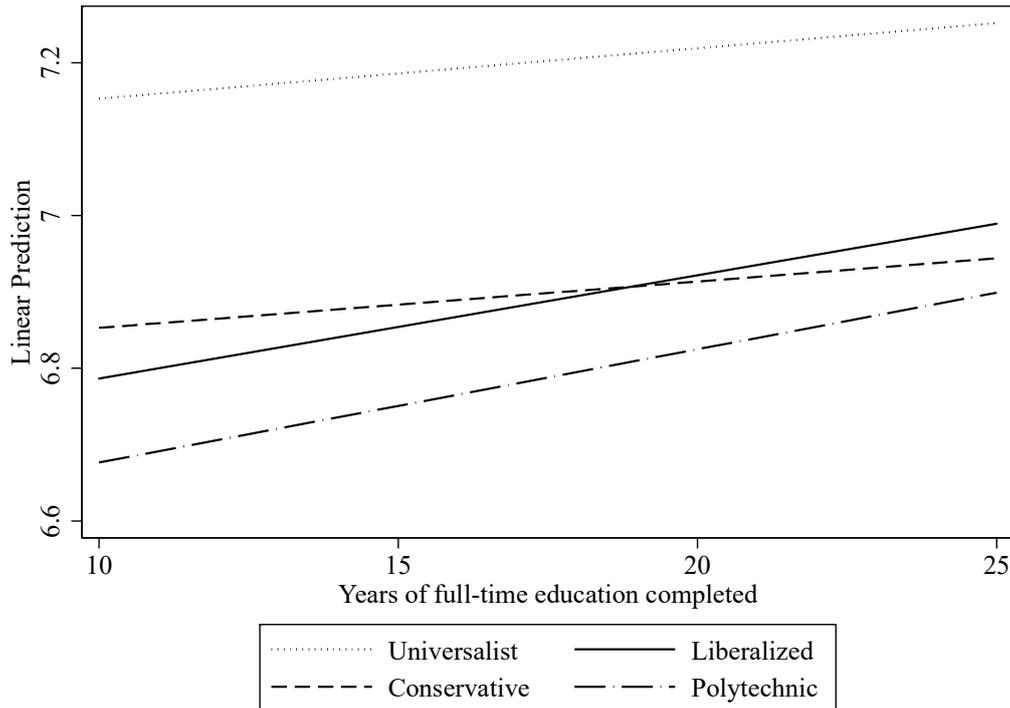
Figure 101. Predictive margins plot of the interaction between EWR and years of education. *Note:* This graph shows the fitted *flourishing* values (net of all individual-level controls) by years of education. Thus, the slope of the lines shows the direction of and differences in the association by EWR. We see that the fitted values are much higher in the Universalist than in the other regimes, but that the direction of the association (a positive association) is the same across all regimes. We see some indication that this relationship is stronger (steeper) in the Liberalized and Polytechnic regimes, although these interaction effects are not statistically significant in these models.

Table 49. *Mediating effects of occupation through years of education*

	Flourishing	*Psycho-social well-being*	*Thriving*
Years of full-time education completed			
Total	0.02***	0.01***	0.03**
	(0.00)	(0.00)	(0.01)
Direct	0.01**	0.01***	0.01
	(0.00)	(0.00)	(0.01)
Indirect	0.01***	0.00**	0.01***
	(0.00)	(0.00)	(0.00)
Observations	23191	23555	23461

Source: ESS Wave 6 (Version 2.3)
Note: Robust standard errors in parentheses. Total effects are the overall coefficients of the effect of years of education on *flourishing* scores, net of controls. Direct effects are the effects due to additional years of education, while indirect effects are the part of the total effect on *flourishing* that is explained by the occupational sector variable. Thus, a significant indirect effect shows that the effect of years of education on *flourishing* is mediated by differences in occupational sector.
$^{+} p < 0.10,$ $^{*} p < 0.05,$ $^{**} p < 0.01,$ $^{***} p < 0.001$

8.3. *Potential country-level mediating variables*

As described in the literature in Chapter 2, average income levels and income inequality within a country, as well as the overall size of the welfare state, have been put forward as potential explanations for the link between the welfare state and the individual subjective well-being of citizens. To test whether these country-level factors indeed have a significant impact on average levels of *flourishing* across countries, and to what extent they mediate the impact of the country-level analytic dimensions of post-secondary educational stratification and decommodification, the 'two-step' and KHB methods outlined above are put to use on the country-level data. (It was already shown above that these macro-level factors do not 'explain away' the effects of the analytical dimensions or EWR groupings.)
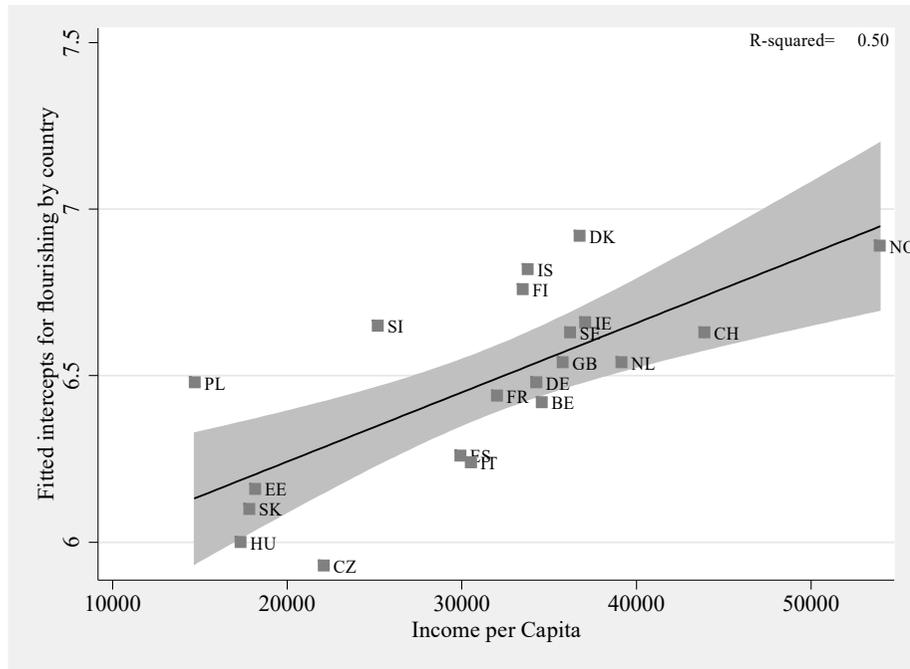
Figure 102. Flourishing regressed on country-level income per capita.

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country measures of income per capita. The *R²*, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by this country-level variable.
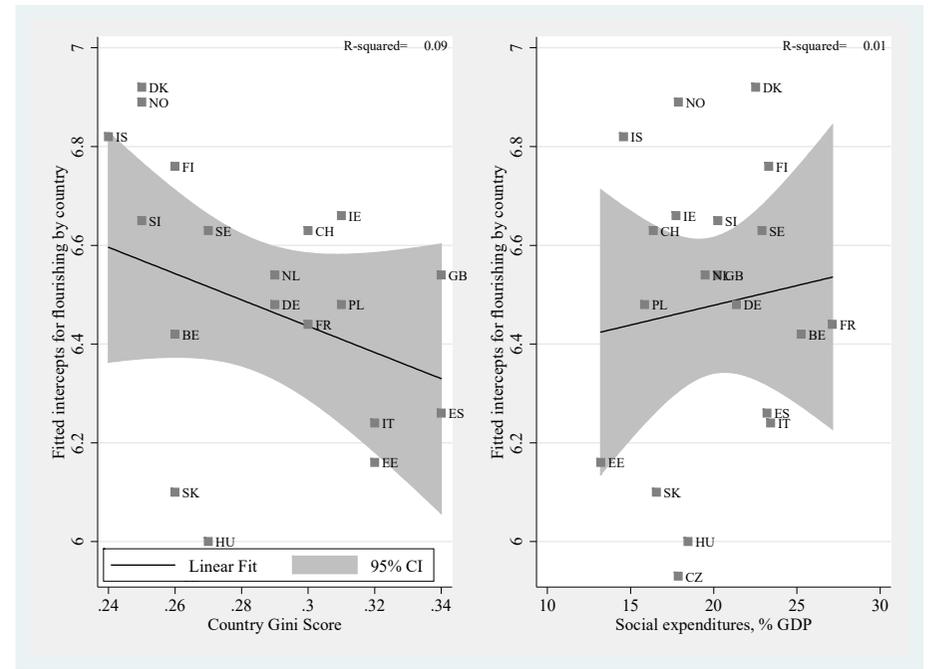
Figure 103. Flourishing regressed on country-level equality and social expenditures variables.

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country measures of the Gini coefficient and overall social expenditures. The *R²*, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted country levels of well-being that is explained by these country-level variables.

Examining per capita income levels, it is found that income per capita significantly predicts average levels of well-being (R^2=.50) when levels for each country are examined in relation to overall levels of *flourishing* with controls, as measured by the fitted country intercepts. This effect is much stronger for overall income levels than it is for the Gini coefficient (R^2=.09), a measure of income inequality within a country, or for overall public social expenditures as a percentage of GDP (R^2=.01). Thus, higher per capita incomes rather than equality in incomes or overall social spending are associated with *flourishing* in these analyses.

These results run counter to the suppositions of Fahey and Smyth (2004), who suggest that wealthier countries may increase the well-being of the least advantaged through

> public goods in rich societies from which the less well-off may gain considerable benefit – the shops, the streets, transport services, schools, hospitals, even the air people breathe – may be of higher quality and have a more equalizing impact on household welfare than is captured in measures based on household-level resources. The converse might be true in poorer societies – even the rich in poor societies may suffer a loss in welfare on account of the low standard of public goods or poor quality of the public sphere in their societies. (Fahey & Smyth, 2004, p. 23)

Here, average income rather than overall social spending is more predictive of well-being levels (taking into account all individual-level control variables). However, it is still possible that these countries might more *effectively* transform social spending into public goods that useful and accessible to the most needy in society.

Indeed, when we look at KHB models of the direct and indirect effects of the analytical dimensions of post-secondary educational stratification and decommodification as mediated by the Gini coefficients, average levels of social expenditures, and income per capita, we see that the Gini coefficient and social expenditures do not show any significant indirect effects through the educational dimensions (see Table *50*). Income per capita shows significant indirect effects through decommodification, but these effects are only half as large

as the direct effects. Moreover, once controls for all three of these country-level variables are included in the analyses, the association between post-secondary educational stratification and decommodification and average *flourishing* remain significant, with a significant direct effects in all models.

Thus, these analyses indicate that educational stratification and decommodification are not simply mapping onto underlying affects of per capita income, income inequality, or overall social spending, but rather measuring the societal-level factors that go beyond these economic characteristics. Indeed, this supports the hypothesis that the effects of these analytical dimensions on overall levels of *flourishing* within a country are due to the ways in which they alter the patterns of post-secondary educational participation and attainment within a society. Notably, as described earlier in this chapter, the Universalist countries are characterized by much more equitable patterns of post-secondary educational participation and attainment, while the other regimes show both higher levels of stratification and lower levels of decommodification. These associations are tested more fully in the next section within a robustness check employing multi-level modeling with country-level control variables.

Table 50. *Flourishing regressed on country-level income, income equality, and social expenditures variables*

| | Stratification | | | | Decommodification | | | |
| | Gini | | Social expenditures | | Gini | | Social expenditures | |
Controls		Social exp.		Gini		Social exp.		Gini
Total	-0.28***	-0.28***	-0.28***	-0.30***	0.33***	0.34***	0.33***	0.36***
	(0.07)	(0.06)	(0.07)	(0.06)	(0.09)	(0.09)	(0.09)	(0.11)
Direct	-0.30***	-0.30***	-0.28***	-0.30***	0.36***	0.38***	0.34***	0.38***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.10)	(0.11)	(0.09)	(0.11)
Indirect	0.02	0.02	0.01	0.01	-0.03	-0.04	-0.01	-0.02
	(0.04)	(0.04)	(0.02)	(0.02)	(0.06)	(0.07)	(0.03)	(0.04)
Observations	20	20	20	20	20	20	20	20

| | Stratification | | | | Decommodification | | | |
| | Income per Capita | | | | | | | |
Controls		Social exp.	Gini	Social exp. & Gini		Social exp.	Gini	Social exp. & Gini
Total	-0.28***	-0.28***	-0.30***	-0.30***	0.33***	0.34***	0.36***	0.38***
	(0.05)	(0.06)	(0.05)	(0.05)	(0.07)	(0.07)	(0.09)	(0.09)
Direct	-0.20***	-0.20***	-0.22***	-0.23***	0.21*	0.22**	0.21+	0.23*
	(0.06)	(0.06)	(0.05)	(0.05)	(0.08)	(0.08)	(0.11)	(0.11)
Indirect	-0.07	-0.08	-0.07	-0.08+	0.12+	0.12+	0.16*	0.15+
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.08)	(0.08)
Observations	20	20	20	20	20	20	20	20

Source: ESS Wave 6; OECD (2009)

Note: Standard errors in parentheses. Total effects are the overall coefficients of the effect of educational stratification or decommodification on the fitted intercept of *flourishing* by country. Direct effects are the effects due to stratification or decommodification, while indirect effects are the part of the total effect on *flourishing* that is explained by the Gini coefficient, social expenditures, or income per capita variable. Thus, a significant indirect effect shows that the effect of these educational dimensions on *flourishing* is mediated by differences in levels of income inequality, social expenditures, or income per capita.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.4. Considering multi-level models

As described earlier, although multi-level models are not the best option for the analysis of the present data, preliminary models are useful to refer to as a robustness check. These analyses begin using an unstructured covariance matrix allowing for random intercepts in the first models (random intercept models), and then are built upon by allowing slopes to covary (random slope models) in the later models. The errors are likely biased due to the limited number of countries, but the overall trends confirm the findings reported above; namely, both VET and tertiary education have strong positive associations with *flourishing* and its subcomponents (see Appendix 3). Furthermore, the negative association of all regimes as compared to the Universalist regimes is clearly reproduced.

However, we see that once the country-level controls for Gini coefficient, income per capita, and social expenditures have been added to the model, only the differences between the Conservative and Polytechnic regimes and the Universalist regimes remain significant. Nevertheless, the interaction term for tertiary education in the Liberalized grouping remains significant across all models, as we saw in the *psycho-social well-being* results in the OLS regression findings.

These models also confirm that neither income per capita nor overall levels of inequality as measured by the Gini coefficient explain the significant differences found between these country groupings in terms of average levels of *flourishing*. They show that the size of the welfare state, as measured by public social expenditures as a percentage of GDP, do not account for these effects either. These results provide limited supporting evidence for differences between regimes in the effect of education on well-being as well; however, this evidence is restricted to the case of tertiary education in the Liberalized countries as compared to Universalist regimes.

9. Sensitivity checks

9.1. *Individual country-level educational characteristics*

Country fitted intercepts for *flourishing* and its subcomponents clearly relate in significant ways to levels of post-secondary educational stratification and decommodification. However, within these composite measures there are diverse items tapping into educational system characteristics and overall levels of education within the country. Furthermore, although the analytical dimensions of post-secondary educational stratification and decommodification were used to cluster the countries into the educational welfare regime groupings used in this study, there are significant differences *within* as well as between groupings.

When examining the individual country-level variables that comprise these two overall measures, we see that some items are more determinate than others in determining overall levels of well-being. Specifically, when examining the stratification items, the number of secondary programs is negatively correlated with overall *flourishing*, but this relationship is modest in its explanatory power (see *Figure 104*). First age of selection, or tracking, shows a much more robust relationship, with later selection corresponding to higher average *flourishing* (R^2=0.32). Horizontal stratification between schools, in terms of types of programs at the secondary level, again shows a robust relationship with overall *flourishing*, with an R^2 of 0.29. Finally, horizontal stratification within schools, as measured by presence of specialized mathematics courses by ability level, does not show any relationship to the fitted intercepts.

In terms of educational attainments, the percentage of the population for whom a VET credential is their highest degree is negatively correlated with the fitted intercepts for *flourishing* (see Appendix 3). This is driven mainly by the high percentages and low averages in the Polytechnic countries, although the explanatory power of the model is modest (R^2=0.14). The percentage of the population with tertiary credentials is strongly linked to

overall levels of well-being with controls, as is the percentage of the youngest generation in the working population, 25-34 year olds, who have a tertiary credential (for both, R^2=.40), although tertiary enrolment shows a significant but less dramatic positive relationship (R^2=.19).

Interestingly, enrolment ratios in VET show a *positive* relationship to fitted levels of *flourishing*, which seems contradictory to the finding for horizontal stratification and VET credentials. However, the VET participation rate is for 18 to 25 year olds, which suggests that perhaps rates of participation in adult VET have a positive association with overall well-being, while rates of early streaming into VET at younger ages has a negative association with overall societal well-being across countries.
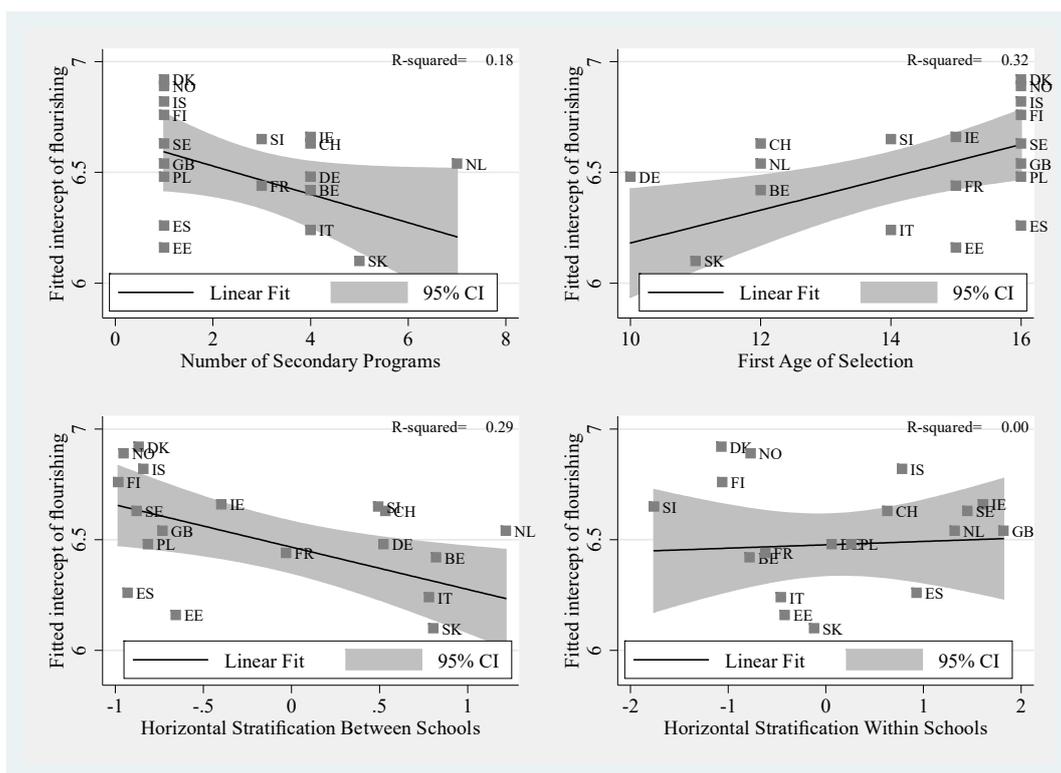
Figure 104. Fitted *flourishing* intercepts regressed on PSE stratification items.
Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.

Turning to the items measuring post-secondary educational decommodification, we see that public expenditures on education show a robust positive relationship with fitted values (see *Figure 105*). The explanatory power of public expenditures on all levels of education as a percentage of GDP is particularly elevated, with an R^2 of 0.64. Expenditures on education as a percentage of total expenditures (which are often seen as a measure of the size of the welfare state), is also very predictive, explaining 40% of the variance in the average level of *flourishing* with controls. Expenditures on tertiary education as a percentage of GDP and in total are also significant, although the amount as a percentage of GDP has more explanatory power ($R^2=.35$ versus $R^2=.14$).

Public expenditures on student loans as a percentage of total public expenditures is also significantly positively related to overall levels of well-being ($R^2=.23$; see Appendix 3). This relationship is in large part driven by the Nordic Universalist countries, where, despite the fact the there are no tuition fees, there are nonetheless high rates of spending on student loans. This unique aspect of the high decommodification in these countries has been described as central to their functioning (Pechar & Andres, 2011; Rubenson, 2006). These loans are not used to pay for post-secondary studies, but rather enable students to live independently from their parents and families (part of the concept of *defamilialization* described in Chapter 3) during their studies (S. Moulin, 2010). This, in theory at least, allows students the independence to construct their own visions of how they want to live their lives (Van de Velde, 2010).

Private expenditures on education are less predictive of fitted *flourishing* levels, and the modest correlations are mainly driven by the high rate of private investment in Great Britain. Annual expenditures per student on tertiary education and average tuition levels show no relationship with the fitted country intercepts for *flourishing*. However, these non-results may be related to the limitations of the dataset in terms of country selection, rather

than suggesting that no such relationship exists. A larger selection of countries outside of Europe, where tuition fees and private investment as household expenditures on education are more elevated, such as the United States, Canada, Australia, and New Zealand, would be necessary to fully explore this particular aspect of decommodification as it relates to overall levels of *flourishing*. With the present data, a modestly predictive effect for private expenditures as whole (R^2=.15) is found, a small effect for household expenditures (R^2=.07), and insignificant effects for annual expenditures per student and average tuition as they relate to overall levels of well-being.
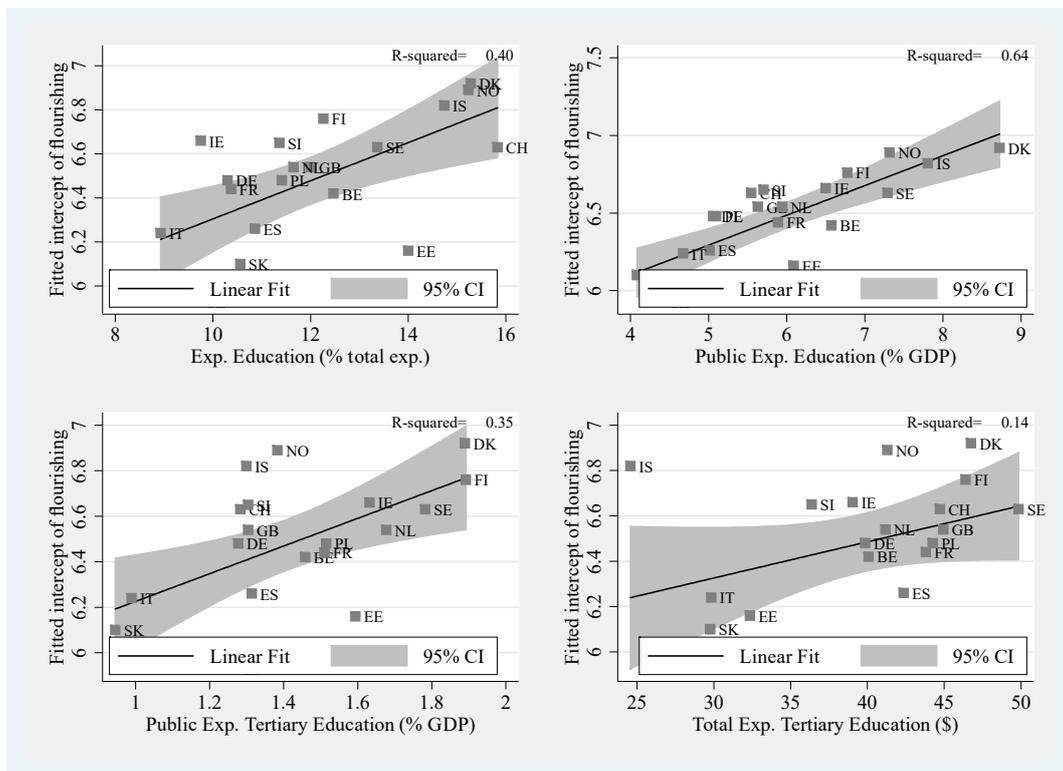
Figure 105. Fitted *flourishing* intercepts regressed on PSE decommodification items.
Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.

Overall, examining trends across all these country-level predictor variables regressed on the fitted intercepts of the well-being measures, as summarized in Table *51*, we see that these bivariate relationships are highly significant across almost all measures. Indeed, the only exceptions are annual expenditures per student on tertiary education, average tuition, and horizontal stratification within schools. Regarding tuition, this is likely due to the large number of countries who do not have tuition fees. In terms of horizontal stratification within schools, this is likely due to the fact that this variable differs dramatically between the Universalist and Liberalized countries, which share relatively high levels of *flourishing*.

Table 51. *Summary of the significance of country-level items regressed on fitted intercepts*

	Measure of well-being		
	Flourishing	*Psycho-social well-being*	*Thriving*
Post-secondary educational stratification	***	***	***
Post-secondary educational decommodification	***	***	***
Standard deviation (SD) of *flourishing*	***	-	-
Inter-quartile range (IQR) range in *flourishing*	***	-	-
Number of secondary programs	*	-	-
First age of selection	***	-	-
Horizontal stratification between schools	***	-	-
Horizontal stratification within schools	ns	-	-
Percentage with VET credentials	*	-	-
Percentage with tertiary credentials	***	-	-
Enrolment in VET (% 18-25 year olds)	***	-	-
Enrolment in tertiary (ratio 18-25 year olds)	**	-	-
Vertical stratification	+	-	-
Proportion pop. with tertiary (25-34 year olds)	***	-	-
Expenditures on education (% total exp.)	***	-	-
Public expenditures education (% GDP)	***	-	-
Public expenditures tertiary education (% GDP)	***	-	-
Total expenditures tertiary education ($ equiv.)	**	-	-
Public expenditures tertiary education (% total)	**	-	-
Public exp. tertiary education as loans (% total)	***	-	-
Private exp. tertiary education (% total)	**	-	-
Household exp. tertiary education (% total)	*	-	-
Annual exp. per student, tertiary ed. ($ equiv.)	ns	-	-
Average tuition, tertiary ed. ($ equiv.)	ns	-	-

Source: ESS Wave 6 (Version 2.3)
Note: The fitted intercepts are the sum of the overall regression equation intercept and each country effect in a fixed effects model, allow for a comparison between countries in terms of average well-being scores net of demographic and occupational controls. These fitted country intercepts are then regressed on country-level predictor variables in a second regression model, for which the significance of the models is reported here. A dash signifies that the results are not discussed here, while *ns* signifies "not (statistically) significant."

A limitation of these analyses is their bivariate nature: While levels of *flourishing* take into consideration all individual-level control variables, other potentially important country-level control variables are not introduced in these analyses. However, when these analyses are conducted including controls for income per capita and the Gini coefficient, the direction and significance of the results does not change (not shown). Although income per capita is significant across models, its beta coefficient is comparatively very small with the main independent variables, and the Gini coefficient is often insignificant in these models. Thus, it would appear that these measures are tapping into aspects of the organizational context of countries that go beyond standard economic predictors of general well-being.

A further critique might be levied suggesting that all of these variables should be introduced together in order to examine which single variables have the greatest independent impacts on overall well-being as measured by *flourishing*. However, when we do this, all variables become insignificant, likely due to the small sample size (20 in these models) and high levels of multi-collinearity between the predictor variables. Thus, it was determined to be more instructive to examine the bivariate models, although similar models with country-level controls were discussed earlier in this chapter.

In summary, the institutional organization of post-secondary education systems appears to be associated with average levels of well-being within societies. Notably, those systems with resources and conversion factors theorized to be 'capability-building,' such as an extended common core curriculum, absence of streaming and tracking, presence of universal loans, absence of tuition, and high levels of access to post-secondary education, as epitomized by the Universalist countries, also show much higher overall levels of well-being. Countries that show early tracking and more barriers in access to post-secondary education also tend to show lower levels of well-being, as is the case for the Polytechnic countries, and in some cases the Conservative countries as well.

These links between educational systems and social welfare are not typically captured in classic welfare regime comparisons. Thus, it would appear that an important aspect of the welfare state is ignored by excluding education from the analytical framework. However, caution is also called for: In the end, these groupings are fairly similar to standard welfare regime groupings, in particular for the Nordic countries. Therefore, we cannot be sure that other aspects of the overall social welfare complex do not also drive these results. This is not necessarily a limitation, as was argued in Chapter 3 that education forms *one* (important) part of the welfare state. However, the interconnected nature of national policies must be recognized, and specific causal arguments (for example, that higher expenditures on tertiary education *cause* higher levels of well-being within a society) cannot be made. The associations, and their various magnitudes, suggest factors that may be more or less instrumental in providing an overall array of policies that encourage well-being in terms of capability development.

9.2. *Comparing interaction effects for the analytic dimensions*

Earlier in this chapter, we considered several EWR-education interactions, finding that only the Polytechnic regime countries differed significantly from those in the Universalist regime grouping in the association between VET and *flourishing*, while the patterns of effects in Liberalized and Conservative regimes were not significantly different. It is also possible to examine cross-level interactions between the post-secondary educational stratification and decommodification analytic dimensions and levels of educational attainment directly. This is examined in *Figure 106* and *Figure 107*.

Both interaction terms and all of the individual interactions are highly significant ($p<0.001$). We see that as post-secondary educational stratification increases, levels of well-being decrease across all educational attainment categories *Figure 106*. This is particularly

striking in the case of tertiary education. However, VET shows a shallower slope: In fact, those with VET report higher well-being than those with tertiary education in the countries with the highest educational stratification (controlling for all other individual factors). This explains the significant interaction term for those with VET in the Polytechnic regimes as compared to the Universalist regimes (shown earlier), as the Polytechnic regimes show the highest stratification.

Turning to post-secondary educational decommodification, the most striking finding is the large difference between those with secondary education or less and those who have some post-secondary education in the least decommodified educational systems (see *Figure 107*). These differences in well-being disappear in the countries with the highest decommodification (i.e., the Universalist countries). However, along the rest of the decommodification scale, the differences are striking, although they become smaller with increasing levels of decommodification. These findings support those found for the educational welfare regimes above, and the hypotheses related to educational stratification and decommodification. It does indeed appear that the relationship between education and well-being is strongest where decommodification is low and/or stratification is high.
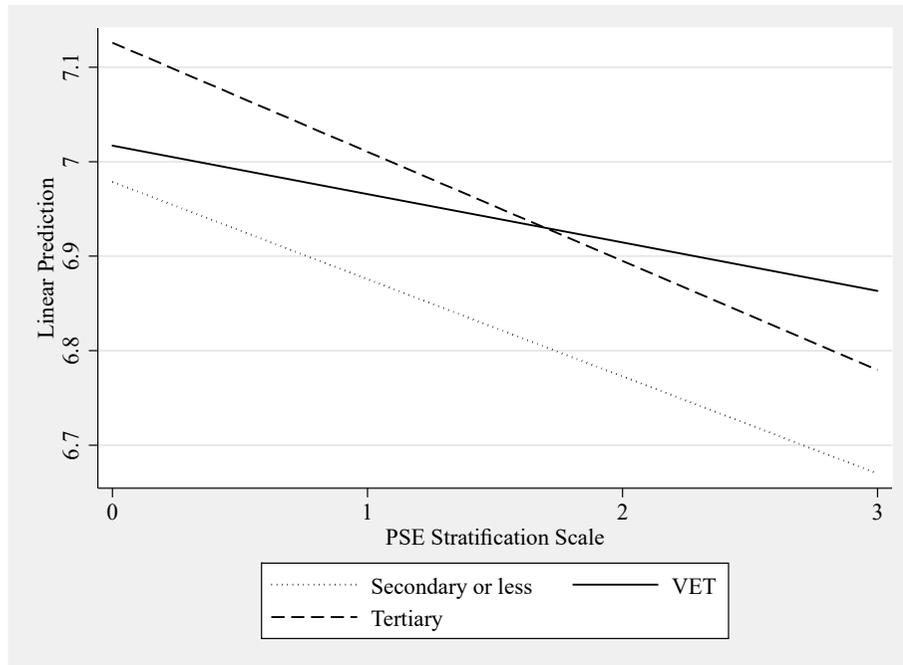
Figure 106. Margins plot by education level and level of educational stratification for *flourishing*.

Note: This graph shows the fitted *flourishing* values (net of all individual-level controls) by levels of post-secondary educational stratification. Thus, the slope of the lines shows the direction of and differences in the association by educational category. We see that the fitted values are much higher where levels of stratification are lower. The direction of the association (a negative association) is generally consistent across educational categories, although VET shows a less steep slope.
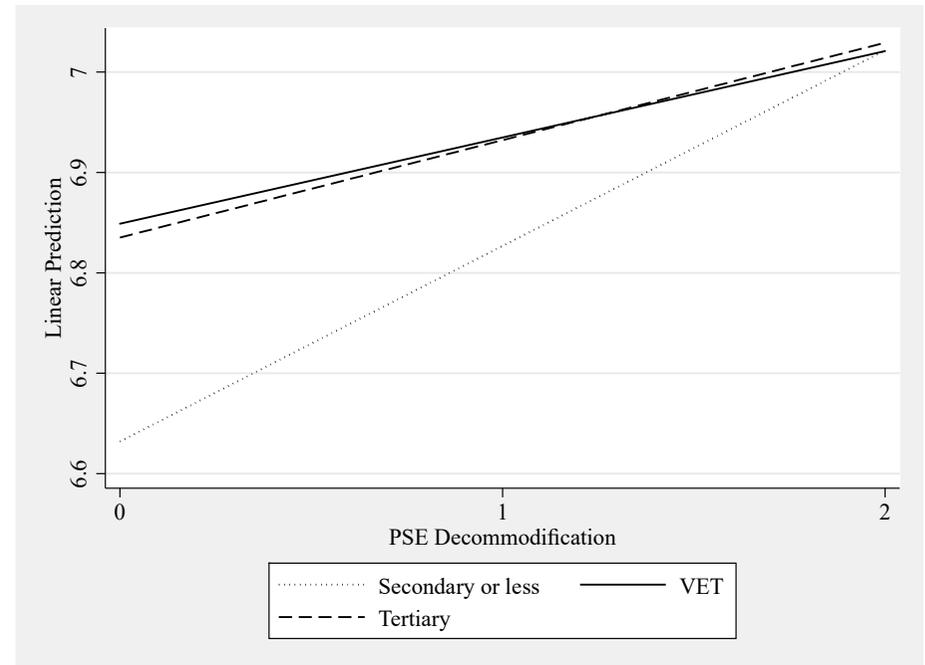
Figure 107. Margins plot by education level and level of educational decommodification for *flourishing*.

Note: This graph shows the fitted *flourishing* values (net of all individual-level controls) by levels of post-secondary educational decommodification. Thus, the slope of the lines shows the direction of and differences in the association by educational category. We see that the fitted values are much higher where levels of decommodification are higher. The direction of the association (a positive association) is generally consistent across educational categories, although secondary education or less shows a steeper slope.

9.3. 'Threshold' accounts of well-being

Due to the fact that Nussbaum's list of central capabilities is a perfectionist account, a fully human life by this account requires the real opportunities to attain all of these capabilities. The capability-informed measure of *flourishing* developed in this study might thus better capture the attainment of each capability in binary terms, using logistic regression to predict capability attainment. In order to map onto global capability attainment, that is, of all ten capabilities, a further indicator is needed; however, due to the fact that only 6 percent of the overall study sample attain all ten capabilities (as described in Chapter 5), another 'moderately perfectionist' measure (Deneulin, 2002; Walker, 2008) is tested, for those who attain at least 7 central capabilities, where 49.5% of the overall sample attains this benchmark. This type of 'threshold' approach is common in the literature (Fredrickson & Losada, 2005; Huppert & So, 2011; Smith & Exton, 2013). Furthermore, the measure can be broken down into the ten central capability dimensions and each can be examined separately in a 'dashboard' approach (not shown, but available on request).

In order to begin to address these concerns that the capability approach necessitates a 'threshold' account, rather than relative inter-individual comparisons of utility, the scale created to measure the number of capabilities attained (defined as a high level of perceived functioning in this domain on the ordinal response scale) and the dichotomous variable representing the attainment of a high number of capabilities (at least seven out of the 10 central capabilities) are examined. These results are compared to those found for the standardized ordinal scale measure R^2s capturing levels of capability-informed *flourishing*.

Firstly, examining the number of capabilities attained, we see that those with VET and tertiary education report a significantly higher number of capabilities than those with secondary education or less, net of all demographic and occupational controls (see Table *52*). All EWR show a negative effect as compared to the Universalist countries, and this effect is

the most pronounced for the Polytechnic countries. Only the interaction term for the Polytechnic grouping by VET is significant, in line with the findings thus far, and only tertiary education (not VET) remains significant (and positive) when all country-level variables are included.

Turning to the logistic regression models, we see that the results are again consistent: The odds of individuals with VET reporting a high level of capability attainment are 1.23 times higher than those with secondary education or less, and the odds of those with tertiary education reporting a high level of capability attainment are 1.34 times higher than those with secondary education or less, net of all individual-level controls (see Table *53*). This remains true for tertiary education across all models, but VET is no longer a significant predictor once cross-level interactions are included. (This means that only tertiary education is a significant predictor of a high level of capability development in the Universalist countries.)

Furthermore, there is again a significant cross-level interaction between the Poytechnic grouping and VET. Those with VET in the Polytechnic countries are significantly more likely to report a high level of capability attainment (the odds are 1.26) than those with secondary education or less in the Universalist countries. In contrast to previous models, the interaction term for those with VET in the Conservative countries is also significant in these models. However, their odds of reporting a high level of capability attainment are significantly lower (0.86) than the Universalist reference category. Thus, EWR appears to impact the link between education and well-being more strongly at the VET level in these models, both providing advantages (in the Polytechnic countries) and disadvantages (in the Conservative countries). A potential explanation for these findings lies in the institutional organization of the educational systems in these countries: Indeed, it has been found that VET reduces the chances of becoming unemployed and of entering the labour force as an

unskilled worker, and that these and other advantages are most pronounced in countries with

high vocational specificity and institutional differentiation (Shavit & Müller, 2000b).

Table 52. *Number of capabilities reported regressed on educational and EWR variables*

	Individual-level controls			EWR variables			Cross-level interactions		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.68***	0.44***	0.31***	0.63***	0.40***	0.28**	0.38***	0.22+	0.11
	(0.09)	(0.07)	(0.07)	(0.10)	(0.09)	(0.08)	(0.09)	(0.11)	(0.12)
Tertiary	0.98***	0.61***	0.38**	0.94***	0.59***	0.36**	0.80***	0.55***	0.32**
	(0.10)	(0.09)	(0.11)	(0.08)	(0.07)	(0.10)	(0.08)	(0.09)	(0.09)
Universalist	*reference category*								
Liberal				-0.97**	-0.86**	-0.84**	-1.06***	-0.91**	-0.87**
				(0.27)	(0.27)	(0.25)	(0.27)	(0.28)	(0.25)
Conservative				-0.72**	-0.65*	-0.65**	-0.76**	-0.64*	-0.64*
				(0.24)	(0.24)	(0.22)	(0.25)	(0.25)	(0.24)
Polytechnic				-1.18**	-1.04**	-1.03**	-1.29**	-1.12**	-1.11**
				(0.34)	(0.32)	(0.32)	(0.34)	(0.33)	(0.32)
Universalist by secondary or less	*reference category*								
Liberalized by VET							0.14	0.11	0.07
							(0.13)	(0.14)	(0.13)
Liberalized by tertiary							0.20	0.08	0.05
							(0.16)	(0.15)	(0.16)
Conservative by VET							0.09	-0.01	-0.03
							(0.10)	(0.12)	(0.12)
Conservative by tertiary							0.03	-0.10	-0.09
							(0.16)	(0.17)	(0.15)
Polytechnic by VET							0.50**	0.44*	**0.40***
							(0.15)	(0.16)	(0.15)
Polytechnic by tertiary							0.17	0.09	0.10
							(0.17)	(0.20)	(0.17)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	5.89***	5.17***	5.25***	6.85***	6.01***	6.08***	6.94***	6.05***	6.11***
	(0.13)	(0.08)	(0.14)	(0.18)	(0.22)	(0.22)	(0.21)	(0.25)	(0.24)
Observations	24212	23899	23899	24212	23899	23899	24212	23899	23899
R^2	0.03	0.09	0.11	0.05	0.10	0.12	0.05	0.10	0.12
Adjusted R^2	0.03	0.09	0.11	0.05	0.10	0.12	0.05	0.10	0.12

Source: ESS Wave 6 (version 2.3); OECD 2009

Note: Robust standard errors in parentheses. Results here are from OLS models; results from Poisson models are available on request.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 53. *Reporting a high number of capabilities regressed on educational and EWR variables*

	Individual-level controls			EWR variables			Cross-level interactions		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	1.59***	1.36***	1.23***	1.54***	1.33***	1.21**	1.37***	1.22**	1.12
	(0.10)	(0.07)	(0.07)	(0.10)	(0.07)	(0.07)	(0.06)	(0.08)	(0.08)
Tertiary	2.04***	1.59***	1.34**	2.00***	1.57***	1.33**	1.91***	1.61***	1.34***
	(0.17)	(0.12)	(0.14)	(0.13)	(0.09)	(0.13)	(0.09)	(0.08)	(0.09)
Universalist	*reference category*								
Liberal				0.45***	0.48**	0.48**	0.43***	0.46***	0.47***
				(0.10)	(0.11)	(0.11)	(0.09)	(0.11)	(0.10)
Conservative				0.54**	0.56**	0.55**	0.55**	0.59**	0.58**
				(0.11)	(0.11)	(0.11)	(0.10)	(0.12)	(0.11)
Polytechnic				0.41***	0.44**	0.43**	0.39***	0.43**	0.42***
				(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Universalist by secondary or less	*reference category*								
Liberalized by VET							1.10	1.10	1.08
							(0.09)	(0.09)	(0.09)
Liberalized by tertiary							1.12	1.04	1.03
							(0.13)	(0.12)	(0.12)
Conservative by VET							0.94	0.88+	**0.86**+
							(0.05)	(0.06)	(0.07)
Conservative by tertiary							0.95	0.86	0.87
							(0.14)	(0.13)	(0.13)
Polytechnic by VET							1.32**	1.28**	**1.26***
							(0.12)	(0.12)	(0.13)
Polytechnic by tertiary							1.03	0.98	1.01
							(0.09)	(0.11)	(0.10)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.79*	0.48***	0.46***	1.70***	0.96	0.92	1.75***	0.97	0.93
	(0.08)	(0.03)	(0.06)	(0.25)	(0.18)	(0.17)	(0.27)	(0.19)	(0.18)
Observations	24212	23899	23899	24212	23899	23899	24212	23899	23899

Source: ESS Wave 6 (version 2.3)

Note: Exponentiated coefficients; robust standard errors in parentheses.

+ *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001

10. Conclusion

This chapter tested three of the central groups of hypotheses of this study: whether or not education is positively associated with well-being, whether or not educational welfare regimes (EWR) are significantly related to overall country well-being levels, and whether or not EWR impacts (or moderates) the association between education and well-being. Each of these groups of hypotheses was supported to varying degrees.

The first was clearly supported in regards to the capability-informed measure of *flourishing* and its subcomponents, as well as for hedonic well-being scales, even with the inclusion of relevant individual-level and country-level variables. The second group of hypotheses also found support: all other EWR show lower levels of well-being overall in comparison with the Universalist countries, and the Polytechnic countries exhibit a significant negative association with levels of well-being overall even with the addition of controls for income per capita and income inequality. Indeed, those with secondary education or lower in the Polytechnic countries experience the lowest *flourishing*.

Finally, regarding the third group of hypotheses, the impact of education on well-being differs significantly in the Liberalized and Polytechnic countries as compared to the Universalist group: Although those individuals living in the Polytechnic EWR have the greatest well-being disadvantage overall, their *flourishing* increases significantly more with VET as compared to the Universalist grouping. There is also some evidence that those with tertiary education in the Liberalized and Conservative countries also experience a significantly larger increase in *psycho-social well-being* as compared to those in the Universalist countries, despite the fact that living in these countries is not associated with significantly lower well-being levels with the inclusion of all individual- and country-level controls.

These findings confirm the 'general skills' advantage of tertiary education in the Liberalized regimes, and the 'specific skills' advantage in the Polytechnic countries, but show that these advantages extend beyond labour market effects into non-market effects. Thus, educational welfare context is shown to relate not only to overall levels of well-being, but also to shape the link between educational attainment and well-being as conceptualized by individuals' ability to live a life that they have reason to value through the subjective attainment of central capabilities theorized as key to a *flourishing* life.

Conclusion

1. *Résumé en français*

Cette conclusion commence par une discussion des réponses aux hypothèses de cette étude à la suite des analyses du chapitre précédent. Cette étude a montré que le plus haut diplôme d'études post-secondaires, tant pour l'enseignement et la formation professionnels (EFP) que pour l'enseignement supérieur, a un impact significatif sur le bien-être des individus dans toute l'Europe. En effet, on constate que l'éducation post-secondaire et le bien-être sont significativement associés aux niveaux « micro » et « macro », toutes choses étant égales par ailleurs. Ces résultats soutiennent l'argument central de cette thèse, qui se repose sur la valeur des impacts non marchands de la scolarité au niveau individuel et au niveau sociétal. Par conséquent, il est conclu que l'éducation n'est pas seulement valable dans un sens utilitaire et économique, même si ces aspects sont aussi importants, mais aussi pour son rôle dans la distribution du bien-être, conceptualisé par la grille de lecture de l'approche des capabilités et les théories de l'*épanouissement*.

Ces résultats sont interprétés au travers d'une optique ciblée sur les inégalités éducatives relatives à la qualité de vie. Les deux dimensions analytiques « macro », visant à saisir des politiques éducatives, des dispositifs, et des institutions éducatives et leurs interrelations avec l'État-providence, sont fortement associées avec les niveaux du bien-être sociétal et les inégalités générales du bien-être dans un pays. Par contre, ils ne sont pas significativement liés avec l'association directe (les coefficients de régression, *ceteris paribus*) entre le niveau de qualification le plus élevé des individus et leur bien-être. Les arguments en faveur du fait que ces « régimes éducatifs du bien-être social » façonnent cette relation sont donc limités. D'autre part, l'hypothèse selon laquelle ces groupements sont liés avec la taille et la fiabilité de l'association *indirecte* entre l'éducation et le bien-être au niveau individuel par le biais de statut occupationnel est confirmée dans les analyses. En effet, les tendances dans l'intensité et le sens de cette relation entre les pays de l'échantillon sont

complexes, variant avec l'opérationnalisation du bien-être utilisée et différant autant en fonction du niveau de stratification éducationnel que de decommodification éducationnel.

Ensuite, les limites de la recherche sont soulignées, elles incluent les facteurs liés aux données utilisées, les mesures des capabilités ainsi que les mesures de stratification et decommodification de l'éducation post-secondaire, et les dangers de sophisme écologique dans les analyses « macro ». Pour conclure le chapitre, les pistes de recherche qui méritent d'être étudiées et les pas franchis dans cette direction sont discutés, ainsi que les implications de la recherche pour les politiques éducatives en Europe. Les pistes de recherche futures, tels les effets intergénérationnels, les effets de l'enseignement et la formation professionnels (EFP) sur les diverses mesures du bien-être, et les études qui réunissent les rôles marchands et non marchands de l'éducation, sont présentées. En général, ces résultats appuient l'argument que les dispositifs éducatifs « Universalistes » jouent un rôle déterminant dans la réduction des inégalités du bien-être. Malgré le fait que les individus qui sont hautement diplômés et employés tirent d'avantage de bénéfices du bien-être à travers les pays européens, leur bien-être est significativement associé avec leur contexte national et son « régime éducatif du bien-être social ». Par conséquent, la capacité des États-providence à minimiser la répartition inégale des opportunités et privilèges est déterminante pour comprendre les inégalités sociales d'une perspective non-matérielle autant qu'une perspective matérielle des approches économiques traditionnelles. Enfin, ce travail ouvre la voie à de nombreuses pistes de recherches qui pourront être approfondies.

2. Summary

This research has examined the association between education and well-being at multiple levels and through different foci. The hypotheses and related analyses rested upon two underlying and complementary arguments:

1) Post-secondary educational attainments affect individuals' access to material (e.g. employment, social networks) and non-material (e.g. skills, knowledge) resources in both occupational and other life spheres that allow them maximize the positive consequences of events and circumstances that impact their overall well-being as well as avoiding potential risks jeopardizing their quality of life; and

2) Institutional arrangements as conceptualized by 'educational welfare regimes' determine individuals' life chances by shaping the social conditions that organization the distribution of resources, relative social hierarchies, patterns of inclusion and exclusion, and thus overall levels of inequality within societies (Beckfield et al., 2013).

Based on these assumptions, this study investigated overall levels of well-being and well-being inequalities by educational category (i.e. the education gradient in well-being), as well as the association between education and well-being across countries, with an eye to the ways in which broader social forces shape these outcomes.

In order to conceptualize and measure well-being, this study drew on the 'flourishing' literature, which suggested that multiple indicators of *eudaimonic* well-being can be operationalized as a single construct (H_6). As well, previous empirical work with the capabilities approach showed that a capabilities list, as described by Nussbaum, can be measured through survey items (Anand et al., 2009, 2005). These two streams of research were fused, and it was asserted that these capabilities can be meaningfully combined into a single measure, as has been done in the elsewhere in the literature (Becchetti et al., 2016). Indeed, as we saw in Chapter 5, the overall capability-informed *flourishing* measure shows good internal consistency, is significantly correlated to other measures of well-being, and differs significantly both across countries and levels of educational attainment. Although this approach presents several additional difficulties from a capability perspective, as discussed in

the limitations, it does allow for inter-individual and inter-country comparisons of multi-dimensional well-being data that is publicly available in existing representative quantitative European datasets.

In order to provide a comparative frame for the analyses, Chapter 3 explored the comparative educational and welfare regime literature. It was suggested that countries can be distinguished empirically into categorizations based on educational attainment and post-secondary system characteristics related to stratification and decommodification (H_7), while an overview of the welfare regimes literature concluded that types of welfare regime contexts impact and distribute individuals' well-being (H_8). In Chapter 4, statistical grouping methods, namely cluster analysis and multi-dimensional scaling, provided meaningful groupings of countries that showed strong theoretical consistency with the literature. Levels and the distribution of educational attainment and individual well-being were found to significantly differ across these contexts.

Finally, the individual-level well-being-education association was examined across countries, within countries, and within educational welfare regimes in Chapter 6. The country-level association across average levels of these variables was assessed in relation to the analytical dimensions of post-secondary educational stratification and decommodification, as well as educational welfare regime groupings. Furthermore, inequalities in well-being were considered in comparative context, comparing various measures of inequality applied to the well-being concept. The findings of these inferential analyses are discussed below.

3. What role for education in the distribution of well-being?

Previous research has suggested that education is linked to well-being, and, more specifically, that increasing levels of education in a society have an 'inequality-reducing impact' on well-

being (Becchetti, Massari, et al., 2010). Indeed, educational policies related to increasing access and participation have been described as "crucial" to reducing well-being inequalities and "potential social tensions arising from it" (Becchetti et al., 2010, p. 1). The present research bolsters these claims, finding a significant education gradient in well-being, and significant differences across countries in both levels and the educational distribution of well-being.

Previous comparative research also supported the notion that macro-social factors "differentially affect" levels of well-being and well-being inequalities in different welfare state contexts, based on differing prominent social cleavages (Beckfield et al., 2013). Indeed, sociological studies into the determinants of health (Olafsdottir & Beckfield, 2011) strongly suggest that there may also be cross-national variability in the education gradient in well-being as measured by the capability-informed measure of *flourishing*. This variability was proposed to be in part explained by differing social conditions that generate social well-being within welfare states, in this case focusing our attention on systems of education and resulting patterns in the distribution of well-being within societies.

Although previous research has suggested that macro-level economic variables concerning the size of the welfare state, at least up to a certain threshold (Fahey & Smyth, 2004), may impact levels and variation in well-being across countries (Ejrnæs & Greve, 2017; Ott, 2011), the analyses presented here did not find strong evidence for these effects. Furthermore, while income per capita showed a small but significant effect, the Gini coefficient (measuring income inequality) was not predictive. Thus, income inequalities were not found to be determinate of well-being inequalities in this sample. However, *quality* rather than size of public investments and expenditures may be a potentially determinate intervening variable (Ott, 2010). Indeed, as suggested by Becchetti and Pelloni (2013), higher incomes may contribute "to improve the quality and the availability of domestic public goods

(especially health and education)" which have "straightforward and undoubtedly positive effects on life flourishing when [they] enhance individual capabilities which, in turn, depend on personal prosperity, quality of institutions and public wealth" (Becchetti & Pelloni, 2013, p. 111). However, analyses with country-level economic control variables showed that these factors are not the sole determinants – strong evidence was found that institutional arrangements in terms of educational stratification and decommodification shape societal well-being.

3.1. *Individual-level direct effects of education on well-being*

Post-secondary education clearly showed a significant association with *flourishing* in this study even once key individual-level control variables underscored in the literature were accounted for in the models. This supports the notion that post-secondary education impacts later adult well-being. It also provides some explanation for why 'over-education' does not necessarily have unfavourable effects on individuals (Jaoul-Grammare & Guironnet, 2009). However, differences amongst the individual well-being items were found: For example, the gradients in physical health and resilience were much more pronounced than those in emotional well-being, play, or positive relationships; and security, development of potential, and dignity showed much larger gradients than accomplishment and personal autonomy, when examined across educational categories. These results show that post-secondary education enhances self-reported capabilities in an unequal manner, potentially providing greater benefits for some capabilities than others.

Furthermore, differences between the type of post-secondary educational credential were also found: Tertiary education appears to be strongly linked to health, security, development of potential, and dignity, while VET provides greater advantages in terms of resilience and social relationships. Due to a lack of research on the well-being outcomes of

VET specifically (for an exception, see Candeias & Melo, 2014), these results do not have a point of reference in the literature. Overall, these findings for post-secondary education in general were largely consistent with the literature explored in Chapters 1 and 2, although the non-significance of the autonomy and accomplishment items was unexpected based on the *eudaimonic* well-being literature. This was hypothesized to be due to differences between countries in the opportunities for attainment of these 'environmental mastery' aspects of well-being, as discussed below.

3.2. *Country-level direct effects of education on well-being*

The initial comparative findings are straightforward: Well-being is lower in all regimes as compared to the Universalist educational welfare regimes. What is more, the introduction of individual-level and country-level economic control variables increases the overall fit of the model, but does not reduce the EWR coefficients. Thus, these groupings have effects on well-being beyond differences in occupational status and economic development patterns. Both VET and tertiary education remain important predictors across all models. VET education effects were generally strongest in the Polytechnic countries; however, somewhat surprisingly, they were also strong in the Anglophone countries, while tertiary education effects were significant in all but the Nordic countries. Germany was the only country that consistently showed significant positive effects for VET, but *not* tertiary, education. As well, despite the fact that the association between education and well-being was generally insignificant in the Nordic countries, this was not the case for Sweden, where both VET and tertiary education had a positive effect on *flourishing*, and Iceland, where only tertiary education showed a significant positive effect. This underscores the fact that trends were not entirely consistent within educational welfare groupings, which group similar but nonetheless distinct national educational and social welfare systems.

It was hypothesized that countries with more decommodified and less stratified educational systems would report higher overall well-being and less well-being inequality (H_{8-10}). Examining the impact of the analytical dimensions of post-secondary educational stratification and decommodification, a clear negative relationship was found between educational stratification and average *flourishing*. Net of demographic and employment controls, the negative correlation between educational stratification and the average level of *flourishing* was statistically significant and explained almost half of the variance in scores. Thus, in this sample, countries with less stratified educational system characteristics (i.e. later streaming, a lower number of distinct programs in secondary school, a higher percentage of the population participating in post-secondary education) generally have higher average levels of *flourishing*. This was also true of fitted *flourishing* scores *ceteris paribus*, controlling for key individual-level factors.

Furthermore, a clear positive relationship is found between educational decommodification and average *flourishing*. This correlation was again statistically significant and again explained almost half of the variance in scores. Thus, in this sample, countries with greater public investment in education (i.e. higher funding as a percentage of GDP, a higher ratio of public to private spending, and higher overall investment in education) are associated with higher average levels of *flourishing*. This supports the contention that "the quality and the availability of domestic public goods" have "straightforward and undoubtedly positive effects on life flourishing," by enhancing individual capabilities (Becchetti & Pelloni, 2013, p. 111). Once again, these results were replicated on fitted *flourishing* scores that control for key individual-level factors.

When examining overall societal well-being across countries, support is found for the notion that these social conditions shape 'well-being gradients.' The relationship between overall average levels of well-being in countries with controls and the variation in well-being

scores in these same countries exhibits a very strong negative association. Countries with higher fitted intercepts for *flourishing* show lower variation in well-being scores as measured by both the standard deviation of *flourishing* and the inter-quartile range: Where overall well-being is higher, well-being inequalities are also generally lower. This is consistent with prior research (Ovaska & Takashima, 2010) and the findings related to the educational welfare groupings, where the associations between well-being inequality and the educational grouping analytical dimensions were also highly significant.

This confirms welfare state research asserting that more encompassing welfare states (i.e. with more extensive decommodification) increase overall well-being *and* decrease well-being inequalities (Ono & Lee, 2013; Rothstein, 2010). However, some contrasting evidence in the literature was highlighted, as Gainer (2013) found that "the welfare state does not benefit the worst-off in a society in terms of happiness more than the average member" (p. 453). In order to test this, measures of inequality based on the Rawlsian difference principle (Rawls, 1971) were also mobilized. The average well-being of the least advantaged group in the society in terms of education (in this case, those with secondary education or less) was examined, which was then regressed on the post-secondary educational stratification and decommodification scales, and the results were found to be strongly significant. Countries with higher levels of educational stratification show larger inequalities, and those with lower levels of educational decommodification also show larger inequalities in terms of the well-being of the least advantaged.

These findings may be seen as contradictory with the assertion that educational welfare regimes with lower stratification and higher decommodification promote capability development: Indeed, those who have participated the *least* in post-secondary education are exhibiting the most pronounced benefits in these systems. Three factors explain this finding:

1) The analytical dimensions were measured not only in terms of post-secondary educational characteristics, but also 'upstream' factors in compulsory education. Indeed, the groupings were largely consistent with those of other researchers focusing on primary and secondary education (Mons, 2007; Olympio, 2012), and educational systems are strongly interrelated across levels. Thus, the effects of pre-post-secondary education and post-secondary educational systems cannot be disentangled.

2) The countries exhibiting optimal scores on the analytical dimensions democratize access to post-secondary education, in theory to all those who *want* to participate. Therefore, there may be an optimal distribution of individuals across the educational categories to which they aspire and which coincide with their personal goals (Rubenson, 2006; Rubenson & Desjardins, 2009).

3) There is evidence in the literature of 'positive spillover' effects for the entire society with increasing participation in higher levels of education (Becchetti, Massari, et al., 2010; W. W. McMahon, 2009; Vila, 2005). Based on this notion, increasing access to post-secondary education should increase the well-being of all members of the society, including those who do *not* participate.

More broadly, this research questions the utility of examining only individual 'payoffs,' as these likely reflect inequalities rather than enhanced functioning of educational systems. These individual approaches are often used to defend and promote highly stratified systems (Arum, Gamoran, & Shavit, 2007; Shavit & Müller, 2000b). Evidently, depending on levels of coordination with the labour market (Andersen & van de Werfhorst, 2010), more differentiated systems may provide greater individual economic and non-economic advantage, as was shown here in the case of the Polytechnic countries. However, consideration should be paid to likely societal-level repercussions as well.

This study also proposed that post-secondary educational attainments will differentiate more strongly amongst individuals in terms of later well-being in countries with less decommodifed and more stratified characteristics. When comparing well-being-education associations across educational welfare regimes, it was found that those with secondary education or less in the Universalist countries reported higher levels of *flourishing* than those with higher levels of education in any of the other EWR. However, the direction of the association between education and well-being was consistent all EWR: Those with post-secondary education report higher levels of *flourishing* than those without post-secondary credentials. There was only one exception to this linear trend: Those with VET in the Polytechnic countries report higher well-being than those with tertiary education, as indicated in the discussion above.

Indeed, when interaction terms were introduced to test if educational welfare regime groupings moderated the education-well-being association (Aguinis et al., 2005; Brambor et al., 2006), only limited support was found for the idea that the association between education and well-being *ceteris paribus* differs systematically across educational welfare regimes. The Polytechnic regimes were again the exceptional case: the association between VET and *flourishing* was significantly stronger, or more positive, in this group as compared to the Universalist regime group, while the patterns of effects in Liberalized and Conservative regimes were similar overall to the Universalist countries, although more pronounced. However, the results differed by sub-component of well-being: The association between tertiary credentials is significantly stronger, or more positive, in the Liberalized and Conservative regime groupings as compared to the Universalist regime group for *psycho-social well-being*, consistent with prior research (Jongbloed & Pullman, 2016), while VET has a significantly more positive effect on *thriving* in the Polytechnic countries than in the

Universalist countries, suggesting the potential importance of institutional context in determining well-being in terms of 'environmental mastery.'

When controls for country-level characteristics were added, including income per capita by country and the Gini coefficient, the general findings remained consistent: Those with secondary education or lower Polytechnic countries experience the greatest *flourishing* 'penalty,' whereas those with VET show the greatest well-being 'payoff' in this context. Thus, individual advantage is indeed optimized for those with vocational education or training in these countries, but at a cost for the least educated in society. However, with the addition of these controls, another interaction term becomes positive: Those with tertiary education in the Liberalized countries. This again suggests that the individual benefit-inequalities dichotomy is at work. In this case, it is likely due the low levels of decommodification in these countries, which 'stratify' access in a less overt manner. These results incorporating country-level economic control variables provide supporting evidence of a 'general skills' advantage of tertiary education in the Liberalized regimes, and the 'specific skills' advantage in the Polytechnic countries, consistent with prior research (Estevez-Abe et al., 2001b).

Thus, country-level economic control variables reduce, but do not explain away, the effects of welfare regime groupings on well-being, consistent with other research (Samuel & Hadjar, 2016). This is consistent with research in educational studies finding that social inequalities are more impacted by institutional factors than general economic conditions (Jaoul-Grammare, 2011). However, the inclusion of these variables appears to bring to light further significant differences in the association between education and well-being across countries, underscoring the societal disadvantages of highly stratified and commodified educational systems. This supports the notion that individual *flourishing* depends not only on

personal factors, but also on the "quality of institutions and public wealth," in particular related to education (Becchetti & Pelloni, 2013, p. 111).

Overall, the link between education and *flourishing* was found to be weakest in the Universalist EWR even with country-level economic control variables, and stronger in the Polytechnic countries, where post-secondary educational stratification is highest, and Liberalized countries, where levels of post-secondary educational decommodification are lowest. However, 'two-step' analyses of the overall analytical dimensions and individual country-level items do not lend support to the hypothesis that educational context, as measured by post-secondary educational stratification and decommodification, systematically determines the education-well-being relationship within countries. Rather, it appears that overall well-being inequalities significantly shape the relationship between education and well-being, particularly at the tertiary level. The standard deviation and inter-quartile range in *flourishing* within a country is significantly correlated with this relationship (as measured through standardized beta coefficients). This is consistent with previous research suggesting that overall average levels of well-being strongly determine levels of social inequality in well-being (Ferrer-i-Carbonell & Ramos, 2013; Ott, 2005; Ovaska & Takashima, 2010). However, one should note that post-secondary educational stratification and decommodification were found here to significantly impact *average* well-being, which in turn was found to be highly determinant of the distribution of well-being. Thus, an indirect line of causation may be at work.

Testing the robustness of these findings, two-step regression and mediation analyses of average fitted *flourishing* scores with economic country-level controls were employed, which found that educational stratification and decommodification do not simply map onto underlying affects of per capita income, income inequality, or overall social spending, but rather measure macro-social factors that go beyond these economic characteristics. Multi-

level models confirmed these findings: Both VET and tertiary education have strong associations with *flourishing* and its subcomponents across all countries, while each of the educational welfare regimes shows significantly lower levels of well-being as compared to the Universalist regime grouping, even in models with all controls.

These findings are consistent with previous research in the literature that people in a universal welfare state, as exemplified by the Nordic countries, report higher levels of well-being (Helliwell & Huang, 2008; Pacek & Radcliff, 2008; Rothstein, 2010) and more equal levels of well-being (Gainer, 2013; Ono & Lee, 2013; Ovaska & Takashima, 2010). This is true even once controls for overall levels of inequality and income per capita are included in the models, as shown in the multi-level model robustness checks and reported in the literature (Samuel & Hadjar, 2016). Indeed, models with country-level controls for income per capita and the Gini coefficient confirmed the significance of the Polytechnic by VET and Liberalized by tertiary interaction terms. This is consistent with previous research looking at this relationship using hedonic measures of well-being (Deeming & Hayes, 2012; Jongbloed & Pullman, 2016). However, this hypothesis (H_{11}) received weaker support than the hypothesis concerning overall levels of, and dispersion in, well-being (H_{8-10}) from the current data and methods.

3.3. *Individual-level indirect effects of education on well-being*

In this study, the importance of education has been illustrated, alongside and interacting with occupational sorting, in predicting individual outcomes in terms of well-being. Employing a composite measure of well-being, conceptualized as a capability-informed measure of *flourishing*, it has been demonstrated that in some educational welfare regime contexts education is not directly associated with higher levels of well-being. Rather, it functions indirectly through occupational sorting.

In pooled models, the indirect effect of occupational sector was largest at the tertiary level, while the direct effect of education formed a slightly larger portion of the total effect for VET than tertiary education. Supplementary analyses (see Appendix 4) testing the mediating effect of income across countries found that effects were smaller than for occupational sector and were also more pronounced at the tertiary level.[58] Thus, although individuals with higher levels of education self-reported higher average levels of well-being regardless of their income and occupational sector, these educational credentials also affected occupational sector, which in turn had an impact on well-being. The significance of these indirect effects provides evidence for both human capital and 'critical' educational selection perspectives, which suggest that education contributes to life outcomes through productivity and enhanced capacities, on the one hand, and through 'sheepskin' effects on one's position in the labour market, on the other hand. Indeed, the significant direct effects of education in these models support a 'human agency' view that education contributes directly to well-being through capability development. Importantly, mediating effects of occupational sector do not 'explain away' the relationship between education and well-being, rather, these mediating effects function alongside significant direct effects in all models.

3.4. *Country-level indirect effects of education on well-being*

We saw that all effects, direct and indirect, are smallest in the Universalist countries. Direct effects for VET education are largest in the Polytechnic countries, while the direct effects of tertiary education are largest in the Conservative countries. This is consistent with prior research suggesting that education is more determinant of outcomes in these highly transparent (Andersen & van de Werfhorst, 2010) and rigid systems (Pfeffer, 2008). Indeed,

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[58] As mentioned in Chapter 6, income is measured in relative deciles by country and measures *household* income. Thus, these findings may have been stronger with a variable measuring absolute, individual income or wages. This is an important area of future research that will require the use of alternative data.

in the Conservative countries, this may be evidence of the increased value of a more scarce good (a classic supply and demand argument) in more selective systems with less democratization of access (Andres & Pechar, 2013).

Nonetheless, in most countries the direct effect of both educational levels is larger than the indirect effects through income or occupational sector. Concerning the mediating effects of income examined in supplementary analyses (see Appendix 4), [59] all effects, direct and indirect, are smallest in the Universalist countries, while indirect effects through income are largest in the Liberalized and Polytechnic groupings for both VET and tertiary education. This is not surprising, considering that post-secondary educational decommodification was also lowest in these two groupings: Income likely plays a stronger role in determining well-being, and the association between education and well-being, where the costs of education are not removed from the market and taken on by the state. However, these preliminary analyses require further study.

The mediating effect of education on well-being through occupational sector was relatively small as compared to the direct effects for most countries. However, occupational sector had a large mediating effect on the relationship between education and well-being in the Polytechnic countries, providing strong support for the critical-institutional and education signalling explanations outlined in Chapter 1 in this "transparent" and highly stratified system (Andersen & van de Werfhorst, 2010). Of particular interest, in Germany, the Czech Republic, and Poland, *only* the indirect effects of tertiary education were significant, and in these countries, as well as Hungary and Slovakia, the mediating effect of occupational sector was greater than that found for income. Thus, indirect effects through occupational sector were largest in the most educationally stratified countries and reflect the policy emphases of

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[59] See the prior footnote describing the limitations of this measure, and thus, these preliminary analyses.

these educational systems: these effects were strongest for VET education in the Polytechnic grouping, and tertiary education in the Conservative grouping.

The sensitivity of these findings was investigated by comparing these relationships across the full spectrum of values on the analytical dimension scales, rather than only the country groupings. When examining the indirect effects of education through occupational sector, a significant relationship between the indirect effects of VET education and post-secondary educational stratification is found. The Polytechnic countries, which exhibit high post-secondary stratification, are juxtaposed with the low stratification and low indirect effects of education through occupational sector shown in the Universalist countries.

When examining the relationship with post-secondary educational decommodification, the indirect effects of VET through occupational sector were again significantly related to scores on this scale. However, the relationship was negative: within those countries exhibiting high decommodification, there are lower indirect effects of VET through occupational sector on individuals' *flourishing*. This, however, may also be due to the strong inverse relationship between stratification and decommodification: a potential limitation of these analyses. Overall, these patterns in the distribution of well-being by educational level, and differences in the predictors of well-being more generally, show that societal arrangements structure individuals' possibilities for achieving a high quality of life in lasting ways.

4. Limitations of the study

4.1. *Empirical limitations*

4.1.1. Data availability

Several factors limit the analyses, including the cross-sectional nature of the data, the type of educational and occupational information available in the ESS, and the limited ability to account for cultural and labour market differences in the analyses. These limitations were discussed in Chapter 5. Future research involving less coarsened educational information would likely deepen insight into how the relationships explored in this study operate within specific national contexts, as described in Chapters 4 and 6. This limitation is common to other research examining educational outcomes and inequalities, which often capture only vertical differences in educational attainment and neglect important forms of "horizontal differentiation", such as "quality and prestige differences between institutions," especially at the post-secondary level (Pfeffer, 2012, p. 18). This is an important area of future research, and has been investigated in terms of economic outcomes for post-secondary graduates (Giret & Goudard, 2007; Goudard & Giret, 2010).

The cross-sectional nature of the data limits this study's ability to make causal conclusions. Due to the fact that the personal well-being module of the ESS was only conducted in 2006 and 2012, and that country participation varied between these two survey waves, it was not possible to employ longitudinal statistical models. Furthermore, in regards to the effects of generation, the variable capturing occupational sector is a measure of occupational status and not social mobility. This does not take into account generational differences in educational attainments, nor individual's aspirations for upward mobility, which can be imagined to impact well-being. These possibilities were tested, and found to be insignificant in these model specifications, as will be discussed in the "Specific sub-groups" section below.

Finally, this study does not fully account for the ways in which cultural differences may influence well-being (Senik, 2014). Rather than directly measuring an absolute level of well-being as informed by the capability approach, country-specific cultural effects and survey response styles may influence the self-reported measures. An additional limitation of this study concerns sample selection bias, as specific countries are chosen for analysis, notably affluent Western states.

4.1.2. Model specifications

The statistical models also contain several inherent limitations. First of all, it was not possible to use multi-level modeling to fully explore country-level effects due to the small sample size of countries (20). However, this limitation was partly addressed through the use of the 'two-step' method to examine country-level relationships with unbiased standard errors, and further tackled through the comparison of preliminary multi-level models that supported the study findings. Secondly, the sample sizes in some categories for some countries were small (for example, the number of individuals with VET in Slovakia), which may have led to less significant and less representative results.

Thirdly, it was not possible to incorporate all potential intervening variables in these models. Some of the association between education and well-being is likely not the effect of knowledge and skills attained in formal education, but rather a result of other ('*third*') variables, such as social capital (different social circles, colleagues, neighbourhoods), cultural capital (different tastes, habits, values), and personality traits (being future-oriented, naturally gifted, dedicated). These are potential biases of self-selection present in nearly all studies incorporating education as a key variable (Grossman, 2005; Triventi, 2013). However it is important to recognize that education may also operate through these intervening variables, *indirectly* affecting well-being.

4.1.3. Specific sub-groups

This research has neglected the differences arising from the influence of gender, race, and class, as well as how these differences might also be impacted by national contexts. In particular, the literature from capability approaches outlined in Chapter 1 suggested that gender differences in the impact of education on well-being need to be more fully explored. Preliminary models examining the impact of education on the well-being measures developed in this study showed that the effects of education were similar in direction and significance between men and women, but that effects of both VET and tertiary education were somewhat *stronger* for women across all three measures (in other words, the coefficients were larger; see Appendix 4). Gender differences in the education-well-being association likely differ by country and might best be investigated with groupings of countries by welfare and labour systems related to gender, as well as educational and labour market characteristics (Mandel & Shalev, 2009; Siaroff, 1994). This is an important area of future research.

Additionally, based on previous research, it seems likely that post-secondary education plays a different role for those who are unemployed versus those who are employed (Becchetti & Pelloni, 2013; Bockerman & Ilmakunnas, 2006; Cole, Daly, & Mak, 2009; Michalos & Orlando, 2006). Post-secondary education may be associated with an improvement in one's job quality, experience of work, social connections at work, and other factors besides simply one's occupational status as measured by occupational sector. For example, the central capability of 'development of potential' may depend more on specific opportunities within the workplace than prior education or occupational sector (Lorenz & Valeyre, 2005; Rasmussen, Lorenz, & Lundvall, 2008). These contextual workplace factors also differ in important ways between countries (Gallie, 2008, 2011; Pullman & Jongbloed, 2017). Despite these possibilities, previous research has supported the contention that educational institutional context exerts independent effects on both adult skills and

occupational outcomes, above and beyond labour market organization (Andersen & van de Werfhorst, 2010; Pfeffer, 2012).

Indeed, when examining models separately for employed and unemployed respondents, it was found that patterns of results were similar across these groups (see Appendix 4). The magnitude and level of significance of effects were less robust, but looking at overall trends across models, this seems likely to be due to the smaller sample size in these models (3,224 respondents). In bivariate models and models with only demographic controls, both levels of post-secondary education are significantly associated with well-being on all three measures. However, in models with both demographic and occupational controls, VET does *not* have a significant impact on well-being for unemployed individuals, while tertiary education has a reduced effect (p=0.10). This may be further evidence for the indirect effects of education through occupation, but the overall trends confirm that education still appears to play a direct role in capability development for those who are not employed. This is consistent with the theoretical framework of the capability approach and its focus on both the intrinsic and extrinsic contributions of education (Verhoeven et al., 2009). This is an important area for future research, in particular in regards to studies of the at-risk group of 'NEET' (not in education, employment or training) individuals (Egdell & Graham, 2017).

Preliminary analyses were also run separately for those who were engaged in full-time and part-time employment to tease out differences in education's impact on well-being under these differing circumstances (see Appendix 4). It was found that, again, results were similar in direction and significance, but that these two groups differed slightly in the magnitude of the education effects. As might be expected, education effects were slightly larger for those who were employed full-time. However, these effects were also significant for those who were only employed part-time (defined here as working less than 40 hours per week). Thus, although the role played by post-secondary education in later well-being for these sub-groups

were not directly explored in this research, preliminary findings suggest that the findings discussed here are more or less consistent across these working status categories. This is consistent with the theoretical assumptions of the study and the fact that education and employment are not perfectly linked: only rarely does schooling map directly onto job requirements (Giret, 2015) in most institutional contexts.

4.1.4. From a capability perspective

Nussbaum's list of central capabilities is a 'perfectionist' account: All capabilities are needed for a fully human life. The capability-informed measure of *flourishing* developed in this thesis is an ordinal scale, where individuals can be compared as having higher or lower levels of each capability in a utilitarian statistical approach. Furthermore, due to the self-reported nature of the survey items, all of the variables are inherently subjective. As explained above, although Nussbaum's philosophical argument necessitates that all ten capabilities must be accessible for a fully human quality of life and well-being, from a pragmatic standpoint, it is also useful to look at to *what degree* people are attaining valued capabilities. Thus, it is also useful to examine who attains a high level or number of capabilities, measured here in a comparative manner, treating the variables as absolute levels of an underlying construct.

Furthermore, because Sen (1999) theorizes well-being as the real opportunity that an individual disposes to choose between different combinations of functionings in the construction of a life that she has reason to value, and argues that subjective accounts of well-being are incomplete, the present study can be critiqued for being both too specific and too subjective from a capability approach. However, as discussed earlier, the use of subjective measures allows one to avoid undue paternalism and the use of specific functionings is necessary in interpersonal comparisons (see Chapter 2; Fleurbaey, 2006; Schokkaert, 2007).

4.2. *Theoretical limitations*

4.2.1. A 'thin' account of education

Both human capital and capability approaches in their most basic forms provide a 'thin' account of education (Walker, 2008). Education, in particular for large comparative studies, is difficult to measure. Measures of education tend to in fact measure educational attainments, or schooling, as was done in this study. These measures are quantified into years of schooling or categorized into educational credential levels, which does not take account of qualitative differences in education. This weakness is not unique to this study, but is important to recognize.

Notably, quality of education, though often neglected, when included is typically incorporated as either labour market outcomes or standardized literacy or numeracy scores. However, depending on the aspect of education one is interested in measuring, these measures of education may also be quite limited, as they simplify the role of education to either preparation for a specific job or the reporting of specific knowledge or skills. Indeed, when 'quality of education' as measured by the average of multiple standardized international test scores (Altinok et al., 2018, 2014) was introduced in country-level regression analyses, it was not significant in predicting either average levels of well-being or the relationship between education and well-being in terms of VET or tertiary education across countries.[60]

In contrast to these skill-based measures of 'quality,' Walker (2008) positions the problems pertaining to simplified notions of education in the fact that they underestimate the "struggle in the formation of learner identities in the face of histories and dominant education norms and values and learning practices permeated by power, history, language and contradiction" (p. 154). This is also recognized in the human capital literature on the non-market benefits of education:

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[60] These analyses are not shown here, but are available on request. Models were run using each of the 'two-step' methods, as well as individual-level regression models with macro-level controls. Effects were insignificant.

> Not all incremental provisions of educational services yield the same impacts. Indeed, any particular type of schooling may have quite different impacts on different types of students. And one suspects that what, in some cases, passes as schooling may well be misplaced, misleading, and a useless drudgery. Efforts to estimate the contribution of schooling… must reflect this heterogeneity. (Haveman & Wolfe, 1984, p. 390)

Schooling differs for individuals between and within countries, regions, cities, schools, and classes – as well as between students of different backgrounds, ethnicities, and even temperaments within each class. Although it was not feasible to consider differences at all of these levels in this study, it is important to consider these potential differences in promoting well-being in terms of both capabilities and non-market effects of education.

Schooling may also inhibit capability-formation, rather than encourage it, for some individuals in some contexts, as argued by Unterhalter (2003) in the case of South Africa. As was emphasized when discussing the theories of Bourdieu and Collins, not all knowledge, skills, and attitudes are valued equally within the context of schooling and later upon entry into the labour market. As Walker (2008) argues:

> We learn in contexts and contexts are socially structured; we learn how to be members of educational communities and how to participate competently. If learning communities recognise only some identities and capitals (cultural and social) then it stands to reason that learning to read such a community, to access its learning resources and codes, and to act appropriately, will be easy for some, difficult to impossible for others. (Walker, 2008, p. 154)

This points again to the importance of considering issues of inequality and structures of discrimination related to gender, race, and immigration-status ('recognitional' elements), as well as more general 'distributional' elements of justice in the ability to live a life that one has reason to value.

4.2.2. 'Black box' causal mechanisms

It has been argued here that there is a *direct* effect between education and well-being; however, it is evident that this relationship must be viewed as a 'black box' comprising a

multitude of mediating effects, as discussed in Chapter 1. Some might argue that this makes the effect too uncertain, but it is important to remember that this is the case with *most* dependent variables in the social sciences (Diewald & Ulrich, 2008). Furthermore, the fact that this study examines the later adult well-being of individuals with various levels of educational attainment does not necessarily pose unique disadvantages as compared to studies of the well-being of students:

> Of course, post-schooling capability measures also entail their own conceptual challenges. In particular, they may appear sensitive to influences from outside of the education system, such as on-the-job learning opportunities or more general societal conditions. Do they therefore provide a less direct indicator for the performance of education systems? First, we remind the reader that literacy and other capabilities are indeed also accumulated outside of formal schooling – but not only by adults but also by students enrolled in schools… In this sense, measures of student capabilities may be no less sensitive to societal influence outside of formal schooling than measures of adult literacy. (Pfeffer, 2012, p. 9)

Thus, while omitted third variables are certainly possible, – and even probable – they are not due solely to the gap in time between the completion of education and the measurement of well-being. This gap certainly makes intervening variables likely, but these are accepted as part of the causal mechanism, rather than an alternative theoretical model.

Indeed, these effects are not clearly separate from the process of education itself. Education is not only the mechanic imparting of information from teacher to student, it is also undeniably a process of socialization, whereby students discover new ways of relating to others, manners of speaking, viewpoints, and countless other ways of being in relation to others and the exterior world at large, outside of the home and family. For the purposes of this study, the rich variety of learning inherent in post-secondary education was reduced to educational credentials and years of education, keeping in mind that the knowledge and skills learned within these educational experiences are not simply occupational knowledge- and skill-related.

4.2.3. Ecological fallacy

A third theoretical limitation necessary to highlight concerns the ecological fallacy of framing micro–macro interactions (Bjørnskov et al., 2008, 2010). Educational welfare regimes should not be understood as simply dominating forces structuring social life, but rather must be framed as interacting with other micro-, meso-, and exo-systems. This includes the many state-specific education system characteristics discussed in Chapter 3, included in the analytical dimensions of post-secondary educational stratification and decommodification, as well as other important characteristics, such as variables related to vocational specificity, horizontal institutional differentiation, locality and school heterogeneity. Additional research is needed to understand how individual elements impact the connection between education and well-being within institutional context, adding to the emerging body of literature on education policy and welfare regimes and their impacts on social well-being.

A related limitation concerns the manner in which countries were grouped and the use of these country groupings within this study. First, it is important to note that use of educational welfare regimes (EWR) in this study as a comparative framework should *not* be considered a Weberian (Weber, 1978/1922) exercise. The use of ideal-types is common in the literature, and aims to constrain interpretation through a comparative framework structuring direct and explanatory understanding, bounding social inquiry, and foregrounding an epistemological stance based on approximations towards ideal-typical constructs (Klant, 1984; Rees, 2013). The deductive, empirical approach employed here, although informed by such typologies, joins individual countries into *imperfect* groupings that differ both within, as well as between, groups.

For this reason, while trends are explored, so are findings across individual countries. Differences within groups, therefore, are to be expected, and 'rules' that apply to all countries within educational welfare regimes are not possible to state without important caveats in all

cases. However, this approach might also be accused of "*natio-centrism*," as it focuses on national political contexts without taking into account the strong impacts of both European and global developments in educational policy, which have important implications at the state level (Malet, 2005). This is a clear limitation of the present research. Thus, the arguments presented here do not claim to capture in their entirety the complex interworking of social actors, the nuances of intricate education systems, nor the multifaceted ways that the education gradient in well-being can be understood.

5.   The view ahead: Implications for future research

Each of these limitations of the present study offers fruitful new avenues for future studies. From a comparative perspective, well-being has been shown to be unequally distributed both within and across countries. However, the potentially significant roles played by other factors, such as qualitative aspects of the organization of educational systems and policies, were not explored here. Rather, the purpose of this study has been to highlight the multiple and complex ways in which education provides access to higher levels of well-being, both eradicating and perpetuating social inequalities, depending on the social context. Indeed, individual-level demographic and occupational variables do *not* offer a complete account of why some individuals report higher well-being than others. Rather, the relationship between education and well-being is dependent upon the ways in which varying educational institutional contexts provide individuals with a variety of capability-building (or impeding) resources and opportunities to create a life that they have reason to value.

5.1. *Conceptualizing well-being as capability development*

The nature and strength of the education-well-being association also necessarily depends on the conceptualization of well-being chosen. As mentioned above, studies examining well-being from the perspective of 'satisfaction with life' alone have found a very weak link with educational attainments (Becchetti & Pelloni, 2013). In Chapter 2, this study hypothesized, based on the capability approach and *eudaimonic* theories of well-being, that a more comprehensive measure of well-being measured as capability-informed *flourishing* would be strongly associated with education, while simple hedonic measures of satisfaction with life (SWL) or subjective well-being (SWB) would not be. These hypotheses were tested empirically and, surprisingly, hedonic measures of well-being were also significantly related to VET and tertiary education in all models. Therefore, this hypothesis (H_5) was not supported. Despite the fact that hedonic measures have been argued to be less comprehensive in their conceptualization of well-being and more prone to cultural bias, as discussed in Chapter 2 and Chapter 5, they do correlate significantly with *eudaimonic* measures and *are* significantly associated with post-secondary education, lending support to a small body of research arguing for this relationship (Clark & Senik, 2011; Jongbloed, 2018; Nikolaev, 2018).

Furthermore, when analyzing these hedonic constructs, all educational welfare regime interaction terms, with the exception of Liberalized regime by VET, were significant, unlike in the *flourishing* models, where only differences by VET in the Polytechnic countries and tertiary in the Liberalized and Conservative countries were significant. Thus, country differences are both more pronounced and more systematic, although this is perhaps related to the potential cultural biases highlighted earlier (Senik, 2014). Therefore, this research does *not* find that hedonic measures of well-being underestimate education effects. Rather, with this data and within this sample of countries, hedonic measures may overestimate country

differences by tapping into manners of self-reporting and not quality of life *per se*. However, these suppositions require further analysis with other datasets and samples.

Adding further complexity, the weak link found in many studies between education and well-being has been explained as a 'side effect' of schooling, as education is meant to broaden our view of world, opening many new possibilities. This creates both higher aspirations and higher comparison points (as ratings of satisfaction are often described as situated at the meeting point between current conditions and expectations). As Wood and Deprez (2012) describe it, "education expands the possibilities for what people value and for various life pathways they might take" allowing "individuals to see alternative ways of being and doing and to develop sufficient agency to pursue lives of value, constantly making 'the horizon of vision wider,'" (Wood & Deprez, 2012, p. 471). These psychological mechanisms were not analyzed in this study; however, these considerations need to be extended into multi-dimensional constructs, such as the measure of *flourishing* used here, which would add further nuance to the findings. This should also be explored in relation to processes of adaptation, whereby individuals habituate to goods or life conditions (positive or negative), as has been highlighted in the capability approach.

Finally, each of these areas should be investigated more specifically in relation to vocational education and training (VET), as most prior research does not compare effects between tertiary and non-tertiary post-secondary education. While some studies have emphasized the positive non-occupational outcomes of VET on individuals (Gendron, 2005a; Winch, 2002), this area deserves much more attention. Indeed, a great deal of important recent research concerning the economic outcomes of VET exists, in particular concerning its (most often positive) implications for integration into the labour market (Béduwé & Giret, 2011; Giret, 2011; Giret et al., 2011) and wages (Béret, 2009; Böckerman et al., 2018).

Future research should fruitfully combine these market and non-market approaches, as is discussed in more depth below.

5.2. *Uniting research into the market and non-market effects of education*

This research refutes a purely individual-agency framework for understanding the association between education and well-being, and presents support for critical-institutional perspectives underlining how occupational 'sorting' may mediate the relationship between education and well-being. Across most countries, the mediating effect of occupational sector is significant, while smaller than direct effects. These results indicate that education may impact well-being through enhancing access to occupational sectors where individuals' capacities to achieve a high quality of life are improved. In most countries, these occupational mediating effects exist alongside a smaller mediating effect of income and a remaining direct effect between education and well-being. This evidence suggests that a combined human capital-capability line of reasoning for the mechanism of causality is plausible in many countries, as education is – in most cases – directly linked to well-being in these contexts. However, this direct effect does not completely explain the relationship between education and well-being. Rather, education effects function in tandem with indirect effects through occupational sorting. Future studies should attempt to further grapple with the complexities of the education-work nexus in determining individual well-being in comparative perspective.

For example, an important avenue for future research is to attempt to take into account the 'signalling effects' of credentials in order to examine whether degree inflation has a moderating effect on the relationship between education and well-being (Jarousse & Mingat, 1986, 1992). There are logical arguments both for why it is advantageous for an individual to be part of a generation that is more highly educated – because they have a larger number of people to interact with socially and with whom to exchange and share cultural

experiences – and for why it is disadvantageous. Indeed, if education is a positional good, or signal, and there is larger proportion of the population who has this same good, the value will decrease (Giret & Lemistre, 2004). These effects may also interact with effects of intergenerational social mobility at the individual level (Fabre & Moullet, 2004). This type of analysis will require longitudinal, rather than cross-sectional, data that examine several cohorts across time.

5.3. *Framing education effects in comparative context*

The final key research finding that should inform future research is that educational and well-being outcomes are dependent on both country and 'educational welfare regime' contexts. Both overall levels of well-being and the dispersion in well-being scores provide insight into country and regime differences in the direct and indirect relationships between education and well-being. First, the direct influence of post-secondary education and the mediating effects of occupational sector are smaller in countries with higher overall levels of well-being. Second, the greater the general 'well-being inequality' within a country, the larger the effects of education on well-being. These correlational relationships suggest that the association between education and well-being is relative, based on both the distribution of well-being within a country and the overall average.

There are several important macro-social institutional factors that have been argued to influence well-being, including overall welfare state spending (Pacek & Radcliff, 2008) and overall levels of inequality (Ono & Lee, 2013). These effects received only limited support in the present research. Tapping more specifically into the social conditions in terms of educational system characteristics and outcomes that determine individual life chances, there was a positive relationship between educational stratification and variation in well-being scores, suggesting that inequalities in well-being co-occur with higher educational

inequalities. Viewed from a more positive standpoint, equitable access to education functions like a rising tide that lifts all boats (Ovaska & Takashima, 2010); that is, the power of educational categories diminishes and become less of a stratifying force when well-being is higher overall. Thus, the direct and indirect relationships between education and well-being appear to be relative to levels of *social*, rather than economic, inequality among individuals within a country.

These findings are (for the most part) consistent with the bulk of the literature focusing on inequalities in various welfare state regimes. Indeed, these regimes are argued to redistribute valued outcomes from the most advantaged to the least advantaged groups, resulting in an overall equalization in outcomes (Gainer, 2013; Ono & Lee, 2013). Furthermore, universalist-type approaches have been found to more effective than other policy types in promoting equality (Korpi & Palme, 1998), while, in contrast, "highly differentiated education systems are marked by significantly less equality than education systems with a low degree of differentiation" (Pfeffer, 2012, p. 22).

The results shown here suggest that there this indeed an equalization in outcomes in the Universalist countries – *without* a concurrent decrease in average levels of well-being. This refutes prior results suggesting the opposite using life satisfaction as the operationalization of well-being (Veenhoven, 2000). Furthermore, we see that this is true not only for *eudaimonic* conceptualizations of well-being, as was proposed at the beginning of this study, but also for hedonic conceptualizations of well-being as well. Indeed, these effects might be interpreted as being even more apparent with these measures. Both the Liberalized and Polytechnic countries stand out with the most significant education gradients in well-being when well-being is conceptualized from a hedonic standpoint.

This study challenged the assumption that the relationship between education and well-being can be theorized as universal; rather, the educational institutional contexts specific

to welfare production regimes have been shown to shape the effect of education on well-being in unique ways. These findings align with those of Peter, Edgerton, and Roberts (2010), who found lesser degrees of educational inequality in terms of skills outcomes in social-democratic welfare states than in conservative welfare states, and, in an even more striking and perhaps surprising finding, greater educational inequalities in conservative welfare states than in liberal welfare states. The authors made sense of this finding based on the particularities of the types of educational systems that exist in conservative welfare regimes, which are "typically more differentiated" and exhibit "explicit between-school tracking", which have both been linked to greater inequalities in the literature (p. 257). These qualities also apply to the Polytechnic countries, highlighted in this study as the least equitable in terms of well-being outcomes.

Thus, the present study confirms and extends these conclusions: In this case, the Polytechnic countries present themselves as a unique case, and the greater inequalities in education found in these contexts are also seen to impact well-being later in life. This leads to greater inequalities in well-being by educational attainments. On one hand, such a finding indicates the power of education to impact individual well-being; however, as discussed above, given that education involves the stratified allocation of public and private provisions, such a finding also illustrates that education has the power to unequally distribute well-being within society, regardless of income, health, gender, age, and marital and employment status.

Surprisingly, this study finds that the relationship between well-being and education is not significantly different between Universalist, Liberalized, and Conservative educational welfare regimes when well-being is operationalized as *flourishing*.[61] Indeed, strikingly similar relationships are found between these educational welfare regimes, despite the greater income and health inequalities found in Liberalized and Conservative countries. These

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[61] However, significant differences are found between all regimes when well-being is operationalized as satisfaction with life or subjective well-being.

findings question to what extent overall welfare state decommodification plays a role in the connection between education and well-being, especially as education is often presented as an individualized strategy to gain social protection through employment within liberal welfare states (Pullman & Andres, 2015). However, there is a need to disentangle this further in future research, in particular comparing various operationalizations of well-being.

6.   General conclusion: Education systems, well-being systems

As this research has highlighted, institutional educational welfare regime arrangements shape not only economic and social attributes but also personal and social well-being and the equilibrium between individual and social gain. As Esping-Andersen writes,

> …welfare states may be equally large or comprehensive, but with entirely different effects on social structure. One may cultivate hierarchy and status, another dualism, and a third universalism. Each case will produce its own unique fabric of social solidarity" (Esping-Andersen, 1990, p. 58).

Indeed, education may serve to augment social tensions and social divides in terms of well-being within a society, or it may act as a promoter of social cohesion. As underscored by prior research, "education has a strong direct effect in reducing happiness inequality," which has been shown to be rising over time, and provides resources for individuals to avoid falling into a 'low well-being trap' through its effect on multiple central capabilities, which are often referred to in the economic literature as non-market effects (Becchetti et al., 2010, p. 21).

Both post-secondary educational stratification and decommodification were found to be determinant of the levels and distribution of well-being across countries. These findings offer some support for the notion that equalizing, or non-stratifying, educational systems, as well as decommodifying redistribution efforts, are instrumental in the effort to counter inequalities in well-being (Jongbloed & Pullman, 2016). Although those who are highly educated, have high occupational status positions, and possess higher incomes may benefit

from increased well-being across welfare regimes, the capacity of a welfare state to lessen the unequal allotment of educational opportunities and privileges is integral to understanding social inequality from a non-material standpoint as well as from traditional inequality approaches.

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Appendices

1. Appendix 1

These tables summarize the raw country educational characteristics data used in Chapter 4.

Table 54. *Country (raw) values for variables related to post-secondary educational stratification*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
First Age of Selection	16.00	15.00	16.00	15.00	16.00	12.00	12.00	12.00	15.00	14.00
Number of Secondary Programs	1.00	1.00	1.00	4.00	1.00	4.00	4.00	7.00	3.00	3.00
Vertical Stratification	-0.64	-0.54	-1.44	0.28	0.75	1.00	1.15	0.54	0.93	-0.52
Horizontal Stratification Between Schools	-0.73	-0.66	-0.81	-0.40	-0.93	0.82	0.53	1.22	-0.03	0.49
Horizontal Stratification Within Schools	1.82	-0.42	0.26	1.61	0.93	-0.78	0.63	1.32	-0.62	-1.76
Enrolment in Tertiary (ratio 18-25 year olds)	59.22	72.10	72.85	67.64	85.55	71.24	55.50	78.50	59.99	86.32
Percentage with Tertiary Credentials	36.95	36.04	21.79	31.80	26.94	30.42	34.95	29.28	25.95	23.67
Proportion Population with Tertiary (25-34 year olds)	46.91	39.00	39.21	47.20	39.16	42.46	39.81	39.78	43.01	33.82
Enrolment in VET (% 18-25 year olds)	52.03	38.18	54.94	46.25	40.22	37.47	38.89	49.06	40.23	51.52
Percentage with VET Credentials	37.00	32.80	23.40	11.10	8.00	25.00	38.90	33.50	30.30	70.00
PSE Stratification Scale	-1.22	-0.54	-1.06	-0.73	-0.82	0.54	0.57	0.26	0.29	0.25

Source: OECD, 2005-2011

	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
First Age of Selection	16.00	16.00	16.00	16.00	16.00	10.00	11.00	11.00	14.00	11.00
Number of Secondary Programs	1.00	1.00	1.00	1.00	1.00	4.00	6.00	3.00	4.00	5.00
Vertical Stratification	-0.22	-0.59	-0.88	-0.49	-1.23	0.43	-0.13	0.17	-0.06	0.05
Horizontal Stratification Between Schools	-0.87	-0.98	-0.95	-0.88	-0.84	0.52	1.00	0.73	0.78	0.80
Horizontal Stratification Within Schools	-1.07	-1.06	-0.77	1.45	0.78	0.06	-1.55	0.73	-0.46	-0.12
Enrolment in Tertiary (ratio 18-25 year olds)	79.25	93.28	73.25	69.62	82.23	61.06	65.86	59.80	65.03	56.05
Percentage with Tertiary Credentials	32.29	33.07	32.23	29.90	35.00	25.62	17.34	21.01	12.75	17.17
Proportion Population with Tertiary (25-34 year olds)	38.58	39.38	46.81	42.87	39.37	27.67	25.12	28.11	20.98	25.67
Enrolment in VET (% 18-25 year olds)	46.02	45.04	52.46	45.89	45.88	31.94	38.01	35.72	32.74	37.55
Percentage with VET Credentials	34.90	38.70	31.90	31.20	23.10	56.20	71.20	52.40	30.90	75.00
PSE Stratification Scale	-0.66	-0.93	-1.09	-0.99	-1.32	1.28	1.72	1.03	1.16	1.61

Source: OECD, 2005-2011

Table 55. *Country (raw) values for variables related to post-secondary educational decommodification*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
Exp. Education (% total exp.)	12.00	14.00	11.41	9.75	10.86	12.47	15.83	11.65	10.37	11.36
Public Exp. Education (% GDP)	5.63	6.09	5.10	6.50	5.01	6.57	5.55	5.94	5.89	5.70
Total Exp. Tertiary Education ($)	44.94	32.35	44.25	39.04	42.36	40.07	44.71	41.17	43.81	36.37
Public Exp. Tertiary Education (% GDP)	1.30	1.59	1.51	1.63	1.31	1.46	1.28	1.68	1.51	1.30
Public Exp. Tertiary Education (% total)	29.62	80.17	69.74	83.79	79.09	89.74	91.80	71.96	83.05	85.07
Average Tuition, Tertiary Education ($)	5402.00	3527.00	0.00	6450.00	1129.00	653.00	863.00	1966.00	801.00	0.00
Private Exp. Tertiary Education (% total)	31.40	7.00	13.80	7.50	14.60	5.20	8.20	16.70	10.20	11.60
Exp. Tertiary Education as Loans (% total)	37.54	10.35	1.36	13.25	9.21	13.39	2.08	27.05	7.36	22.06
Household Exp. Tertiary Education (% total)	58.07	18.20	22.78	13.80	16.78	5.48	8.20	14.93	9.70	10.77
Annual Exp. per student, Tertiary Education ($)	47.38	32.20	41.12	41.31	42.35	42.08	32.16	43.44	43.42	34.30
PSE Decommodification Scale	-0.94	-0.21	-0.26	-0.22	-0.26	0.33	0.10	0.04	0.05	-0.07

Source: OECD, 2005-2011

	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
Exp. Education (% total exp.)	15.28	12.26	15.23	13.37	14.74	10.30	9.67	9.82	8.93	10.56
Public Exp. Education (% GDP)	8.72	6.78	7.32	7.29	7.81	5.06	4.38	5.12	4.67	4.08
Total Exp. Tertiary Education ($)	46.74	46.39	41.30	49.84	24.58	39.85	30.10	42.40	29.83	29.77
Public Exp. Tertiary Education (% GDP)	1.89	1.89	1.38	1.78	1.30	1.28	1.26	0.97	0.99	0.95
Public Exp. Tertiary Education (% total)	95.43	95.77	96.10	89.79	92.01	84.39	79.92	80.00	68.57	70.04
Average Tuition, Tertiary Education ($)	0.00	0.00	0.00	0.00	0.00	1210.00	0.00	0.00	1407.00	0.00
Private Exp. Tertiary Education (% total)	5.50	2.40	5.00	2.50	9.60	14.60	12.30	20.00	9.90	15.80
Exp. Tertiary Education as Loans (% total)	27.15	15.43	40.34	24.94	24.93	20.74	2.83	14.32	22.01	19.87
Household Exp. Tertiary Education (% total)	4.60	2.40	3.03	2.50	7.35	14.60	8.77	20.00	23.81	11.66
Annual Exp. per student, Tertiary Education ($)	48.45	46.22	35.22	53.67	27.07	43.58	48.45	42.26	29.51	29.88
PSE Decommodification Scale	1.18	0.80	0.77	1.05	0.13	-0.16	-0.38	-0.42	-0.81	-0.72

Source: OECD, 2005-2011

2.   Appendix 2

These tables and figures include the correlations between well-being items and scales, as well as the raw average scores on well-being items and scales by educational category and educational welfare regime, as referred to in Chapter 5.

Table 56. *Correlations between dependent well-being variables*

	Flourishing	*Psycho-social well-being*	*Thriving*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Number of central capabilities	Satisfaction with life (SWL)	Subjective well-being
Capability-informed *flourishing*	1.00															
Psycho-social well-being	0.85***	1.00														
Thriving	0.86***	0.47***	1.00													
1. Physical health	0.43***	0.44***	0.28***	1.00												
2. Security	0.70***	0.40***	0.70***	0.21***	1.00											
3. Development of potential	0.45***	0.20***	0.62***	0.18***	0.21***	1.00										
4. Emotional well-being	0.62***	0.81***	0.31***	0.24***	0.28***	0.11***	1.00									
5. Personal autonomy	0.46***	0.29***	0.52***	0.16***	0.22***	0.14***	0.20***	1.00								
6. Positive relationships	0.55***	0.74***	0.27***	0.18***	0.22***	0.11***	0.50***	0.15***	1.00							
7. Dignity	0.44***	0.22***	0.60***	0.12***	0.19***	0.28***	0.14***	0.18***	0.15***	1.00						
8. Play	0.61***	0.64***	0.37***	0.23***	0.29***	0.16***	0.37***	0.30***	0.28***	0.15***	1.00					
9. Accomplishment	0.51***	0.32***	0.59***	0.16***	0.24***	0.24***	0.24***	0.31***	0.19***	0.19***	0.28***	1.00				
10. Resilience	0.58***	0.56***	0.36***	0.20***	0.35***	0.19***	0.28***	0.16***	0.26***	0.17***	0.25***	0.19***	1.00			
Number of central capabilities	0.91***	0.79***	0.77***	0.44***	0.54***	0.44***	0.57***	0.45***	0.51***	0.44***	0.57***	0.49***	0.54***	1.00		
Satisfaction with life (SWL)	0.52***	0.46***	0.42***	0.29***	0.32***	0.18***	0.34***	0.26***	0.31***	0.24***	0.35***	0.30***	0.26***	0.49***	1.00	
Subjective well-being (SWB)	0.60***	0.56***	0.47***	0.31***	0.35***	0.22***	0.43***	0.29***	0.38***	0.27***	0.41***	0.33***	0.29***	0.57***	0.93***	1.00

Source: ESS6-2012 (Edition 2.3)

Note: This table shows the Pearson product-moment correlation coefficients of raw scores computed using design weights in combination with population size weights.

Table 57. *Levels of well-being (raw) scores by EWR*

	Universalist			Liberalized			Conservative			Polytechnic		
	Secondary or less	*VET*	*Tertiary*	*Secondary or less*	*VET*	*Tertiary*	*Secondary or less*	*VET*	*Tertiary*	*Secondary or less*	*VET*	*Tertiary*
Capability-informed flourishing	7.16	7.30	7.41	6.64	6.87	7.09	6.81	7.06	7.18	6.41	6.74	6.95
	(0.88)	(0.78)	(0.75)	(1.07)	(1.03)	(0.91)	(1.00)	(0.80)	(0.79)	(1.08)	(1.01)	(0.93)
Psycho-social well-being	5.50	5.60	5.62	5.12	5.28	5.41	5.23	5.41	5.50	5.00	5.18	5.29
	(0.71)	(0.63)	(0.60)	(0.88)	(0.80)	(0.72)	(0.85)	(0.70)	(0.65)	(0.85)	(0.80)	(0.75)
Thriving	8.73	8.87	9.15	8.09	8.36	8.71	8.35	8.64	8.79	7.72	8.24	8.61
	(1.23)	(1.13)	(1.06)	(1.55)	(1.53)	(1.33)	(1.38)	(1.15)	(1.12)	(1.63)	(1.49)	(1.35)
Subjective general health	3.92	4.11	4.26	3.75	3.97	4.07	3.78	4.04	4.15	3.68	3.79	4.03
	(0.88)	(0.80)	(0.74)	(0.91)	(0.86)	(0.79)	(0.86)	(0.77)	(0.71)	(0.85)	(0.85)	(0.80)
Deal with important problems in life	6.55	6.69	6.76	5.81	6.15	6.41	5.81	6.02	6.23	5.28	5.79	5.97
	(1.84)	(1.72)	(1.65)	(2.13)	(1.98)	(1.83)	(1.98)	(1.80)	(1.77)	(2.14)	(2.06)	(1.91)
Learn new things in life	4.36	4.58	4.84	3.99	4.24	4.69	4.22	4.55	4.71	3.80	4.27	4.71
	(1.09)	(0.97)	(0.90)	(1.50)	(1.41)	(1.16)	(1.27)	(1.07)	(0.99)	(1.54)	(1.28)	(1.18)
Felt sad, how often past week	3.67	3.70	3.67	3.37	3.44	3.50	3.43	3.51	3.57	3.30	3.43	3.48
	(0.58)	(0.54)	(0.53)	(0.74)	(0.65)	(0.63)	(0.69)	(0.60)	(0.57)	(0.72)	(0.66)	(0.64)
Free to decide how to live my life	4.14	4.11	4.18	3.95	3.95	4.04	4.14	4.18	4.17	3.81	3.85	3.99
	(0.82)	(0.82)	(0.79)	(0.90)	(0.92)	(0.87)	(0.87)	(0.80)	(0.79)	(0.96)	(0.93)	(0.85)
Felt lonely, how often past week	3.74	3.79	3.81	3.55	3.64	3.71	3.59	3.66	3.72	3.46	3.56	3.60
	(0.57)	(0.49)	(0.46)	(0.74)	(0.64)	(0.58)	(0.74)	(0.62)	(0.57)	(0.78)	(0.70)	(0.68)
Feel people treat you with respect	4.58	4.60	4.88	4.38	4.47	4.59	4.45	4.57	4.69	4.08	4.34	4.52
	(0.96)	(0.91)	(0.79)	(1.28)	(1.18)	(1.04)	(1.21)	(0.98)	(0.88)	(1.32)	(1.21)	(1.08)
Enjoyed life, how often past week	3.05	3.07	3.08	2.87	2.95	3.04	3.05	3.13	3.15	2.69	2.77	2.85
	(0.81)	(0.78)	(0.75)	(0.87)	(0.84)	(0.78)	(0.81)	(0.75)	(0.74)	(0.89)	(0.87)	(0.85)
Feel accomplishment from what I do	3.94	3.98	4.06	3.65	3.73	3.78	3.84	3.93	3.88	3.70	3.85	3.95
	(0.73)	(0.67)	(0.66)	(0.89)	(0.89)	(0.79)	(0.81)	(0.69)	(0.71)	(0.88)	(0.79)	(0.78)
When things go wrong in my life it takes a long time to get back to normal	3.65	3.78	3.82	3.23	3.42	3.58	3.32	3.55	3.64	3.29	3.46	3.58
	(0.94)	(0.91)	(0.87)	(1.06)	(0.99)	(0.93)	(1.13)	(1.05)	(0.94)	(1.06)	(1.01)	(0.95)
Observations	2370	928	1796	4147	1160	1861	3285	765	1419	4364	777	1340

Source: ESS6-2012 (Edition 2.3)

Note: Means and standard deviations (in parentheses) of raw scores were computed using design weights in combination with population size weights.

3. Appendix 3

These tables and figures correspond to explanations of analyses outlined in the text of Chapter 6, but not shown due to space constraints. In particular, individual well-being items and educational system characteristics indicators are explored in sensitivity checks of the composite scale measures employed in the core analyses.

Table 58. *Reporting a high level of flourishing regressed on educational variables*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	1.49***	1.30**	1.20*	1.47**	1.25*	1.19	1.40**	1.33**	1.25*
	(0.15)	(0.11)	(0.11)	(0.18)	(0.12)	(0.12)	(0.14)	(0.12)	(0.11)
Tertiary	1.81***	1.46***	1.25*	1.60***	1.24***	1.16**	1.71***	1.56***	1.34*
	(0.15)	(0.11)	(0.14)	(0.10)	(0.05)	(0.06)	(0.16)	(0.13)	(0.15)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.36***	0.22***	0.23***	0.45***	0.26***	0.28***	0.39***	0.31***	0.28***
	(0.04)	(0.02)	(0.03)	(0.06)	(0.02)	(0.03)	(0.02)	(0.01)	(0.03)
Observations	23448	23173	23173	23828	23538	23538	23733	23440	23440

Source: ESS Wave 6 (Version 2.3)

Note: Exponentiated coefficients. Robust standard errors in parentheses. The coefficients are thus interpreted as changes in the odds of reporting a high level of well-being on each measure. For example, those with VET in Model 3 are more likely to report a high level of *flourishing* than those with secondary education or less ($p<0.05$). More specifically, those with VET have 20% higher odds of reporting a high level of *flourishing* as compared to those with secondary education or less. For those with tertiary education, as compared to those with secondary education or less, the corresponding difference in odds is 25%.

$^+ p < 0.10,$ $^* p < 0.05,$ $^{**} p < 0.01,$ $^{***} p < 0.001$

Table 59. *Psycho-social well-being items regressed on educational and EWR variables*

	Health			Emotional well-being			Positive relationships			Play			Resilience		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**	**Model 15**
Secondary or less							*reference category*								
VET	0.23***	0.12***	0.08**	0.13**	0.07+	0.04	0.16***	0.10***	0.08**	0.15**	0.09*	0.07+	0.23***	0.17***	0.11***
	(0.03)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.05)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)
Tertiary	0.42***	0.23***	0.17***	0.15***	0.05*	0.02	0.16***	0.07*	0.04*	0.15***	0.04	0.02	0.27***	0.17***	0.08***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)
Universalist							*reference category*								
Liberalized	-0.21+	-0.20+	-0.18+	-0.35***	-0.32***	-0.31***	-0.15**	-0.15*	-0.14*	-0.12	-0.09	-0.09	-0.31***	-0.28***	-0.28***
	(0.10)	(0.11)	(0.09)	(0.08)	(0.08)	(0.07)	(0.05)	(0.05)	(0.05)	(0.11)	(0.11)	(0.11)	(0.06)	(0.06)	(0.05)
Conservative	-0.19**	-0.18**	-0.17**	-0.31***	-0.29***	-0.29***	-0.23*	-0.23**	-0.23**	0.13	0.15	0.15	-0.27***	-0.25***	-0.26***
	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)	(0.06)	(0.09)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.05)	(0.05)	(0.05)
Polytechnic	-0.34***	-0.32***	-0.32***	-0.33*	-0.30*	-0.29*	-0.22*	-0.19*	-0.19*	-0.39*	-0.36*	-0.36*	-0.25**	-0.22**	-0.22**
	(0.08)	(0.08)	(0.07)	(0.12)	(0.11)	(0.11)	(0.11)	(0.09)	(0.09)	(0.14)	(0.13)	(0.13)	(0.07)	(0.07)	(0.07)
Controls		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.
Intercept	0.12*	0.18**	0.27***	0.26***	-0.09	-0.05	0.13**	-0.30***	-0.25**	0.11	-0.05	-0.04	0.17***	-0.10	-0.08
	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.07)	(0.04)	(0.06)	(0.07)	(0.08)	(0.09)	(0.09)	(0.04)	(0.06)	(0.08)
Observations	24178	23866	23866	24108	23802	23802	24116	23811	23811	24067	23765	23765	24077	23773	23773
R^2	0.04	0.12	0.15	0.01	0.06	0.07	0.01	0.06	0.07	0.05	0.07	0.08	0.02	0.05	0.06
Adjusted R^2	0.04	0.12	0.15	0.01	0.05	0.07	0.01	0.06	0.07	0.05	0.07	0.07	0.02	0.05	0.06

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in each item for each independent variable as compared to the reference category for that item. For example, those with tertiary post-secondary education report a level of health that is 0.17 SD higher than those with secondary education or less in the final model with all controls. As well, those in all EWR other than the Universalist countries report significantly lower health than those in the Universalist countries.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 60. *Thriving items regressed on educational and EWR variables*

	Security			Development of potential			Personal autonomy			Dignity			Accomplishment		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**	**Model 15**
Secondary or less							*reference category*								
VET	0.21***	0.16**	0.11*	0.24***	0.21***	0.13***	-0.00	-0.04	-0.03	0.07	0.07	0.04	0.07	0.05	0.03
	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.06)	(0.05)	(0.04)
Tertiary	0.24***	0.15***	0.10*	0.43***	0.38***	0.21***	0.04	-0.03	-0.02	0.18**	0.18***	0.13**	0.08	0.04	-0.02
	(0.02)	(0.03)	(0.03)	(0.06)	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.03)
Universalist							*reference category*								
Liberalized	-0.20	-0.15	-0.15	-0.14	-0.15	-0.12	-0.21+	-0.18	-0.18+	-0.16	-0.15	-0.14	-0.37**	-0.35**	-0.34***
	(0.18)	(0.17)	(0.17)	(0.11)	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)	(0.16)	(0.16)	(0.16)	(0.10)	(0.09)	(0.08)
Conservative	-0.39**	-0.36**	-0.37**	-0.04	-0.05	-0.03	0.07	0.10	0.10	-0.15	-0.14	-0.14	-0.14+	-0.12	-0.12
	(0.11)	(0.10)	(0.10)	(0.08)	(0.08)	(0.08)	(0.06)	(0.07)	(0.07)	(0.10)	(0.10)	(0.09)	(0.07)	(0.07)	(0.07)
Polytechnic	-0.44**	-0.39**	-0.39**	-0.09	-0.09	-0.07	-0.21**	-0.18*	-0.19*	-0.15	-0.13	-0.13	-0.13	-0.12	-0.11
	(0.13)	(0.11)	(0.11)	(0.12)	(0.12)	(0.11)	(0.07)	(0.07)	(0.07)	(0.11)	(0.11)	(0.11)	(0.10)	(0.09)	(0.09)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.24**	-0.02	-0.03	-0.04	0.05	-0.08	0.12*	0.15+	0.17+	0.09	-0.08	-0.13	0.18*	-0.06	0.03
	(0.07)	(0.08)	(0.10)	(0.08)	(0.09)	(0.11)	(0.06)	(0.08)	(0.09)	(0.09)	(0.11)	(0.12)	(0.07)	(0.07)	(0.09)
Observations	24115	23807	23807	24095	23792	23792	24160	23852	23852	23986	23680	23680	24102	23793	23793
R^2	0.03	0.06	0.07	0.03	0.05	0.07	0.01	0.02	0.03	0.01	0.02	0.02	0.02	0.03	0.05
Adjusted R^2	0.03	0.05	0.07	0.03	0.05	0.07	0.01	0.02	0.03	0.01	0.02	0.02	0.02	0.03	0.05

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in each item for each independent variable as compared to the reference category for that item. For example, those with tertiary post-secondary education report a level of security that is 0.10 SD higher than those with secondary education or less in the final model with all controls.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
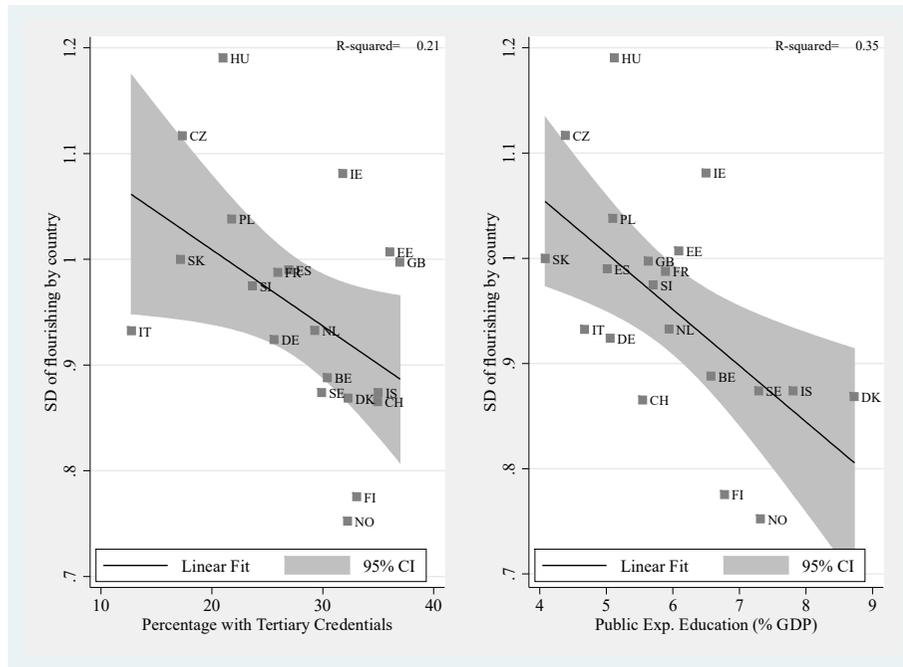
Figure 108. Standard deviations of *flourishing* regressed on overall levels of educational attainment and overall levels of public spending on education within countries.

Note: These scatterplots show country measures of well-being dispersion plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this dispersion that is explained by the analytical taxonomy items.
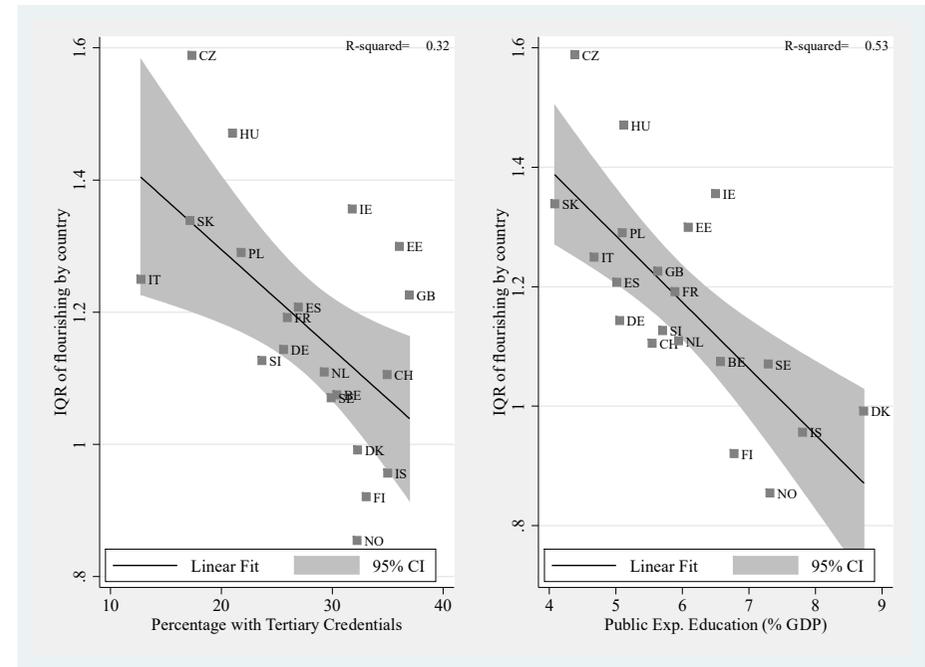
Figure 109. Inter-quartile ranges of *flourishing* regressed on overall levels of educational attainment and overall levels of public spending on education within countries.

Note: These scatterplots show country measures of well-being dispersion plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this dispersion that is explained by the analytical taxonomy items.

Table 61. *Flourishing scale regressed on educational variables in Universalist EWR countries*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	reference category								
VET	0.13*	0.08	0.04	0.14+	0.09	0.05	0.09+	0.05	0.01
	(0.05)	(0.06)	(0.06)	(0.05)	(0.06)	(0.05)	(0.04)	(0.04)	(0.05)
Tertiary	0.24**	0.17*	0.09	0.15*	0.08	0.03	0.29**	0.24*	0.15+
	(0.04)	(0.06)	(0.05)	(0.04)	(0.06)	(0.03)	(0.05)	(0.05)	(0.06)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	0.27*	-0.02	0.06	0.25*	-0.07	0.09	0.22*	0.04	-0.01
	(0.09)	(0.18)	(0.10)	(0.08)	(0.16)	(0.08)	(0.08)	(0.18)	(0.11)
Observations	5030	4998	4998	5065	5033	5033	5050	5017	5017
R^2	0.02	0.06	0.11	0.01	0.05	0.10	0.02	0.05	0.09
Adjusted R^2	0.02	0.06	0.10	0.01	0.05	0.09	0.02	0.05	0.08

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* and its sub-components for each independent variable as compared to the reference category for that variable. For example, those with tertiary post-secondary education report a level of *thriving* that is 0.15 SD higher than those with secondary education or less in the final model with all controls.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 62. *Flourishing scales regressed on educational variables in Liberalized EWR countries*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.24*	0.17*	0.12$^+$	0.21$^+$	0.12	0.07	0.20	0.16	0.12
	(0.05)	(0.04)	(0.05)	(0.09)	(0.08)	(0.06)	(0.10)	(0.09)	(0.10)
Tertiary	0.40**	0.24**	0.14	0.33***	0.15*	0.08*	0.36*	0.27*	0.18
	(0.05)	(0.03)	(0.07)	(0.02)	(0.04)	(0.02)	(0.10)	(0.09)	(0.12)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.18	-0.47**	-0.42*	-0.17	-0.53**	-0.48*	-0.14**	-0.28***	-0.24*
	(0.09)	(0.07)	(0.14)	(0.11)	(0.08)	(0.15)	(0.02)	(0.02)	(0.07)
Observations	6895	6833	6833	7059	6990	6990	6972	6907	6907
R^2	0.03	0.10	0.13	0.02	0.10	0.12	0.03	0.05	0.08
Adjusted R^2	0.03	0.10	0.13	0.02	0.10	0.12	0.03	0.05	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* and its sub-components for each independent variable as compared to the reference category for that variable. For example, those with tertiary post-secondary education report a level of *psycho-social well-being* that is 0.08 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 63. *Flourishing scales regressed on educational variables in Conservative EWR countries*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.21***	0.14**	0.10**	0.23***	0.13**	0.09*	0.13**	0.10**	0.07*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Tertiary	0.34***	0.24***	0.17**	0.35***	0.22***	0.16***	0.22*	0.18*	0.11
	(0.03)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.07)	(0.06)	(0.05)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.09	-0.51***	-0.33***	-0.10	-0.64**	-0.43**	-0.03	-0.23**	-0.13*
	(0.05)	(0.04)	(0.03)	(0.07)	(0.09)	(0.06)	(0.02)	(0.04)	(0.04)
Observations	5400	5366	5366	5440	5406	5406	5423	5389	5389
R^2	0.02	0.07	0.11	0.02	0.11	0.14	0.01	0.02	0.05
Adjusted R^2	0.02	0.07	0.11	0.02	0.11	0.14	0.01	0.02	0.05

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* and its sub-components for each independent variable as compared to the reference category for that variable. For example, those with tertiary post-secondary education report a level of *psycho-social well-being* that is 0.16 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10,$ $^* p < 0.05,$ $^{**} p < 0.01,$ $^{***} p < 0.001$

Table 64. *Flourishing scales regressed on educational variables in Polytechnic EWR countries*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.37***	0.27**	0.18*	0.33*	0.21*	0.15	0.30*	0.24*	0.15*
	(0.04)	(0.04)	(0.05)	(0.08)	(0.06)	(0.07)	(0.08)	(0.07)	(0.05)
Tertiary	0.35**	0.19+	0.09	0.25**	0.09	0.04	0.36*	0.26*	0.12+
	(0.06)	(0.07)	(0.05)	(0.05)	(0.05)	(0.03)	(0.08)	(0.08)	(0.05)
Controls		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*		*demo.*	*demo. & occup.*
Intercept	-0.28+	-0.57**	-0.70**	-0.27	-0.61**	-0.64**	-0.17	-0.36**	-0.58**
	(0.12)	(0.09)	(0.10)	(0.14)	(0.09)	(0.13)	(0.08)	(0.06)	(0.09)
Observations	6123	5976	5976	6264	6109	6109	6288	6127	6127
R^2	0.03	0.08	0.12	0.02	0.09	0.11	0.02	0.04	0.07
Adjusted R^2	0.03	0.08	0.12	0.02	0.09	0.11	0.02	0.04	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variables are standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* and its sub-components for each independent variable as compared to the reference category for that variable. For example, those with VET report a level of *thriving* that is 0.15 SD higher than those with secondary education or less in the final model with all controls.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 65. *Psycho-social well-being items regressed on educational and EWR variables with interactions*

	Health			Emotional well-being			Positive relationships			Play			Resilience		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**	**Model 15**
Secondary or less	*reference category*														
VET	0.22***	0.17***	0.13**	0.05	0.01	-0.01	0.10**	0.05	0.03	0.05	0.01	-0.00	0.10**	0.06	0.01
	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)
Tertiary	0.40***	0.25***	0.19***	0.00	-0.05	-0.09**	0.11***	0.04	0.00	0.03	-0.04	-0.06	0.14***	0.06**	-0.03
	(0.01)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)	(0.06)	(0.02)	(0.02)	(0.03)
Universalist	*reference category*														
Liberalized	-0.21*	-0.18+	-0.16+	-0.40***	-0.36**	-0.35**	-0.19*	-0.17*	-0.17*	-0.17	-0.13	-0.13	-0.38***	-0.34***	-0.33***
	(0.09)	(0.09)	(0.08)	(0.10)	(0.10)	(0.09)	(0.07)	(0.07)	(0.07)	(0.13)	(0.13)	(0.13)	(0.07)	(0.07)	(0.06)
Conservative	-0.22**	-0.18**	-0.17**	-0.36***	-0.32***	-0.33***	-0.26*	-0.25**	-0.25**	0.09	0.13	0.13	-0.36***	-0.32***	-0.33***
	(0.07)	(0.06)	(0.05)	(0.07)	(0.07)	(0.07)	(0.09)	(0.08)	(0.08)	(0.10)	(0.11)	(0.11)	(0.06)	(0.06)	(0.05)
Polytechnic	-0.33***	-0.30**	-0.30**	-0.40**	-0.35*	-0.35*	-0.24*	-0.21*	-0.21*	-0.45*	-0.41*	-0.41*	-0.29***	-0.26**	-0.25**
	(0.08)	(0.09)	(0.08)	(0.14)	(0.13)	(0.13)	(0.11)	(0.10)	(0.10)	(0.16)	(0.16)	(0.15)	(0.07)	(0.08)	(0.07)
Universalist by secondary or less	*reference category*														
Liberalized by VET	0.04	-0.01	-0.01	0.04	0.02	0.02	0.06	0.06	0.05	0.02	-0.00	-0.01	0.12	0.12	0.10
	(0.05)	(0.05)	(0.05)	(0.09)	(0.09)	(0.09)	(0.04)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.08)	(0.08)	(0.08)
Liberalized by tertiary	0.01	-0.05	-0.06	0.15**	0.10+	**0.10***	0.08*	0.06	0.06	0.16*	0.12+	**0.11+**	0.17***	0.14***	**0.13*****
	(0.03)	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.02)
Conservative by VET	0.07	-0.03	-0.01	0.04	0.01	0.01	0.02	0.00	-0.00	0.05	0.01	0.01	0.18**	0.15*	**0.14***
	(0.05)	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Conservative by tertiary	0.10*	0.04	0.05	0.15**	0.10*	**0.11***	0.08*	0.06	**0.07***	0.10	0.06	0.06	0.24***	0.19***	**0.20*****
	(0.05)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.03)	(0.04)	(0.03)	(0.06)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)
Polytechnic by VET	-0.07	-0.11	**-0.12+**	0.16+	0.12	0.11	0.10	0.09	0.08	0.24*	0.21+	**0.20+**	0.11*	0.11*	**0.09***
	(0.08)	(0.07)	(0.06)	(0.08)	(0.08)	(0.08)	(0.06)	(0.06)	(0.06)	(0.11)	(0.10)	(0.11)	(0.04)	(0.04)	(0.04)
Polytechnic by tertiary	-0.02	-0.02	-0.02	0.17**	0.13*	**0.13****	-0.01	-0.02	-0.02	0.09	0.05	0.05	0.05	0.04	0.05
	(0.03)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.03)	(0.04)	(0.04)	(0.08)	(0.08)	(0.07)	(0.04)	(0.04)	(0.04)

Controls		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.
Intercept	0.12**	0.16**	0.26***	0.32***	-0.05	-0.01	0.16**	-0.29**	-0.23**	0.16	-0.02	-0.01	0.23***	-0.05	-0.03
	(0.04)	(0.05)	(0.05)	(0.06)	(0.07)	(0.08)	(0.05)	(0.07)	(0.08)	(0.10)	(0.11)	(0.11)	(0.05)	(0.06)	(0.07)
Observations	24178	23866	23866	24108	23802	23802	24116	23811	23811	24067	23765	23765	24077	23773	23773
R^2	0.04	0.12	0.15	0.01	0.06	0.07	0.01	0.06	0.07	0.05	0.07	0.08	0.02	0.05	0.06
Adjusted R^2	0.04	0.12	0.15	0.01	0.06	0.07	0.01	0.06	0.07	0.05	0.07	0.08	0.02	0.05	0.06

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in each item for each independent variable as compared to the reference category for that item. The interaction terms show how EWR differ in how they shape the effect of education on well-being. Most notable is that significant interaction terms were found even with the addition of all controls (highlighted in bold). Significant interaction effects are found for all regimes. For example, the association between tertiary education and emotional well-being is significantly stronger, or more positive, in the Liberalized, the Conservative, and the Polytechnic countries as compared to the Universalist regime grouping. In the Liberalized countries, emotional well-being increases by 0.10 of a standard deviation with VET, which is significantly different from the relationship in the Universalist EWR.

[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

Table 66. *Thriving items regressed on educational and EWR variables with interactions*

	Security			Development of potential			Personal autonomy			Dignity			Accomplishment		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**	**Model 14**	**Model 15**
Secondary or less	*reference category*														
VET	0.06*	0.02	-0.01	0.18**	0.18**	0.11+	-0.03+	-0.06**	-0.05*	0.02	-0.00	-0.02	0.03	-0.01	-0.03
	(0.03)	(0.02)	(0.02)	(0.06)	(0.06)	(0.07)	(0.02)	(0.02)	(0.02)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
Tertiary	0.10***	0.05**	-0.01	0.38***	0.34***	0.18**	0.10	0.07	0.07	0.25***	0.25***	0.20**	0.11***	0.07**	0.01
	(0.01)	(0.02)	(0.02)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.04)
Universalist	*reference category*														
Liberalized	-0.27	-0.21	-0.21	-0.17	-0.17	-0.14	-0.20+	-0.16	-0.16	-0.14	-0.12	-0.12	-0.39**	-0.37**	-0.36***
	(0.17)	(0.16)	(0.15)	(0.15)	(0.14)	(0.13)	(0.11)	(0.11)	(0.10)	(0.19)	(0.19)	(0.19)	(0.10)	(0.10)	(0.09)
Conservative	-0.43***	-0.39***	-0.39***	-0.04	-0.04	-0.02	0.10	0.13	0.13	-0.13	-0.12	-0.12	-0.08	-0.07	-0.06
	(0.10)	(0.09)	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.09)	(0.09)	(0.09)
Polytechnic	-0.52**	-0.46**	-0.46**	-0.12	-0.11	-0.09	-0.20*	-0.16+	-0.17+	-0.15	-0.14	-0.14	-0.15	-0.13	-0.13
	(0.13)	(0.12)	(0.12)	(0.16)	(0.16)	(0.15)	(0.08)	(0.09)	(0.09)	(0.13)	(0.13)	(0.13)	(0.10)	(0.10)	(0.10)
Universalist by secondary or less	*reference category*														
Liberalized by VET	0.19+	0.19*	**0.17+**	0.05	0.03	0.00	-0.01	-0.02	-0.03	-0.01	0.01	0.01	0.05	0.06	0.06
	(0.10)	(0.08)	(0.08)	(0.10)	(0.11)	(0.10)	(0.03)	(0.03)	(0.03)	(0.08)	(0.07)	(0.07)	(0.14)	(0.12)	(0.11)
Liberalized by tertiary	0.16**	0.12*	**0.11+**	0.08	0.07	0.06	-0.03	-0.07	-0.07	-0.10	-0.09	-0.09	0.05	0.04	0.03
	(0.04)	(0.05)	(0.06)	(0.11)	(0.10)	(0.08)	(0.09)	(0.09)	(0.08)	(0.11)	(0.11)	(0.11)	(0.06)	(0.05)	(0.06)
Conservative by VET	0.00	-0.02	-0.04	0.05	0.01	-0.01	0.07*	0.06+	**0.06+**	0.05	0.07	0.07	-0.07	-0.07	-0.07
	(0.04)	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.03)	(0.06)	(0.05)	(0.05)	(0.09)	(0.09)	(0.08)
Conservative by tertiary	0.13***	0.07**	**0.07****	-0.05	-0.07	**-0.08+**	-0.15	-0.17	-0.18	-0.11	-0.11	-0.10	-0.21*	-0.21*	**-0.21***
	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.11)	(0.11)	(0.11)	(0.08)	(0.08)	(0.08)	(0.10)	(0.09)	(0.09)
Polytechnic by VET	0.25**	0.22***	**0.20****	0.07	0.05	0.03	0.05	0.03	0.03	0.12	0.13	0.13	0.13*	0.15*	**0.14***
	(0.07)	(0.05)	(0.06)	(0.14)	(0.13)	(0.12)	(0.06)	(0.07)	(0.06)	(0.11)	(0.11)	(0.11)	(0.06)	(0.05)	(0.05)
Polytechnic by	0.16**	0.12+	**0.13***	0.09	0.08	0.08	-0.05	-0.09	-0.08	-0.04	-0.05	-0.04	-0.00	-0.01	-0.01

tertiary															
	(0.05)	(0.06)	(0.06)	(0.11)	(0.11)	(0.10)	(0.08)	(0.09)	(0.09)	(0.10)	(0.10)	(0.09)	(0.07)	(0.07)	(0.07)
Controls		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.		demo.	demo. & occup.
Intercept	0.31***	0.03	0.02	-0.01	0.06	-0.08	0.11	0.13	0.14	0.08	-0.09	-0.14	0.18*	-0.06	0.02
	(0.07)	(0.07)	(0.10)	(0.09)	(0.10)	(0.11)	(0.07)	(0.09)	(0.10)	(0.10)	(0.11)	(0.12)	(0.07)	(0.07)	(0.09)
Observations	24115	23807	23807	24095	23792	23792	24160	23852	23852	23986	23680	23680	24102	23793	23793
R^2	0.03	0.06	0.07	0.03	0.05	0.07	0.02	0.02	0.03	0.01	0.02	0.02	0.02	0.03	0.05
Adjusted R^2	0.03	0.06	0.07	0.03	0.05	0.07	0.01	0.02	0.03	0.01	0.02	0.02	0.02	0.03	0.05

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in each item for each independent variable as compared to the reference category for that item. The interaction terms show how EWR differ in how they shape the effect of education on well-being. Most notable is that significant interaction terms were found even with the addition of all controls (highlighted in bold). Significant interaction effects are found for all regimes. For example, the association between tertiary education and security is significantly stronger, or more positive, in the Liberalized, the Conservative, and the Polytechnic countries as compared to the Universalist regime grouping. In the Liberalized countries, security increases by 0.11 of a standard deviation with VET, which is significantly different from the relationship in the Universalist EWR.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
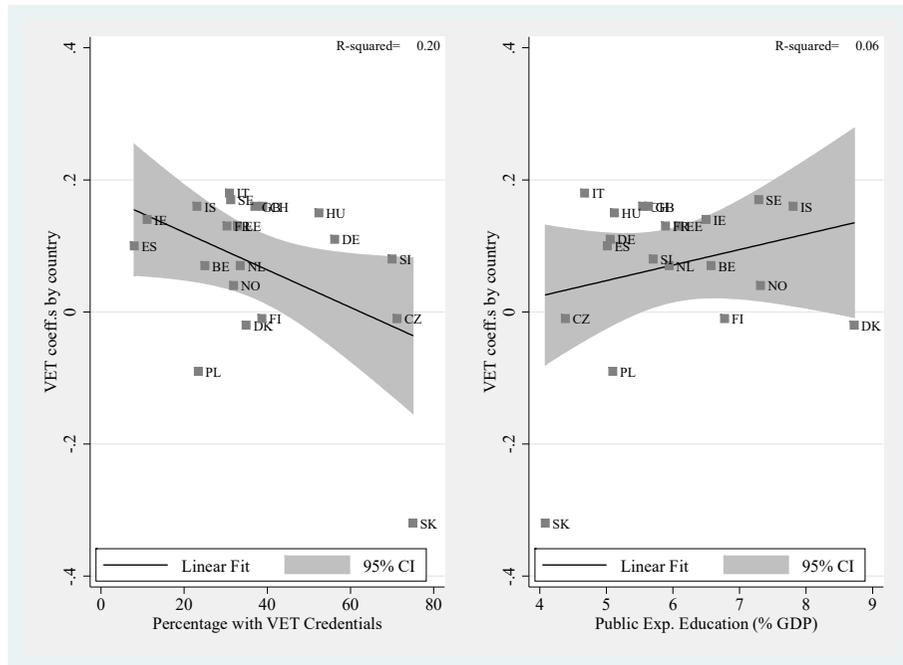
Figure 110. Stratification and decommodification items regressed on VET coefficients.

Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this coefficient that is explained by the analytical taxonomy items.
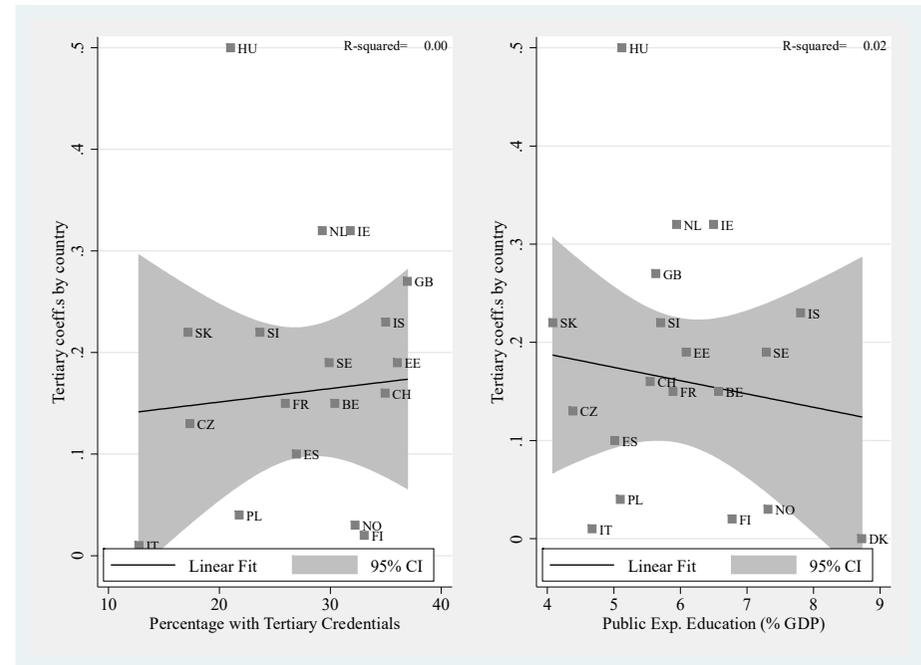
Figure 111. Stratification and decommodification items regressed on tertiary education coefficients.

Note: These scatterplots show the educational regression (beta) coefficients from individual-country models with all controls plotted against items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in this coefficient that is explained by the analytical taxonomy items.
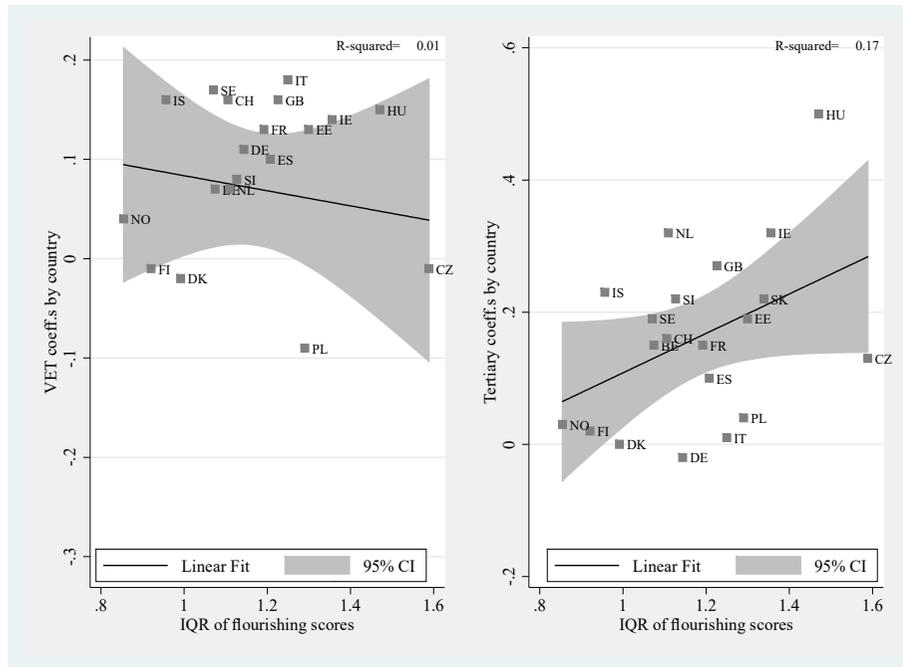
Figure 112. Country VET and tertiary education coefficients for
flourishing regressed on the interquartile range of *flourishing* scores.
Note: These scatterplots show the educational regression (beta) coefficients from
individual-country models with all controls plotted against the interquartile range
(IQR) in *flourishing* for each country. The R^2, or coefficient of determination, is
reported in the upper right-hand corner, showing the percentage of the variation in
this coefficient that is explained by the dispersion in *flourishing* scores.
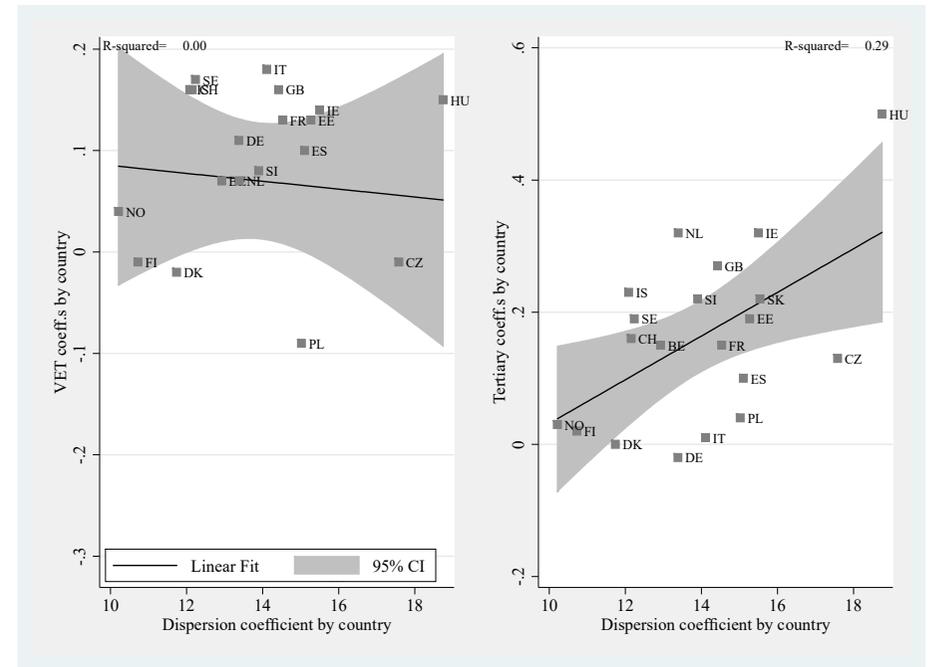
Figure 113. Country VET and tertiary education coefficients for
flourishing regressed on the dispersion coefficients of *flourishing*.
Note: These scatterplots show the educational regression (beta) coefficients from
individual-country models with all controls plotted against the country dispersion
coefficients – that is, the standard deviation (SD) divided by the mean and
multiplied by 100 (Murdoch, 2002) – for *flourishing* in each country. The R^2, or
coefficient of determination, is reported in the upper right-hand corner, showing
the percentage of the variation in this coefficient that is explained by the
dispersion in *flourishing* scores.

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Table 67. *Indirect educational effects through occupational sector by country*

	GB	Estonia	Poland	Ireland	Spain	Belgium	Switzerland	Netherlands	France	Slovenia
VET										
Total	0.15*	0.20**	-0.01	0.17**	0.18+	0.12+	0.20**	0.09	0.16*	0.16+
	(0.08)	(0.07)	(0.15)	(0.06)	(0.09)	(0.07)	(0.08)	(0.09)	(0.08)	(0.09)
Direct	0.16*	0.13+	-0.09	0.14*	0.10	0.07	0.16*	0.07	0.13	0.08
	(0.08)	(0.07)	(0.15)	(0.07)	(0.10)	(0.07)	(0.08)	(0.10)	(0.08)	(0.09)
Indirect	-0.01	0.06**	0.08*	0.03+	0.07*	0.05**	0.04	0.02	0.03	0.08+
	(0.02)	(0.02)	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)
Tertiary										
Total	0.26***	0.36***	0.19**	0.37***	0.20**	0.22***	0.18**	0.30***	0.20*	0.31***
	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)	(0.08)	(0.08)
Direct	0.27***	0.19*	0.04	0.32***	0.10	0.15*	0.16*	0.32***	0.15	0.22**
	(0.08)	(0.07)	(0.10)	(0.08)	(0.09)	(0.07)	(0.08)	(0.07)	(0.09)	(0.09)
Indirect	-0.01	0.17***	0.15*	0.06	0.10*	0.07+	0.01	-0.02	0.05	0.08+
	(0.04)	(0.05)	(0.07)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Observations	1321	1384	1166	1724	1238	1175	951	1205	1252	783

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. Total effects are the overall coefficients of the effect of educational categories on *flourishing* scores, net of controls. Direct effects are the effects due to either VET or tertiary education, while indirect effects are the part of the total effect on *flourishing* that is explained by occupational sector. Thus, a significant indirect effect shows that the effect of VET or tertiary education on *flourishing* is mediated by differences in occupational sector.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 68. *Indirect educational effects through occupational sector by country (cont.)*

	Denmark	Finland	Norway	Sweden	Iceland	Germany	Czech	Hungary	Italy	Slovakia
VET										
Total	0.02	0.01	0.05	0.18**	0.18	0.17**	0.06	0.23*	0.21	-0.19
	(0.08)	(0.06)	(0.06)	(0.07)	(0.12)	(0.06)	(0.09)	(0.11)	(0.24)	(0.13)
Direct	-0.02	-0.01	0.04	0.17*	0.16	0.11*	-0.01	0.15	0.18	-0.32*
	(0.08)	(0.06)	(0.06)	(0.07)	(0.12)	(0.06)	(0.09)	(0.12)	(0.24)	(0.14)
Indirect	0.04	0.02	0.02	0.01	0.02	0.06**	0.07**	0.08*	0.04	0.14**
	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.04)	(0.06)	(0.05)
Tertiary										
Total	0.06	0.07	0.07	0.23***	0.30**	0.09+	0.31***	0.65***	0.04	0.38***
	(0.06)	(0.05)	(0.05)	(0.06)	(0.09)	(0.05)	(0.09)	(0.08)	(0.11)	(0.07)
Direct	0.00	0.02	0.03	0.19*	0.23*	-0.02	0.13	0.50***	0.01	0.22**
	(0.08)	(0.06)	(0.06)	(0.08)	(0.11)	(0.07)	(0.11)	(0.10)	(0.11)	(0.08)
Indirect	0.06	0.06	0.04	0.05	0.07	0.11**	0.18***	0.14*	0.04	0.16**
	(0.05)	(0.04)	(0.04)	(0.05)	(0.06)	(0.04)	(0.05)	(0.06)	(0.07)	(0.05)
Observations	980	1385	1076	1115	442	1842	1119	1250	537	1228

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. Total effects are the overall coefficients of the effect of educational categories on *flourishing* scores, net of controls. Direct effects are the effects due to either VET or tertiary education, while indirect effects are the part of the total effect on *flourishing* that is explained by occupational sector. Thus, a significant indirect effect shows that the effect of VET or tertiary education on *flourishing* is mediated by differences in occupational sector.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 69. *Multi-level models of the relationship between education and flourishing*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.24***	0.17***	0.11***	0.16***	0.09***	0.06**	0.30***	0.24***	0.16**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.06)	(0.06)	(0.05)
Tertiary	0.35***	0.22***	0.13***	0.23***	0.11***	0.06**	0.48***	0.36***	0.21**
	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)	(0.07)	(0.06)	(0.08)
Level 1 intercept	6.76***	6.44***	6.46***	5.22***	4.90***	4.95***	8.25***	7.98***	7.95***
	(0.07)	(0.07)	(0.09)	(0.05)	(0.05)	(0.06)	(0.09)	(0.10)	(0.15)
Level 2 random intercept	-1.27***	-1.27***	-1.31***	-1.63***	-1.62***	-1.66***	-0.98***	-0.97***	-1.01***
	(0.13)	(0.14)	(0.14)	(0.13)	(0.13)	(0.13)	(0.16)	(0.17)	(0.18)
Level 1 error	-0.05***	-0.08***	-0.09***	-0.22***	-0.26***	-0.28***	0.32***	0.30***	0.29***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N	23448	23173	23173	23828	23538	23538	23733	23440	23440

Source: ESS Wave 6 (version 2.3)

Note: Standard errors in parentheses; all individual-level controls are included in the analyses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, those with tertiary education report a level of *flourishing* that is 0.11 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 70. *Multi-level models of flourishing regressed on education and country-level controls*

	Flourishing				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Secondary or less			*reference category*		
VET	0.07	0.07	0.08	0.07	0.08
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Tertiary	0.06	0.06	0.06	0.06	0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Universalist by Secondary or less			*reference category*		
Liberalized by VET	0.03	0.03	0.03	0.03	0.03
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Liberalized by Tertiary	0.12*	0.12*	0.12*	0.12*	0.12*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Conservative by VET	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Conservative by Tertiary	0.06	0.06	0.07	0.06	0.07
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Polytechnic by VET	0.08	0.08	0.08	0.08	0.08
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Polytechnic by Tertiary	0.17	0.17	0.18	0.17	0.17
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Universalist			*reference category*		
Liberalized	-0.40***	-0.51**	-0.26*	-0.40***	-0.20
	(0.10)	(0.17)	(0.10)	(0.10)	(0.19)
Conservative	-0.29***	-0.33**	-0.24**	-0.29***	-0.21$^+$
	(0.08)	(0.11)	(0.08)	(0.08)	(0.11)
Polytechnic	-0.70***	-0.73***	-0.51***	-0.70***	-0.48**
	(0.13)	(0.14)	(0.14)	(0.13)	(0.18)
Gini coefficient		1.54			-0.78
		(1.67)			(1.91)
Income per capita			0.00**		0.00*
			(0.00)		(0.00)
Social expenditures				0.00	-0.00
				(0.01)	(0.01)
Level 1 intercept	6.82***	6.42***	6.34***	6.82***	6.54***
	(0.09)	(0.44)	(0.22)	(0.24)	(0.43)
Level 2 random intercept	-2.18***	-2.18***	-2.17***	-2.18***	-2.17***
	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)
N	23173	23173	23173	23173	23173

Source: ESS Wave 6 (version 2.3); OECD 2009

Note: Standard errors in parentheses; all individual-level controls are included in the analyses; $^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
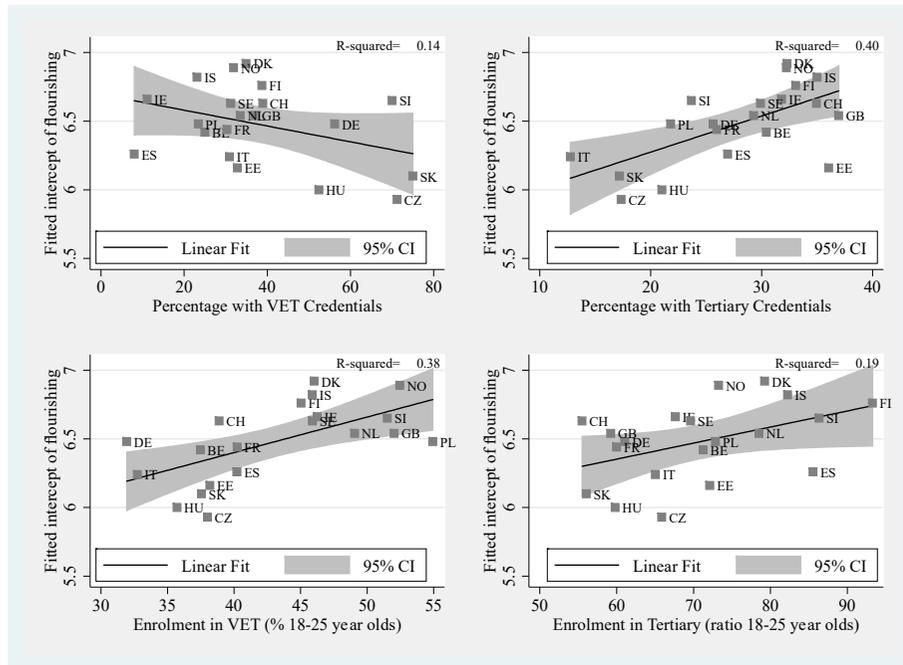
Figure 114. Fitted *flourishing* intercepts regressed on PSE stratification items (cont.).

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.
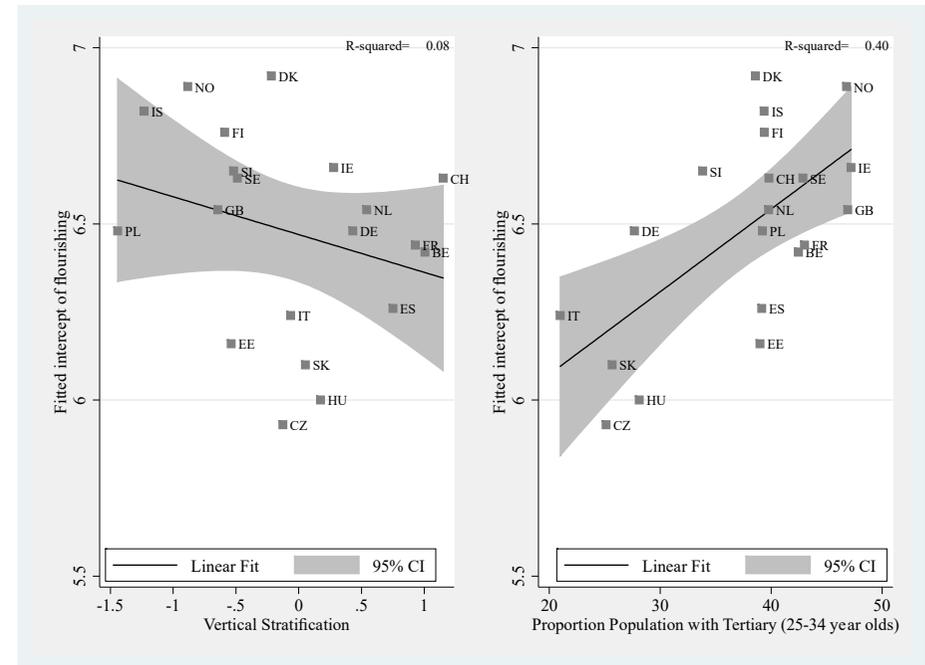

Figure 115. Fitted *flourishing* intercepts regressed on PSE stratification items (cont.).

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.
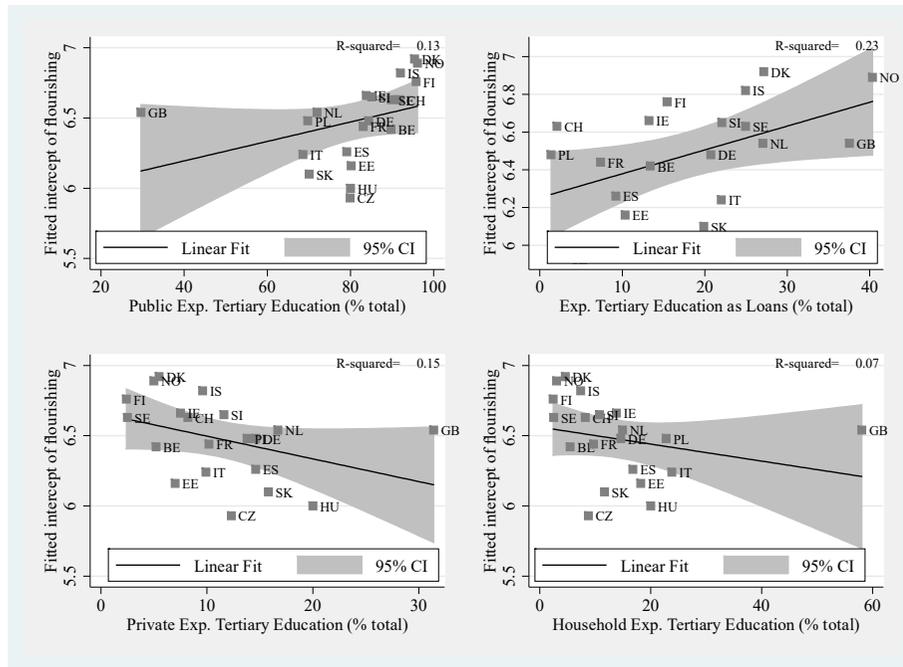
Figure 116. Fitted *flourishing* intercepts regressed on PSE decommodification items (cont.).

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.
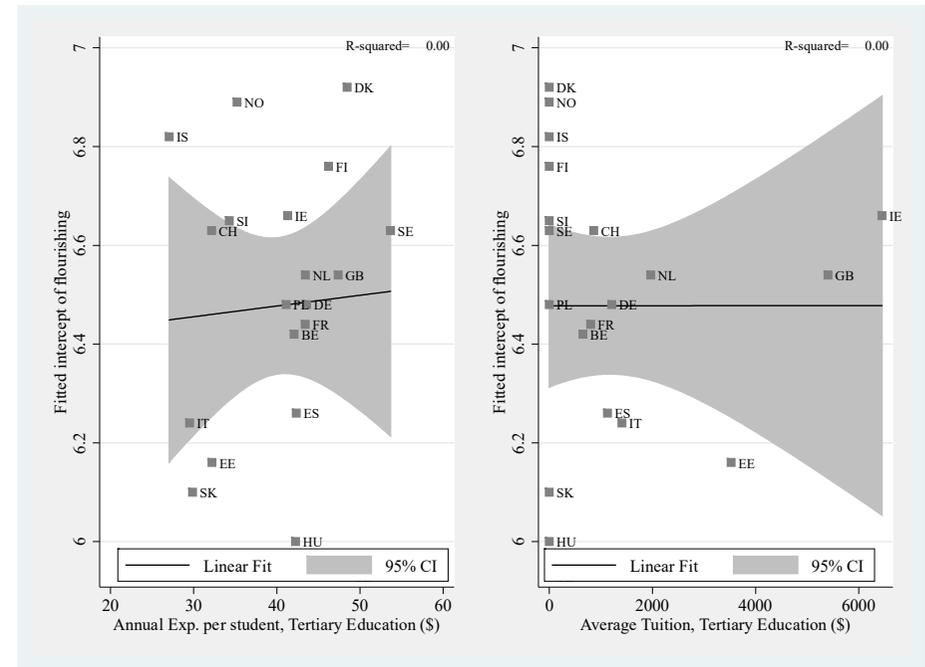

Figure 117. Fitted *flourishing* intercepts regressed on PSE decommodification items (cont.).

Note: These scatterplots show the fitted *flourishing* intercepts (net of all individual-level controls) plotted against country scores on items from the analytical taxonomy developed in Chapter 3. The R^2, or coefficient of determination, is reported in the upper right-hand corner, showing the percentage of the variation in the fitted *flourishing* intercepts that is explained by the analytical taxonomy items.

4. Appendix 4

These tables and figures correspond to supplementary analyses pertaining to the study limitations referred to in the conclusion.
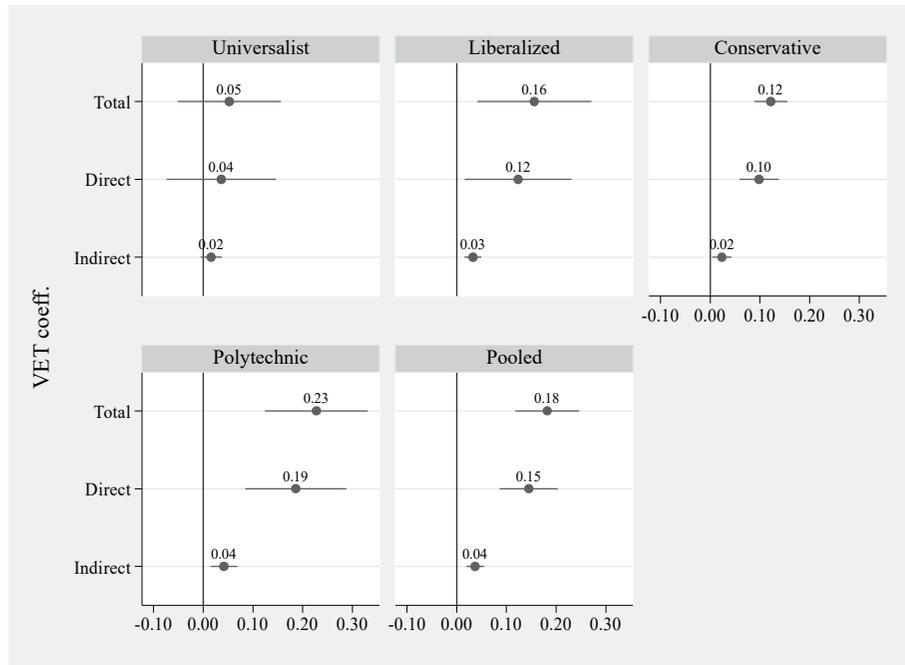
Figure 118. Indirect VET educational effects through income by EWR.

Note: These graphs show the *total, direct,* and *indirect* effects of VET in terms of regression (beta) coefficients in models regressing the *flourishing* scale on the educational variables, net of controls. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at $p<0.05$) in the model. For example, in the Conservative educational welfare regime grouping, the *total* effect of VET on well-being is 0.12 (interpreted as those with VET report a level of *flourishing* that is 0.12 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (due to the fact that it does not overlap with zero). The large part of this effect is *direct* (0.10 SD), while a small part operates *indirectly* through income (0.02 SD).
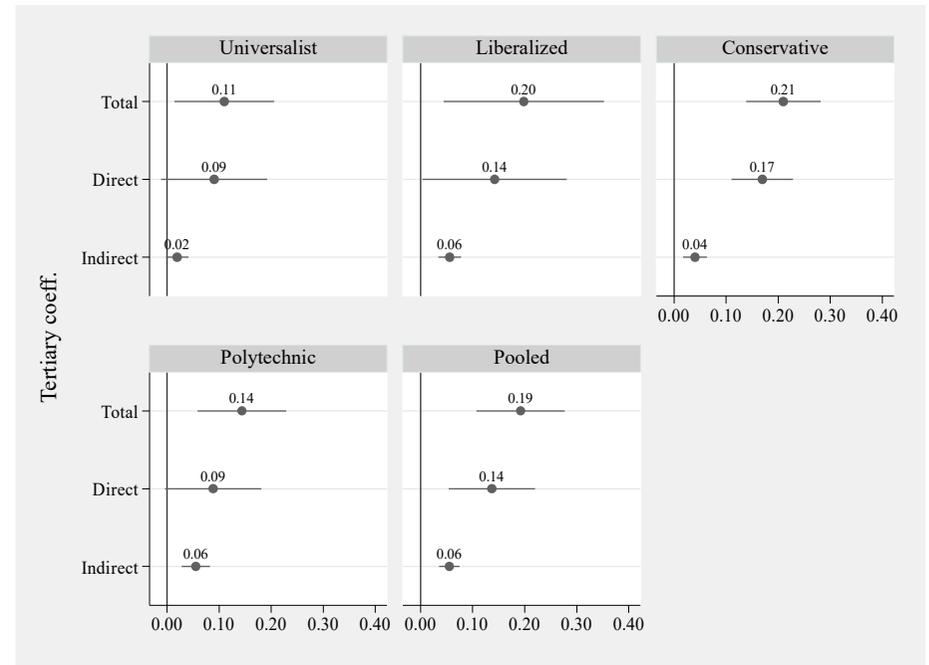
Figure 119. Indirect tertiary educational effects through income by EWR.

Note: These graphs show the *total, direct,* and *indirect* effects of tertiary education in terms of regression (beta) coefficients in models regressing the *flourishing* scale on the educational variables, net of controls. The beta coefficients are shown as points, while the lines represent the 95% confidence intervals (CIs). Thus, a line that crosses zero is not significant (at $p<0.05$) in the model. For example, in the Conservative educational welfare regime grouping, the *total* effect of tertiary education on well-being is 0.21 (interpreted as those with tertiary education report a level of *flourishing* that is 0.21 SD higher than those with secondary education or less, due to the fact that the dependent variable is standardized) and significant (due to the fact that it does not overlap with zero). The large part of this effect is *direct* (0.17 SD), while a small but statistically significant part of this effect operates *indirectly* through income (0.04 SD).

Table 71. *Flourishing scales regressed on educational variables for the sub-sample of men*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less					*reference category*				
VET	0.26^{***}	0.17^{***}	0.13^{**}	0.24^{**}	0.13^{*}	0.11^{+}	0.20^{**}	0.14^{*}	0.10^{*}
	(0.06)	(0.04)	(0.04)	(0.08)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)
Tertiary	0.36^{***}	0.20^{***}	0.11^{*}	0.31^{***}	0.14^{***}	0.09^{*}	0.30^{***}	0.20^{***}	0.11^{+}
	(0.04)	(0.03)	(0.04)	(0.05)	(0.03)	(0.04)	(0.05)	(0.04)	(0.06)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	-0.09	-0.34^{***}	-0.25^{+}	-0.07	-0.34^{***}	-0.18	-0.06^{+}	-0.22^{***}	-0.22^{+}
	(0.06)	(0.05)	(0.12)	(0.08)	(0.07)	(0.13)	(0.03)	(0.05)	(0.11)
Observations	11223	11086	11086	11410	11269	11269	11364	11216	11216
R^2	0.03	0.08	0.12	0.02	0.09	0.11	0.02	0.04	0.07
Adjusted R^2	0.03	0.08	0.12	0.02	0.09	0.11	0.02	0.04	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, men with tertiary post-secondary education report a level of *flourishing* that is 0.11 SD higher than those with secondary education or less in the final model with all controls.

$^{+} p < 0.10$, $^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 72. *Flourishing scales regressed on educational variables for the sub-sample of women*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.33***	0.23***	0.15**	0.30***	0.19***	0.12**	0.25***	0.20***	0.12*
	(0.03)	(0.02)	(0.04)	(0.05)	(0.03)	(0.04)	(0.05)	(0.04)	(0.05)
Tertiary	0.41***	0.25***	0.15**	0.34***	0.16**	0.08*	0.38***	0.29***	0.17*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.03)	(0.07)	(0.06)	(0.06)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	-0.27***	-0.46***	-0.48***	-0.29***	-0.56***	-0.54***	-0.16***	-0.25***	-0.31***
	(0.05)	(0.04)	(0.06)	(0.07)	(0.04)	(0.05)	(0.03)	(0.04)	(0.07)
Observations	12215	12087	12087	12407	12269	12269	12358	12224	12224
R^2	0.03	0.08	0.11	0.02	0.08	0.11	0.03	0.04	0.07
Adjusted R^2	0.03	0.08	0.11	0.02	0.08	0.11	0.03	0.04	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, women with tertiary post-secondary education report a level of *flourishing* that is 0.15 SD higher than those with secondary education or less in the final model with all controls.

[+] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 73. *Flourishing scales regressed on educational variables for the sub-sample of respondents employed full-time*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.32***	0.22***	0.17***	0.29***	0.18***	0.14**	0.25***	0.19**	0.14**
	(0.05)	(0.04)	(0.04)	(0.06)	(0.04)	(0.04)	(0.06)	(0.05)	(0.05)
Tertiary	0.40***	0.24***	0.14*	0.34***	0.16***	0.10**	0.36***	0.26***	0.15*
	(0.05)	(0.05)	(0.05)	(0.04)	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	-0.20**	-0.53***	-0.45***	-0.20**	-0.62***	-0.50***	-0.12**	-0.29***	-0.28*
	(0.06)	(0.04)	(0.10)	(0.07)	(0.04)	(0.08)	(0.04)	(0.04)	(0.11)
Observations	15732	15502	15502	16023	15781	15781	15966	15721	15721
R^2	0.03	0.09	0.13	0.02	0.10	0.13	0.03	0.05	0.07
Adjusted R^2	0.03	0.09	0.12	0.02	0.10	0.13	0.03	0.05	0.07

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, respondents who are employed full-time and have tertiary post-secondary education report a level of *flourishing* that is 0.14 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 74. *Flourishing scales regressed on educational variables for the sub-sample of respondents employed part-time*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.25***	0.17***	0.09**	0.23***	0.14**	0.08+	0.18***	0.14***	0.07+
	(0.03)	(0.02)	(0.03)	(0.05)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
Tertiary	0.33***	0.21***	0.13***	0.28***	0.14**	0.08*	0.30***	0.24***	0.13**
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.05)	(0.04)	(0.05)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	-0.14**	-0.42***	-0.48***	-0.13*	-0.48***	-0.49***	-0.09**	-0.26***	-0.35***
	(0.04)	(0.05)	(0.07)	(0.06)	(0.05)	(0.07)	(0.02)	(0.04)	(0.07)
Observations	7716	7671	7671	7805	7757	7757	7767	7719	7719
R^2	0.02	0.08	0.11	0.02	0.09	0.11	0.02	0.04	0.06
Adjusted R^2	0.02	0.08	0.11	0.02	0.09	0.11	0.02	0.03	0.06

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, respondents who are employed part-time and have tertiary post-secondary education report a level of *flourishing* that is 0.13 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 75. *Flourishing scales regressed on educational variables for the sub-sample of unemployed respondents*

	Flourishing			Psycho-social well-being			Thriving		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Secondary or less	*reference category*								
VET	0.31**	0.26**	0.17+	0.28*	0.20*	0.12	0.24*	0.22+	0.16
	(0.09)	(0.09)	(0.10)	(0.11)	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)
Tertiary	0.31***	0.23***	0.20**	0.31***	0.22**	0.15+	0.20+	0.15+	0.16+
	(0.07)	(0.05)	(0.06)	(0.07)	(0.07)	(0.08)	(0.10)	(0.09)	(0.08)
Controls		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*		*demographic*	*demographic & occupational*
Intercept	-0.63***	-0.74***	-0.83***	-0.64***	-0.77***	-0.79***	-0.42***	-0.47**	-0.58**
	(0.04)	(0.09)	(0.10)	(0.04)	(0.07)	(0.04)	(0.06)	(0.13)	(0.15)
Observations	3224	3176	3176	3311	3260	3260	3276	3224	3224
R^2	0.01	0.06	0.07	0.01	0.06	0.08	0.01	0.03	0.04
Adjusted R^2	0.01	0.05	0.07	0.01	0.06	0.07	0.01	0.03	0.04

Source: ESS Wave 6 (Version 2.3)

Note: Robust standard errors in parentheses. The dependent variable is standardized for the sample as a whole; therefore, the coefficient can be understood as the standard deviation (SD) change in *flourishing* for each independent variable as compared to the reference category for that variable. For example, those who are unemployed and have tertiary post-secondary education report a level of *flourishing* that is 0.20 SD higher than those with secondary education or less in the final model with all controls.

$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
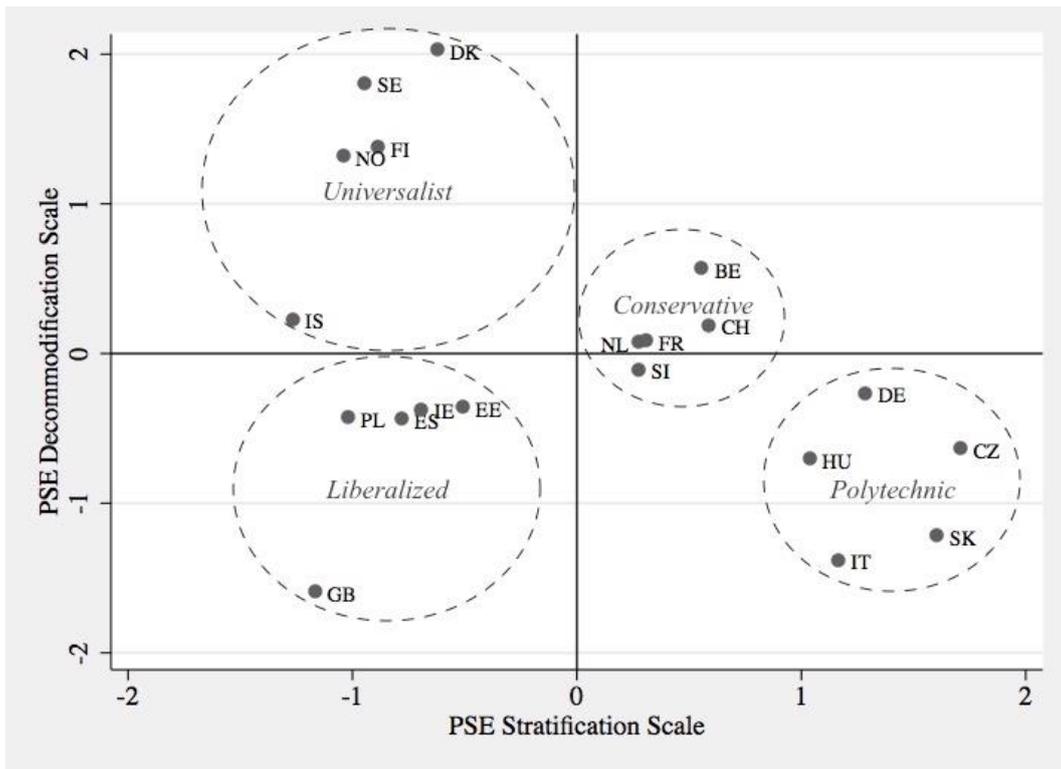
Figure 120. Scatterplot showing country groupings as illustrated by scores on post-secondary educational stratification and decommodification.

Note: This plot shows the "Educational welfare regimes" (EWR) graphically, based on the country scores on the scale measuring post-secondary educational decommodification plotted against the country scores on the scale measuring post-secondary educational stratification. The points represent countries, and countries that are grouped closer together show scores that are similar on both scales. The circles show country membership in the EWR classification groupings.

Résumé

Cette thèse étudie le lien entre l'éducation post-secondaire et le bien-être dans une perspective comparative internationale, utilisant une conceptualisation du bien-être éclairée par l'approche des capabilités et les théories de l'*épanouissement*. Fondée sur une approche intégrant les perspectives des capabilités et du capital humain, l'éducation post-secondaire, opérationnalisée comme le diplôme le plus élevé obtenu, est supposée être significativement liée avec le bien-être, toutes choses étant égales par ailleurs, au niveau de l'individu et du pays. Des critiques majeures de ces approches, qui supposent des effets indirects par le biais de l'emploi au niveau individuel et par le biais des facteurs économiques au niveau national, sont également étudiées.

Au-delà de ces liens globaux, des différences par pays sont anticipées. Par conséquent, un cadre analytique qui réunit la littérature des régimes de protection sociale et la recherche comparative sur l'éducation en Europe est proposé, basé sur une taxonomie analytique mesurant la stratification et decommodification de l'éducation post-secondaire dans un pays. Cette grille de lecture des « régimes éducatifs du bien-être social » est mobilisée pour comparer les niveaux de l'éducation et le bien-être parmi des individus et des pays, et le lien entre eux, examinant l'interaction « macro–micro » entre les arrangements institutionnels nationaux et les résultats relatifs à la qualité de vie. Ces effets sont testés paramétriquement dans des analyses de régression utilisant des termes d'interaction (afin d'évaluer les effets modérateurs) et une procédure en deux étapes de modélisation multi-niveaux, ainsi que des modèles de médiation comparant des perspectives de capital humain–capabilités (« *human agency* ») et des critiques relatives à la sélection sociale.

Ces résultats sont interprétés au travers d'une optique ciblée sur les inégalités éducatives relatives à la qualité de vie, constatant que l'éducation et le bien-être sont significativement associés aux niveaux « micro » et « macro », toutes choses étant égales par ailleurs. Toutefois, les tendances dans l'intensité et le sens de cette relation entre pays sont complexes, variant avec l'opérationnalisation du bien-être utilisée et différant autant en fonction du niveau de stratification éducationnel que de decommodification éducationnel. Ces résultats appuient l'argument que les systèmes éducatifs jouent un rôle déterminant dans la formation des inégalités du bien-être.

Mots-clés : Éducation post-secondaire ; bien-être ; approche par les capabilités ; inégalités ; États-providence ; Europe

Abstract

This study investigates the association between post-secondary education and well-being in international comparative perspective, conceptualizing well-being as a capability-informed measure of *flourishing*. Based on a combined human capital–capability approach, post-secondary education, operationalized as highest post-secondary educational credential, is hypothesized to relate positively with well-being net of individual-level and country-level controls at both the micro and macro levels of analysis. Prominent critiques of these approaches, suggesting indirect effects through occupational sorting at the individual level and economic factors at the country level, are also explored.

Beyond these overall associations, differences amongst countries are anticipated: Therefore, a modified educational welfare regimes framework informed by comparative educational research is proposed based on an analytical taxonomy mapping onto post-secondary educational stratification and decommodification. Levels of, and the association between, education and well-being are compared amongst individuals and countries, exploring the macro–micro interaction between institutional arrangements and life outcomes. Effects are tested parametrically in regression models using interaction effects and a 'two-step' approach to hierarchical data analysis, as well as mediation models comparing human agency-orientated perspectives and their social selection-based critiques.

These results are interpreted through a frame of inquiry focused on educational inequalities in well-being, finding that education and well-being are significantly associated at both the micro and macro levels even with the inclusion of relevant control variables. However, patterns in the strength of these associations amongst countries are complex, varying with the operationalization of well-being used and depending on both levels of educational stratification and decommodification. These findings offer some support for the notion that equalizing, or non-stratifying, educational systems, as well as decommodifying redistribution efforts, are instrumental in the effort to counter inequalities in well-being.

Keywords: Post-secondary education; well-being; capability approach; inequalities; welfare regimes; Europe