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Work-life balance and subjective well-being

Laetitia Dillenseger

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Laetitia DILLENSEGER

ÉQUILIBRE ENTRE VIE PROFESSIONNELLE ET PRIVÉE ET BIEN-ÊTRE SUBJECTIF

Préparée sous la direction de BURGER Martijn et MUNIER Francis

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L'Université de Strasbourg n'entend donner aucune approbation, ni improbation aux opinions émises dans cette thèse ; elles doivent être considérées comme propres à leur auteur.

*"Dans la vie, il n'y a rien à craindre et tout à comprendre.
Il est temps de comprendre davantage pour avoir moins peur."*

*"Nothing in life is to be feared, it is only to be understood.
Now is the time to understand more, so that we may fear less."*

Marie Curie

Abstract

This thesis explores the relationship between work-life balance policies and life satisfaction in the Netherlands – more specifically, the effect of parental leave schemes, informal care provision, and work hours’ mismatches on workers’ subjective well-being. The general problematic of this thesis is formulated as follows; *how do work-life conflict and related policies affect life satisfaction in the Netherlands?* The thesis has for purpose to contribute to the literature on work-life balance and subjective well-being.

This thesis focuses on the Dutch workers in the early 21st century, using data from the Longitudinal Internet Study for social sciences (LISS). The empirical analysis aims to identify correlational relationships (chapters 1 and 3) and causal linkage (chapter 2) in order to answer the research question. Human well-being is evaluated from a subjective perspective. The validity of this approach is recognized by the scientific community nowadays.

Chapter 1 examines the impact of taking parental leave on the life satisfaction of parents with young children. I found that the legal framework of Dutch parental leave offering job-protected leave and fiscal benefits is crucial to enhance parents’ life satisfaction. Further, I estimated that short parental leave schemes are more conducive to life satisfaction than extended parental leave schemes.

Chapter 2 enquires effect of informal care provision on caregivers’ life satisfaction. We use an Arellano-Bond system Generalized-Method-of-moments (GMM) model to address endogeneity issues. Overall, we find that providing care has a causal negative effect on life satisfaction. Spousal caregiving being the most harmful.

Chapter 3 explores the moderating role of socio-demographic and job characteristics, for example, job autonomy, on the relationship between hours’ mismatch and life satisfaction. Overall, I find that it is not the absolute amount of working time that matters when explaining the subjective well-being but rather the mismatch between actual and preferred working hours. Moreover, I estimate that only underemployment has a significant negative impact on Dutch’ workers life satisfaction. More precisely, I highlight that four hours of underemployment or more and a short part-time job combined with underemployment are more conducive to a life satisfaction reduction. Further, no evidence for parental status or gender

difference was found. The marital status, however, played a role. Indeed, being in a couple helped workers to cope with overemployment, while underemployment was more bearable for single workers. Finally, I observed that overemployment was detrimental for highly educated workers and workers with a high degree of job autonomy. I supposed that the "new lumpiness" of work, e.g. the predominance of post-fordist working conditions among Dutch companies - a high degree of job autonomy and increasing workload - contribute to an increase in work-life conflict and to a reduction of workers' life satisfaction.

The conclusions provide insights that are pertinent for workers, firm organizations, management practices, and policymakers. First, this thesis sheds light on many reforms undertaken by the Dutch government since 2001. The first chapter indirectly shows that the legal framework of Dutch parental leave consolidated through the Work and Care Act (Wet Arbeid en Zorg) is crucial to enhance parental well-being. The second chapter highlights the negative effect of care burden on life satisfaction. Consequently, the Social Support Act (Wet Maatschappelijke Ondersteuning, WMO), set in place in 2015, that shifted the responsibility of care towards the family or local community, might have come at the expense of the caregivers' life satisfaction. Then, the third chapter puts in perspective the Flexible Working Hours Act (Wet Flexibel Werken) that came into force on the 1st January 2016. My results go in favor of this act that supports employees' adjustment of working hours. All in all, I argue that policymakers and firms' management practices should not neglect subjective well-being perspective. Second, this thesis notes the importance of analyzing the moderating effect of socio-demographic groups when studying subjective wellbeing. Third, the findings indicate that factors leading to work-life conflict e.g., having young children, informal care provision, mismatch between actual and preferred working hours, negatively impact one's life satisfaction.

Keywords: Life satisfaction; Happiness; Parental leave schemes; Informal care; Mismatch working hours; The Netherlands; Work-life balance; Panel Data Econometric Analysis

Résumé

Cette thèse explore la relation entre les conflits travail et vie privée et le bien-être subjectif aux Pays-Bas. J'étudie plus précisément, l'effet du congé parental, de l'offre de soins informels et du sous et sur-emploi sur le bien-être subjectif des travailleurs. La problématique générale de cette thèse est formulée comme suit : *comment les conflits travail/vie privée affectent-ils la satisfaction de vie des Néerlandais ?* Cette thèse a pour but de contribuer à la littérature sur l'équilibre entre travail/vie personnelle et le bien-être subjectif.

Cette thèse se concentre sur les travailleurs néerlandais au début du 21^e siècle. Les différentes études empiriques menées dans cette recherche exploitent les données du Longitudinal Internet Study for the Social Sciences (LISS). L'analyse empirique vise à identifier les relations de corrélations (chapitres 1 et 3) et les liens de causalité (chapitre 2) afin de répondre à la question de recherche. Le bien-être humain est évalué d'un point de vue subjectif. La validité de cette approche est aujourd'hui reconnue par la communauté scientifique.

Le chapitre 1 examine l'impact de la prise d'un congé parental sur la satisfaction de vie des parents de jeunes enfants. Je constate que le cadre juridique du congé parental néerlandais, qui offre un congé avec protection de l'emploi et des avantages fiscaux, est essentiel pour améliorer le bien-être subjectif des parents. En outre, j'estime qu'un congé parental court est plus favorable à la satisfaction dans la vie que les régimes de congé parentaux prolongés.

Le chapitre 2 étudie l'effet de la prestation de soins informels sur le bien-être subjectif des aidants. J'utilise le modèle du système de la méthode des moments généralisés d'Arellano-Bond pour résoudre les problèmes d'endogénéité. Globalement, je constate que la prestation de soins informels a un effet négatif et causal sur la satisfaction de vie. La prise en charge par le conjoint étant la plus néfaste.

Le chapitre 3 explore le rôle modérateur des caractéristiques socio-démographiques et professionnelles sur la relation entre sous et sur-emploi et le bien-être subjectif. Je constate que ce n'est pas la quantité absolue de temps de travail qui importe pour expliquer le bien-être subjectif, mais plutôt le décalage entre les heures de travail réelles et les heures de travail souhaitées. En outre, j'estime que seul le sous-emploi a un impact négatif significatif sur le bien-être

subjectif des travailleurs néerlandais. Plus précisément, je souligne que quatre heures de sous-emploi ou plus ou un emploi à temps partiel court combiné à du sous-emploi sont plus propices à une réduction de la satisfaction dans la vie. En outre, le statut parental et le sexe du travailleur ne joue pas un rôle discriminant dans cette relation. L'état-civil, en revanche, a un effet modérateur sur la relation. En effet, le fait d'être en couple aide les travailleurs à faire face au sur-emploi, tandis que le sous-emploi est plus supportable pour les travailleurs célibataires. Enfin, j'ai observé que le sur-emploi était préjudiciable aux travailleurs très instruits et aux travailleurs disposant d'un degré élevé d'autonomie professionnelle.

Ces résultats sont pertinents pour les travailleurs, les entreprises et les décideurs politiques. Tout d'abord, cette thèse met en lumière les nombreuses réformes entreprises par le gouvernement néerlandais depuis 2001. Le premier chapitre montre indirectement que le cadre juridique du congé parental néerlandais consolidé par la loi sur le travail et les soins (Wet Arbeid en Zorg) est crucial pour améliorer le bien-être des parents. Le deuxième chapitre souligne l'effet négatif de la charge des soins sur la satisfaction de la vie. Par conséquent, la loi sur l'aide sociale (Wet Maatschappelijke Ondersteuning, WMO), mise en place en 2015, qui a déplacé la responsabilité des soins vers la famille ou la communauté locale, pourrait s'être faite au détriment des aidants. Ensuite, le troisième chapitre met en perspective la loi sur les heures de travail flexibles (Wet Flexibel Werken) qui est entrée en vigueur le 1er janvier 2016. Mes résultats vont en faveur de cette loi qui soutient l'aménagement des horaires de travail des salariés. En somme, je soutiens que les décideurs politiques et les pratiques de gestion des entreprises ne devraient pas négliger la perspective du bien-être subjectif. Deuxièmement, cette thèse souligne l'importance d'analyser l'effet modérateur des groupes socio-démographiques lors de l'étude du bien-être subjectif. Troisièmement, les résultats indiquent que les facteurs conduisant à un conflit entre le travail et la vie privée, par exemple le fait d'avoir de jeunes enfants, la prestation de soins informels, l'inadéquation entre les heures de travail réelles et les heures de travail préférées, ont un impact négatif sur la satisfaction de la vie.

Keywords: Satisfaction dans la vie; Bonheur; Congé parental; Aide informelle; Sur-emploi; Sous-emploi; Pays-bas; Equilibre entre vie professionnelle et vie privée; Données de panel.

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Reading note / Note de lecture

This thesis was written entirely in English to ease the discussion and the diffusion of its results. For French readers, translated versions of the general introduction is available. The thesis is made of three independent chapters, each one contributing to the literature on work-life balance and subjective well-being. In order to make each chapter readable independently from the others, some elements are to be found in several chapters, especially those relating to the economic literature and the institutional context. Each chapter also contains its own contextual elements and a review of literature specific to the issue addressed in the chapter. For this reason, the general introduction remains brief on the literature, in order to avoid excessive redundancies.

Cette thèse a été rédigée intégralement en anglais afin de faciliter la discussion et la diffusion de ses résultats. Pour les lecteurs uniquement francophones, une version traduite de l'introduction générale est proposée. La thèse est composée de trois chapitres autonomes, chacun visant à éclairer une problématique spécifique en lien avec l'étude de l'équilibre travail-vie privée et le bien-être subjectif. Pour permettre la lecture de chaque chapitre indépendamment des autres, certains éléments sont mentionnés dans plusieurs chapitres, notamment parmi ceux ayant trait à la littérature ou la présentation du contexte institutionnel. Chaque chapitre contient également ses propres éléments de contexte et une revue de littérature spécifique à la problématique étudiée dans le chapitre. Pour cette raison, l'introduction générale demeure brève sur les éléments de littérature, dans l'objectif de limiter les redondances.

General Introduction

General Introduction

This thesis explores the relationship between work-life balance policies and life satisfaction in the Netherlands. In this general introduction, I will first motivate the subject of the thesis. Then, I present how well-being has been theorized by economists, psychologists, sociologists, and other social scientists. Afterward, I introduce the concept of ‘*work-life balance*’ and focus on the specificity of the Netherlands. Finally, I outline the research objectives and questions of this study and present the academic contribution.

Motivations

This thesis address questions on work-life balance against a backdrop of globalization, and profound and ongoing social construct and workplace change. Indeed, the inflow of women into the labor force in the late 1960s, the increasing prevalence of dual-earner couples request for equal opportunities between men and women during the 1990s (Lewis, 2006), the increasing value placed by society on work-based achievement (Lewis, 2003), intensification of work (Guest, 2002), technological change and aging population (McGinnity and Whelan, 2009) has changed the nature of work-life balance significantly.

In the late 1960s, women’s started to enter tremendously into the labor market. They gradually broke the glass ceilings to follow the career path previously reserved to men, while ensuring their family duties (Lewis and Cooper, 1999). During the 1970s, social scientists started to note the existence of dual-earner couples and to recognize that men could no longer expect the support of a full-time wife at home (Rapoport and Rapoport, 1969). As noticed by Lewis and Cooper (1999), at this time, research on work and family analyzed these emerging issues from an individual perspective rather than an organizational problem. Most of the literature emphasized identity dilemmas, attitudes to traditional role expectations, and role conflicts among middle-class couples. The focus began to shift in the 1980s to recognize the existence of stress and work-family conflict among employed women in dual-earner couples (Wiersma and Van Den Berg, 1991).

In parallel, the rise of new technologies opened up the possibility of shorter working weeks and more leisure time (Lewis and Cooper, 1999). However this did not happen. Instead, the 1970s were the breeding ground for a period of industrial

strife and layoffs (Lewis and Cooper, 1999). Later in the 1980s, the "enterprise culture" was accompanied by an intensification of work and increased competition. It was a period where the term burnout was used in the everyday vocabulary of many workers (Meier, 1983). The call for family-friendly employment policies started to be heard in the late 1980s and early 1990s. The European Union started developing and supporting family-friendly policies to face labor shortages and falling fertility rates due to demographic shifts (Jacobs and Gerson, 1997).

The need to develop policies to support employees with family commitments was also due to the aging population and the growing recognition that elderly care, as well as child care, was affecting more and more employees well-being (Gornick and Meyers, 2003; Allen et al., 2000). Nonetheless, the desirability of men and women sharing employment and family responsibilities remained an explicit argument to develop work-family reconciliation policies in the mid-1990s (Lewis, 2006). Moreover, Lewis (2006) note that work-family reconciliation, equal opportunities, and social policies have all been historically linked at the EU level.

According to the European Commission (2006, 2008, 2011), policies aimed at reconciling professional and private life are a necessary condition for sustainable growth and social integration. Since, this idea has gained ground. A directive of the European Parliament on work-life balance for parents and carers entered into force in July 2019 (European Commission, 2017). This directive set a minimum of rights to be granted to parents and carers. It includes; ten days of paid paternity leave, and making two out of the four months of parental leave non-transferable from a parent to another. Parental leave should be compensated at a level set by member states. The directive also calls for the introduction of five days carers' leave per year, and the extension of the existing right to request flexible working arrangements for all working parents of children up to at least eight years old, and all carers. One can notice that most of these arrangements concern work-family policies. In the context of this thesis, I will not reduce work-life balance to family-life balance, since family life is only one aspect of life outside work. More generally, work-life balance policies encompass flexible scheduling, freedom-form company, compressed workweek, sabbatical year, holidays, on-site childcare, birth-related leave, carer's leave, telecommuting, part-time schedule, normative support from companies to the use of work-life balance arrangements and job sharing.

At the firm level, work-life integration challenges contemporary forms of work

organization by focusing on productivity rather than '*face time*', offering employees autonomy in how work is performed to adjust work to fit flourishing personal life. Organizational initiatives to facilitate work-life balance further includes on-site childcare, telecommuting job sharing and a family-friendly climate.

In this context, it is all the more interesting to question the impact of work-life balance arrangements and work-life conflicts on subjective well-being. What remains unclear is how the shift towards greater autonomy at work affects individuals' work-life balance and thus workers' life satisfaction. Furthermore, it is ambiguous how work-life arrangements are experimented within dual-earner couples. Another open question concern the change of attitudes and values of the new generation concerning work. More Especially, individuals born after generation X (Coupland, 2007) give greater priority to seeking a balance between work and the rest of life (Klun, 2008). We know little about how different work-life balance practices might affect workers' subjective well-being depending on the predominance of work in their lives.

The importance of exploring the relationship between work-life balance and subjective well-being is demonstrated by the growing demand from policymakers of well-being studies. The "Stiglitz, Sen and Fitoussi" report (Stiglitz, 2009) commissioned for Nicolas Sarkozy and published in 2009, insists on the need to consider other indicators than GDP in the evaluation of public policies. Such as peoples' life evaluations, hedonic experiences, and priorities. As a follow-up to this report, the European Union has developed the Beyond GDP program to develop indicators taking into account the evolution of environmental and social aspects in European countries. As such, eighteen subjective well-being indicators have been introduced in the "European Statistics on Income and Living Conditions" survey (EU-SILC - 2013). Besides, the OECD launched the better life initiative and the better life index in 2001. The better life index measures 11 key aspects of life, including subjective well-being (Durand, 2015). Furthermore, England, Switzerland, France, Netherlands, Austria, and Germany have included subjective well-being indicators in their national surveys. Additionally, a small group of countries, including Scotland, New Zealand, Iceland, Wales and Finland has formed the well-being Economy Alliance that aims at building an economy focused on citizens' well-being. These initiatives show that measuring happiness is at the heart of the concerns for policymakers.

To address these challenges, further study of the relationship between overall life satisfaction and work-life balance is needed. It is the purpose of this thesis, which

investigate how parental leave schemes, informal care provision, and working hours mismatch affect life satisfaction in the Netherlands. Further, this thesis explores the moderating role of socio-demographic characteristics in the relationships between work-life balance arrangements and life satisfaction.

Theoretical Framework

In this part, I define the central concepts of my thesis, ‘*Subjective well-being*’ and ‘*Work-Life Balance*’. Then, I contextualize the framework of my study by specifying the socio-economic and legislative specificities of the Dutch case.

Subjective Well-Being

According to [Diener et al. \(1999\)](#), subjective well-being (SWB) includes people’s emotional responses, domain satisfactions, and global judgments of life satisfaction. They distinguish two distinct components of SWB: an affective part, which refers to both the presence of positive affect and the absence of negative affect and a cognitive part. The affective part is an hedonic evaluation guided by emotions and feeling, while the cognitive part is information based on the appraisal of one’s current life and measures up to their expectations and the gap between their envisioned ‘*ideal*’ life and their current life. Another approach to subjective well-being is ‘*Eudaimonia*’ or ‘*the Good Life*’ which is the quality of life achieved by developing and fulfilling one’s potential, i.e., when people act in congruence with deeply held values and are fully engaged ([Frey and Stutzer, 2002](#)).

The two approaches to well-being, hedonism, and eudaimonism, are grounded on different views of human nature. The hedonic approach initially considers the human organism initially to be relatively empty and thus malleable, such that it gains its meaning with social and cultural teachings. In contrast, the eudaimonic approach ascribes content to human nature and works to uncover that content and to understand the conditions that facilitate or diminish it ([Deci and Ryan, 2008](#)). Judging the overall quality of his/her own life implies a subjective cognitive judgment, which is how a person judges his or her life as favorable rather than unfavorable. This judgment involves an assessment of our past and current experiences, with love, family, friends, career, Etc., and an evaluation of the future possible experience.

The subjective evaluation of one’s quality of life is grounded in two more or less distinct sources of information: how well one’s feel most of the time, the hedonic level of affect, and to what extent life has brought what one’s want from it, contentment ([Veenhoven, 2000](#)). What one feels is called the hedonic level of affect, which is how various emotions that someone experiences are pleasant in

character. The hedonic level of affect is different from ‘*mood*’: nostalgic moods, calm moods, bad moods, Etc. A unique mixture of affective experiences, ‘*hedonic tone or pleasantness*’, characterizes each of these moods. The concept of hedonic level concerns only the pleasure experienced in affects, that is the pleasure in feelings, in emotions, as well as in moods (Veenhoven, 2000). Therefore, someone may experience a high feeling of pleasure based on strong but passing emotions of love, as well as on the moods of steady calmness.

Contentment is the degree to which one’s perceives that his/her aspirations are met (Veenhoven, 2000). This perception implies a cognitive process in which one reflects on his/her past aspirations and observes whether they are met or not. Additionally, one’s will estimate his/her chance to fulfil its expectation about the future. This cognitive process may be seen as a subjective evaluation. However, goals and aspirations are not intrinsic features of a human being, such as feeling.

In sum, contentment and affective level of affects are part of evaluation one’s subjective assesment of satisfaction with life. In the context of this thesis we measure subjective satisfaction with life with the following question; “*How satisfied are you with the life you lead at the moment?*”. The respondent answered using an ordinal scale from zero, not at all satisfied, to ten, completely satisfied. This single-item scale has been recognized as a valid measure of subjective well-being¹. According to Veenhoven (2000) and Frey and Stutzer (2002), life satisfaction is reliable since it is strongly correlated with objective well-being indicators, such as, income, individualism, human rights, and societal equality across surveys².

The roots of the economics of happiness come from the well known ‘*Easterlin Paradox*’ (Easterlin, 1974). It highlights the following stylized fact; surveys in many countries conducted over decades indicate that, on average, significant increases in per capita national income have been found to have little effect on reported global judgments of life satisfaction or happiness over time. Although reported

¹As mentioned previously, this single item question is used across national, European and international surveys. For a more comprehensive review of the literature related to subjective well-being see Dillenseger et al. (2018)

²There is currently a debate on the reliability of the life satisfaction question. Bond and Lang (2019) find that ordered Probit findings using life satisfaction as outcomes can be reversed by lognormal transformations. Kaiser and Vendrik (2020) answer this criticism by arguing that Bond and Lang’s reversal conditions imply that respondents answer happiness questions in a manner that is implausible and which is contradicted by previous empirical research. Additionally, they show that these reversals are due to heterogeneity across the distribution of reported happiness measures.

life satisfaction and household income are positively correlated in a cross-section of people at a given time. In other words, at a given point in time happiness varies directly with income both among and within nations, but over time income increases are not related to a higher level of happiness. At this time, Easterlin's results were considered a paradox, as they contradicted the principles of orthodox economics, according to which economic wealth is the definition of happiness. [Easterlin \(1974\)](#) hypothesized that two factors may explain the absence of relation between income and happiness over time. The first argument is the effect of social comparison on happiness, e.g., if other individuals get richer compared to us, it further reduces the effect of a given income on individual happiness. Additionally, [Wolbring et al. \(2013\)](#) have shown that relative income does have a significant impact on subjective well-being and that individuals are happier the larger their income is, compared to the income of their reference group, including family, friends, and colleagues.

What is Work-life balance ?

In order to clarify the concept of work-life balance, I will now give some definitional elements. According to the Cambridge dictionary, the term balance corresponds to a "state where things are of equal weight or force"³. Consequently, the notion of work-life balance implicitly considers an equal level of attention, time, involvement, or commitment between each role related to work and personal life ([Greenhaus et al., 2003](#)). In the literature, on work-life balance, a distinction is made between positive role balance and negative role balance. [Marks and MacDermid \(1996\)](#) define positive role balance as "the tendency to become fully engaged in the performance of every role in one's total role system, to approach every typical role and role partner with an attitude of attentiveness and care. Put differently; it is the practice of that even-handed alertness known sometimes as mindfulness" ([Marks and MacDermid \(1996\)](#), p. 421). The expression '*fully engaged*' denotes a positive role balance, in contrast to a negative role balance in which individuals are fully disengaged in every role. Another positive definition of '*work-life balance*' provided by [Kofodimos \(1993\)](#) is "a satisfying, healthy, and productive life that includes work, play and love." ([Kofodimos \(1993\)](#); p. xiii). [Kirchmeyer \(2000\)](#) characterized a balanced life "as achieving satisfying experiences in all life domains, and to do so requires personal resources such as energy, time, and commitment to be well distributed across domains" (Kirchmeyer, 2000, p.81).

³For more details see <https://dictionary.cambridge.org/dictionary/english/balance>

This definition of work-life balance aligns with the Conservation of Resources Theory (Hobfoll and Schumm, 2002). This theory suggests that individuals strive to gain, protect, and maintain resources. Resources encompass objects (e.g., a house), personal characteristics (e.g., self-esteem), conditions (e.g., being married), or energies (e.g., vigor, time) that are valued and sought.

The negative view of work-life balance is put forward by the scarcity theory (Edwards and Rothbard, 2000; Marks, 1977; Sieber, 1974) and the conflict theory (Greenhaus and Beutell, 1985). The scarcity theory assumes that time, energy, and attention is finite, and that devotion of lesser resources to the other role. Conflict theory proposes that work and family domains are incompatible due to their different norms and responsibilities. The combination of both theories implies that exposure to stressors in a given domain (e.g., work) may lead to irritability, fatigue, or preoccupation, with those problems, thus limiting one's ability to meet the demands of other domains of life (e.g., family), thus leading to work-family conflict. Greenhaus et al. (2003) view work-life balance "as a matter of degree, a continuum anchored at one end by an extensive imbalance in favor of a particular role (e.g., family) through some relatively balanced state to an extensive imbalance in favor of the other role (e.g., work) as the other anchor point" (Greenhaus et al. (2003), p.513).

The concept of work-life balance also contains the words '*work*' and '*life*'. '*work*' can be defined as paid employment. According to the International Labor Organization (ILO) an employed person is a person aged 15 years or older who have worked - for pay or profit for at least one hour during a given week or having a job from which being absent under conditions on the reason of absence (e.g. holidays, sick leave, maternity leave, Etc.) or duration ⁴.

The definition of *life* or *non-work activities* is also complex since it includes every aspect of life that is not related to work (e.g., leisure activities, self-care, travel, volunteering, family life) as if '*work*' and '*life*' was two completely distinct constructs. In reality, the spheres of work and private life can be porous. Work experiences can have a positive or negative spillover effects on personal life. For instance, someone that experiences stress and overload at work may be more easily irritated in his/her private life and thus see his/her family relationship deteriorate.

⁴But this definition is no longer accurate if we take into account home work, caregiving, extra unpaid hours or commuting time. For the scope of this chapter, however, we restrict the definition of paid work to 'paid employment'.

Conversely, personal life can generate positive or negative spillover effects on functioning at work (Cho and Tay, 2016). Another salient example of spillover effects concern the use of Information and Communication Technologies (ICT). Many workers do not hesitate to communicate with relatives on social networks (e.g., Instagram, Facebook, Snapchat, etc.) during their working time - *life-to-work conflict*. While others continue to check their email after work or communicate about their work via LinkedIn or tweeter - *work to life conflict* (Brulé and Munier, 2021). All in all, Guest (2002) states that the term “*work-life balance* is in itself a misnomer and serves simply as a convenient shorthand for work and the rest of life” (Guest (2002), p. 262).

Boundary Management Strategies

Therefore when looking at the concept of work-life balance, it is essential to analyze how the boundary between work and private life is conceptualized. Boundary management strategies relate to the strategies, principles, and practices people construct to organize and separate role demands and expectations into specific realms of home and work (Nippert-Eng, 1996). According to Baltes et al. (2009) two conceptual models of boundary management of work and family have been elaborated: Border Theory (Clark, 2000) and Boundary Theory (Ashforth et al., 2000). Boundary theory focuses on the meaning people assign to home and work and the ease and frequency of transitioning between roles (Ashforth et al., 2000). This theory considers the link between the home and the work domain as a continuum ranging from segmentation to integration (Voydanoff, 2005). For instance, complete segmentation between personal life and work may concern a striptease artist that prefers to hide his/her work from her/his family because she fears their judgments. At the opposite, a complete integration may occur for a person managing a family restaurant. Most of the time, employees will be in the middle of the spectrum between complete segmentation and complete integration. In contrast to boundary theory, work-family border theory exclusively concerns work and family domains, with work family balance the outcome of interest. The theory assumes that work-family balance, which refers to satisfaction and superior functioning at work and home with a minimum of role conflict, can be achieved in a variety of ways depending on the similarity of work and family domains, the strength of the boundaries between these domains and a variety of other factors (Desrochers et al., 2005). According to Baltes et al. (2009), whether segmentation is more effective than integration is still an open issue. On one

side, integration strategy might help employees to resolve some of the tension arising from holding multiple roles by providing greater flexibility and blurring role boundaries (Ashforth et al., 2000). On the other side, employees might desire greater segmentation because it may buffer employees from the spillover of negative emotions and experiences in one domain to the other (Edwards and Rothbard, 2000).

As mentioned earlier, the COR stipulates that individuals seek to gain, protect, and maintain resources. If one time or energies is overused in one domain (e.g. work) this can lead to work-life conflict. In order to prevent work-family conflict individuals, can develop coping strategies for achieving work-life balance. The first general model is the life management strategy named Selection, Optimization, and Compensation (SOC)⁵ (Baltes et al., 2009). Selection concerns an individual's determination of a goal hierarchy⁶, optimization relates to allocation of resources in order to achieve goals and compensation behaviors take place when alternate means are used to maintain the desired level of functioning in the face of actual or anticipated decreased resources (Freund and Baltes, 1998). According to Baltes and Heydens-Gahir (2003), the use of the life management strategy (SOC) is related to lower levels of job and family stressors, and consequently to lower amounts of work-family conflict. The second coping model that has been empirically tested is the time management model (Macan et al., 1990). The time management model can be characterized by three dimensions: (1) Goal setting and prioritization, which involves daily decisions about what is most essential to accomplish; (2) Mechanics of time management, which includes such activities as making 'to do' lists; (3) Preference for organization, which involves maintaining a methodical, organized approach to work.

Other models consist to enhances work-life facilitation or enrichment state that experiences in one role can improve the quality of life in the other role (Greenhaus and Powell, 2006). Work-life facilitation can be defined as "the extent to which an individual's engagement in one life domain (i.e., work/family) provides gains (i.e., developmental, affective, capital, or efficiency) which contribute to enhanced

⁵SOC is based on the underlying assumption that "the coordinated use of behaviors involving Selection (elective and loss-based), Optimization, and Compensation can (a) increase one's resources in the sense of developmental enhancement, (b) help maintain functioning in the face of challenges, and (c) help regulate impending losses in resources" (Baltes and Heydens-Gahir (2003), p. 1006).

⁶Loss-based selection occurs when an individual is pressured to change their goal hierarchy by the loss of some internal or external resources, while elective selection take place when an individual's determination of a goal hierarchy is not the result of a loss of resources.

functioning of another life domain (i.e., family/work)” (Wayne et al. (2007), p.64)⁷. Two major models of work-life facilitation exist. The first model Resource-Gain Development perspective was developed by Wayne et al. (2007). This model states that personality characteristics such as positive affectivity and a high self-efficacy cause an individual more readily to experience positive emotional states, seek out positive developmental opportunities, and earn status in one domain (e.g., work), which all can facilitate functioning in another domain (e.g., family), and vice versa. Additionally, environmental resources, such as having a job which offers developmental opportunities, having a supportive supervisor, or working in an organization with a supportive work-family culture can also promote positive experiences in one domain (e.g., work) and the acquisition of gains (developmental, affective, efficiency) that can improve functioning in another domain (e.g., family). The second model is the Person-Environment fit (P-E fit) (Edwards et al., 1998) the theory claims that if there is a perceived match between a person’s values and the resources that the environment provides to fulfill those values, then the individual will experience greater well-being and higher levels of work-family facilitation (Edwards et al., 1998).

The research work contained in my thesis focuses mainly on time-based conflict. According to Michel et al. (2011) “time-based conflict occurs when time or attention allocated to one domain, such as work schedule inflexibility and work or family time demands, hinders role performance in the other domain.” (Michel et al. (2011), p.691). A related concept is the ‘*time bind*’ (Hochschild, 1997), representing the perceived imbalance between the demands of work and the demands of family, or more generally, of personal life.

Becoming a parent (chapter 1), or a caregiver (chapter 2), or experiencing a mismatch between actual and preferred working hours (chapter 3) are all events directly linked to the ‘*time bind*’. Indeed, caring for young children or being a caregiver for relatives significantly reduces the extent to which workers feel successful in balancing their work and personal lives (Tausig and Fenwick, 2001; Kossek et al., 2001). Besides, the flexibility of working time is one factor that has been shown to decrease work-family conflict (Tausig and Fenwick, 2001). Consequently, all these events are likely to consume time and energy resources, and so on to generate work-family conflict.

⁷Some researchers point out that whether an individual perceives his/her work and family roles as conflicting with one another, versus facilitating one another, is largely based on the individual’s perception or cognitive appraisal of the two domains (Higgins et al., 2000).

Finally, a large body of literature highlight a positive relationship between positive family-to-work spillover and life satisfaction and a negative relationship between work-life conflict and life satisfaction (Cho and Tay, 2016; Greenhaus et al., 2003; Amstad et al., 2011; Marks and MacDermid, 1996). A more detailed review of the literature on the mechanisms explaining the relationship between work-life balance/work-life conflict and subjective well-being is presented in each chapter.

The specificity of the Netherlands

This thesis focuses on the case study of the Netherlands. There are several reasons why the Netherlands is an interesting case. First of all, according to the OECD better life index the Netherlands are at the top of the list when it comes to work-life balance⁸. Indeed, in the Netherlands, 0,4% of employees work very long hours⁹, the lowest rate in the OECD, where the average share of the employees working very long hours is 11%. Additionally, in the Netherlands, full-time workers spend on average 16,1 hours of their day to personal care (e.g., eating, sleeping, Etc.) and leisure (socializing with friends and family, hobbies, games, computer, and television use, Etc.) than the OECD average of 15 hours¹⁰. Besides, the Netherlands is also at the top of the list concerning their general life satisfaction¹¹. Dutch people on average gave it a 7,4 grade in 2020, higher than the OECD average of 6.5. To conclude, the Netherlands seems to be an example to follow. Therefore, it is an interesting case to explore the relationship between work-life balance and life satisfaction. In order to better understand the structure of the labor market and work-life balance legislation, I will now give some factual elements on these topics.

The Netherlands is the first part-time economy in the world (Visser, 2002). According to Eurostat, around 46% of Dutch employees worked part-time in 2019¹².

⁸For more details see <https://www.oecdbetterlifeindex.org/countries/netherlands/>

⁹According to OECD better life index very long working hours is defined as working fifty hours or more per week.

¹⁰Only France and Italy are ahead of the Netherlands, with an average of 16.4 and 16.5 hours spent on leisure and personal care respectively.

¹¹As mentioned previously the OECD better life index provide data on average self-evaluation of life satisfaction for OECD countries.

¹²Part-time work is recorded as self-reported by individuals. For more details on data see http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_eppgacob&lang=en

Besides, approximatively two in every three female employees worked part-time¹³. According to [Fouarge and Baaijens \(2004\)](#), the important share of part-time workers among the Dutch employees is mainly due to the spontaneous process of the late entrance of women into the labor market in the 80s¹⁴ combined with the necessity to adapt working hours to a growing service sector during a period of economic shortage. The Netherlands took first place as a part-time economy in the 1980s. This place was occupied before by Sweden, Denmark, and the UK. As late as 1971, the Netherlands had the lowest female participation in the labor market ([Visser et al., 2004](#)). Part of the explanations is that Dutch women were relative latecomers to the labor market due to discriminatory labor market policies for women who were seen as homemakers while the man was the breadwinner. Moreover, the availability of childcare was poor ([Misra and Jude, 2008](#)). Dutch policy was dominated by Christian values until the late 1980s, such that women were banned from some professions¹⁵ and the state provided aid so that women could take care of their children at home. The relative economic power of the Netherlands enabled most people to sustain relatively high standards of living on a single income. Moreover, compared with other countries, few men had to leave to fight in the world wars of the 20th century. Thus, women were not working in factories as they did in France and Britain ([Misra and Jude, 2008](#)).

In 1974, a commission for the promotion of gender equality was established at the highest political level¹⁶. In the 1980s the government embraced gender equality and the possibility of women leading an independent existence, and a just division between care and housework as new political aims ([Pfau-Effinger, 1999](#)). At the same time, some welfare state elements were dismantled giving rise to a period of wage moderation, and the promotion of part-time jobs. In 1990 a tax reform reduced the basic tax allowance for breadwinners, thus lowering the

¹³For more details see <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>.

¹⁴For a more detailed explanation on the entry of women into the labor market see [Hakim \(2006\)](#) and [Hakim et al. \(1998\)](#)

¹⁵For example, in 1924 married women were banned from taking public service jobs, including jobs as teachers ([Pott-Buter, 1993](#)). This ban supported by most unions, was withdrawn in 1957 but persisted in many municipalities even ten years later. Employers could legally fire a women because of pregnancy, childbirth, or marriage until new legislation was passed in 1973.

¹⁶In the 1960s, feminist action groups emerged as part of the feminist movement to challenge women's dependence upon men, and the impossibility of combining motherhood with work outside the home ([Bussemaker and Voet, 1998](#)). Responding to feminist demands, in 1974, the Social Democrat-headed government created an external advisory committee called the Emancipatie commissie (Emancipation Commission [EK]). Yet the commission's first report, adopted in 1977, simply reinforced women who were valued as wives and mothers ([Swiebel and Outshoorn, 1998](#)).

disincentives for the second-earners partnership to take up paid work (Visser, 2002). This reform went hand in hand with an expansion of childcare facilities and the development of part-time contracts. Welfare restructuring during this period led to the dismantling of some elements of the welfare state, freezing of wages, and the promotion of part-time jobs (Misra and Jude, 2008). The government presented part-time work as a way for women to reconcile work and family; and as an instrument for facilitating more flexibility for employers while decreasing unemployment (Plantenga et al., 1999). These measures generated a booming economy in the 1980s and created labor shortage, enhancing the wish to bring women workers into the labor market (Visser, 2002).

In the tight labor market of the 1990s, the promotion of part-time work helped match labor demand with labor supply by giving employers flexibility, expanding the pool of potential workers, and helping employees meet their work and family balance (Berg et al., 2004). Contrary to the argument that part-time employment allows ‘economics flexibility’, i.e. reducing working hours during periods of economic downturn. The Netherlands used part-time work as a way to fulfil labor demands in a growing economy. Although part-time work enables firms to have internal flexibility and workers to balance work and life, there is still some penalty associated with it such as the risk of poverty, lower training opportunities and career prospects, lower tenure, and a wage differential compared to full-time workers (OECD, 2010).

Since 1990, a series of national reforms have encouraged part-time work and flexible work hours arrangements. Those reforms were a consequence of the change occurring in the labor market during the 1980s rather than a determinant. In the context of this thesis, I will briefly present the Dutch reforms concerning parental leave (chapter 1), informal care (chapter 2), and working time flexibility (chapter 3).

Legislation on Parental Leave

The Netherlands implemented a right to unpaid part-time parental leave through the ‘*Wet op het ouderschapsverlof*’ (Parental Leave Act) in 1991. This act gave an unpaid part-time parental leave of a maximum of six months to employees who had been employed by their current employer for at least one year to be taken within four years after the birth of a child. Then in January 2009, the length of parental leave was extended at 26 times the contractual

number of working hours (Plantenga and Remery, 2009). To sum up, the Dutch parental leave scheme ensures job-protected leave, but income support is left to the decision of employers, however, some fiscal incentives were introduced since, but they have a marginal impact, as only a minority of the potential leave takers are entitled to a paid parental leave (Plantenga and Remery, 2009). Moreover, although the Netherlands took the first step towards a generalized paid parental leave, the take-up rate is still far from 100 percent, and gender inequalities persist¹⁷.

Legislation on Informal Care

In 1968, the Netherlands implemented a universal public long-term care insurance scheme: ‘*De Algemene Wet Bijzondere Ziektekosten*, AWBZ. The AWBZ was a statutory health insurance scheme covering primarily nursing home care and institutionalized care for persons with cognitive, physical, or sensory handicaps, persons with long-term mental health problems and older persons with somatic or psychogeriatric problems (Maarse and Jeurissen, 2016). The AWBZ coverage was expanded over the years to home health care (1980), ambulatory mental health care (1982), social assistance in case of frailty, psycho-social problems, and after childbirth (1989) and residential care for the elderly (1997). According to Maarse and Jeurissen (2016) in January 2014, about 5 percent of the population received long term care (LTC) with the most prominent category - 56% - consisted of older persons (over 65 years).

This scheme was mainly funded by income-related contributions and was a single-payer program administrated by care officers set up by regionally dominant insurers (Alders and Schut, 2018). The comprehensive and generous public LTC insurance scheme turned the Netherlands into the highest spender on LTC in OECD countries. According to OECD Health Statistics, in 2014, the Netherlands spent 4.3 percent of its Gross domestic product on LTC. The broad entitlements, heavy reliance on institutionalized care, and the government as a single-risk bearing entity limiting efficiency resulted in increasing political concerns about the financial sustainability of the system (Alders and Schut, 2018).

The year 2007 was a turning point, setting the beginning of expenditure cuts, LTC decentralization, and normative reorientation towards greater individual responsibility in LTC. Domiciliary care (e.g. housekeeping services, transport

¹⁷For more details on the parental leave scheme in the Netherlands see p.42 of the thesis

services, meal services, house adjustment, and social shelter for homeless people), which accounted for about 4 percent of AWBZ expenses, was excluded from the coverage of public LTC insurance and transferred to the responsibility of the municipalities under the new *Wet maatschappelijke ondersteuning* (New Social support Act, abbreviated Wmo). Moreover, municipalities possessed substantial policy discretion in implementing the Wmo and were allowed to charge income and means-related copayments for individual provisions up to a maximum legal amount. Additionally, the budget municipalities received from the national government was reduced by 32%. The idea behind this budget cut was to create more substantial incentives to negotiate lower prices with the risk-bearing municipalities than the non-risk-bearing regional care offices and have more instruments to tailor the provision of care and facilities to the specific needs of citizens.

In 2013, The Dutch government went a step further by restricting admission criteria to institutional care. New clients with relative mild impairments (i.e. the first three scales of an eight scales severity index) were no longer entitled to institutional care. The diminution of institutional care recipients led to the closure of residential care homes and a transformation of residential home into a nursing homes.

To ensure the affordability, accessibility, and quality of long-term care in the future, the AWBZ underwent significant reform in 2015. The reform had three main goals: saving costs ¹⁸, keeping people self-sufficient for as long as possible, and improving quality and coordination of care by a client-tailored approach (Maarse and Jeurissen, 2016). Part of the benefits covered by the old LTC scheme (AWBZ) shifted to the responsibility of municipalities and health insurers. An additional element of the reform is the replacement of the former public LTC insurance scheme (AWBZ) by a less inclusive one (abbreviated as WLZ). The new WLZ scheme covers only a minority (about 35 percent) of the original AWBZ beneficiaries. The benefits include institutional care and intensive home health care. Someone is eligible for WLZ benefits when he or she structurally needs 24h day supervision or care in the vicinity. Applicants are subjected to a national needs assessment procedure according to uniform and strict standards (Alders and Schut, 2018).

¹⁸The reforms were accompanied with a project budget cut of 3.5 billion euro over the period 2014-2017

Furthermore, the government would encourage family members and local community networks (i.e., neighborhood networks) to provide various social care (e.g, home help). However, it is unclear to what extent municipalities succeed in fostering informal care, since they cannot oblige people to provide it. According to [Maarse and Jeurissen \(2016\)](#) an important criticism is that the potential of unexplored informal care is overestimated, and the negative externalities for informal caregivers are underestimated. Indeed, the new arrangement may make informal care an obligation, while they offer limited work hours. According to the Dutch government website, employees are legally entitled to take short-term care leave to look after a sick relative such as child, partner, or parent. In 2015, care leave was expanded to include time off to look after extended family members (e.g., siblings or grandparents) and acquaintances (e.g., housemate, neighbor, or friend). This type of leave is available because the sick person requires care and is not in the hospital. Within 12 month period, employees are entitled to take short-term care leave equal to twice their weekly working hours. During this time, the employer must pay at least 70 percent of their salary. For cases of life-threatening illness, long-term care leave is also possible: up to six times one's weekly working hours. However, an employer is not obliged to pay any salary during this period. In consultation with their employer, they may distribute the hours taken as care leave differently.

All in all, the Dutch government has implemented successive reforms to shift the responsibility of care towards family or local community. Consequently, it is all the more interesting to study the effect of informal care on caregivers' life satisfaction.

Legislation on Flexible Working Hours

Finally, the Netherlands has one of the lowest shares of underemployed part-time workers among European countries. According to OECD statistics, 5.5 percent of part-time workers were underemployed in 2020. This percentage is well below the European average of 15.5%. This low rate of involuntary part-time workers was partly made possible thanks to the '*Wet Flexibel Werken*' (Flexible Working Hours Act) that came into force on the 1st January 2016 to improve the work-life balance of Dutch employees. Under this act, the employee may request an increase or a reduction of his/her working hours. The act concerns only employees who have been under contract with the same employer for more than six months. The request should be made at least two months before the desired commencement date. The

employer may only refuse the request if there are compelling business interests that oppose the adjustment. All in all, This reform aims to offer more autonomy to the employee and allow him/her to better reconcile is work and its private life. Thus, it is relevant to analyze the effect of working hours mismatch on workers' life satisfaction in this context.

To sum up, this thesis provides new light on many reforms undertaken by the Dutch governments since 2001. The first chapter indirectly shows that the legal framework of Dutch parental leave consolidated through the Work and Care Act (Wet Arbeid en Zorg) is crucial to enhance parental well-being (chapter 1). The second chapter highlights the negative effect of care burden on life satisfaction. As a consequence, the Social Support Act (Wet Maatschappelijke Ondersteuning, WMO), set in place in 2015, that shifted the responsibility of care towards the family or local community, might have come at the expense of caregiver's life satisfaction (chapter 2). Then, the third chapter is to put in perspective with the Flexible Working Hours Act (Wet Flexibel Werken) that came into force on the 1st January 2016 (chapter 3). My results go in favor of this act that supports employees' adjustement of working hours.

Research Objectives and Research Questions

The overall aim of this thesis is to study *how work-life balance arrangements, more specifically, time bind, affect Dutch overall life satisfaction?* The main research objective is to elucidate the implications of work-life conflict on self-reported subjective well-being.

Following earlier research highlighting a negative relationship on work-life conflict and overall life satisfaction, this thesis explores the effect of the parental leave scheme on life satisfaction among different types of workers (Chapter 1); the impact of the care burden on life satisfaction (Chapter 2); and the difference in subjective well-being between workers who experiment working hours mismatch and the others (Chapter 3). Moreover, for each case study, I analyze the moderating effect of socio-demographic groups when studying subjective well-being. In Table 1, I present the research objectives and questions that are associated with each of my chapters.

Table 1 – Research Objectives and Research Questions

CHAPTER	OBJECTIVES	RESEARCH QUESTIONS	DATA SOURCE
CHAPTER 1	Examines how various parental leave scheme affects life satisfaction across different socio-economic groups.	(1) Does parental leave moderate the effect of having children on life satisfaction? (2) How the length, intensity, and payment scheme of the parental leave program moderates the relationship between parental leave and life satisfaction? (3) For whom parental leave is more conducive to parental well-being?	Dutch Longitudinal Internet Studies for the Social Sciences (LISS), from 2008 to 2013
CHAPTER 2	Enquires the causal effect of informal care provision on caregivers' life satisfaction, and how the frequency of care, the relationship with the care recipient and the kind of care provided differently affect caregivers' life satisfaction.	(1) What is the causal impact of informal care provision on caregivers' life satisfaction? (2) How the intensive margin of care, the type of care provided, and the relationship with the care recipient moderate the effect of care provision on caregivers' life satisfaction?	Dutch LISS, from 2009 to 2018
CHAPTER 3	Explores the moderating role of socio-demographic and job characteristics on the relationship between work hours mismatch and life satisfaction.	(1) What are the effects of under- and overemployment on Dutch workers' life satisfaction? (2) What are the moderating role of socio-demographic characteristics and job features on the relationship between working hours mismatch and life satisfaction? (3) How working hours and the intensive margin of underemployment impacts workers' life satisfaction?	Dutch LISS from 2008 to 2019

Research Strategy

Empirical quantitative research was conducted based on the same database LISS from CentERdata¹⁹. The choice of drawing on the same data sources responds to a need for consistency on the population studied through the three chapters.

Details of the data sources used are presented in each of the three chapters, with an overview of research objectives and questions in Table 1. The empirical strategy and statistical methods are reported in detail in Table 2 and Table 3 (survey description), Table 4 (data analysis) and Table 5 (scientific contributions):

Table 2 – Survey Description

	Chapter 1	Chapter 2	Chapter 3
Sample	Panel data, true probability sample of households drawn from the population register by Statistics Netherlands. All persons aged 21 and over who had been employed by their current employer for at least one year. Country : Netherlands	Panel data, true probability sample of households drawn from the population register by Statistics Netherlands. All persons aged 18 and over. Country : Netherlands	Panel data, true probability sample of households drawn from the population register by Statistics Netherlands. All persons aged 18 and over. All participants work at least 12 hours a week. Country : Netherlands
Frequency	Six core studies was collected every month at different time period	Six core studies was collected every month at different time period	Six core studies was collected every month at different time period
Method	Online questionnaires	Online questionnaires	Online questionnaires
Coverage	2,943 individuals and 8,590 observations	1,188 individuals and 9,180 observations	753 individuals and 5,165 observations
Data Collection	We selected one observation for each individuals every year from 2008 to 2013.	We selected one observation for each individuals every year from 2008 to 2019.	I selected one observation for each individuals every year from 2008 to 2019.

¹⁹Tilburg University, The Netherlands

Table 3 – Survey Description - Followed

	Chapter 1	Chapter 2	Chapter 3
Topics	The Core Study measures change in people’s lives, their reaction to life events and the effects of societal changes and policy measures. We use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and economic situation.	We use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and social integration and leisure.	I use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and social integration and leisure.
Provider	LISS panel data collected by centERdata (Tilburg University, The Netherlands)	LISS panel data collected by centERdata (Tilburg University, The Netherlands)	LISS panel data collected by centERdata (Tilburg University, The Netherlands)
Access	Free access for academic purposes.	Free access for academic purposes.	Free access for academic purposes.
Reference	LISS panel data (2008-2013)	LISS panel data (2008-2018)	LISS panel data (2008-2019)

Table 4 – Data Analysis

	Chapter 1	Chapter 2	Chapter 3
Dependent variable	Life satisfaction.	Life satisfaction.	Life satisfaction.
Econometric analysis	Ordinary least square fixed-effect (OLS FE). (Ferrer-i Carbonell and Frijters, 2004)	OLS and two-step system GMM regressions. (Arellano and Bover, 1995a; Blundell and Bond, 1998)	Ordinary least square fixed-effect (OLS FE). (Ferrer-i Carbonell and Frijters, 2004)
Sensitivity analysis	Happiness as dependent variable. Ordered logit Fixed-Effects. Disctinction between working less in addition from parental leave from working less outside the parental leave scheme.	Nearest-Neighbor Matching. Happiness as dependent variable. Intensive margin of care. Alternative model calibration	Happiness as dependent variable. At least four hours mismatch, intensive margin of under and overemployment., working hours and underemployment.
Heterogeneity Analysis	Lenght of parental leave, Weekly hours of parental leave, disctinction between working less in addition from parental leave from working less outside the parental leave scheme Socio-demographic characteristics; Gender, Education Level, Income category, Work hours category, Sector.	Relationship with the care recipient, residence of the care recipient, frequency of the care provided, type of care provided. Gender, Employment status, Conjugal status.	Work characteristics; Job autonomy, job recognition, career prospect, job certainty. Gender, Conjugal status, Parental status, Education level.
Sample size	2,943 employees aged 21 and over.	1,188 individuals aged 18 and over.	753 employees aged 18 and over.
Source	The Core Study measures change in people’s lives, their reaction to life events and the effects of societal changes and policy measures. I use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and economic situation.	I use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and social integration and leisure.	I use information from 6 panels of the core study that covered issues including background informations, health, personality, family and household, work and schooling and social integration and leisure.

Scientific Contributions

Paper I. Dillenseger, L.; Burger, M.; Munier, F. (2019) ‘Parental Leave and Life Satisfaction: The Dutch case’, *Bureau d’Economie Théorique et Appliquée*, UDS, Working Paper No.2019-26.

<https://ideas.repec.org/p/ulp/sbbeta/2019-26.html>

Paper II. Blaise, M.; Dillenseger, L. (2020) ‘Informal Caregivers and Life Satisfaction: Empirical Evidence from the Netherlands’, *Bureau d’Economie Théorique et Appliquée*, UDS, Working Paper No.2020-55.

<https://ideas.repec.org/p/ulp/sbbeta/2019-26.html>

Paper III. Dillenseger, L. (2021) ‘Working Hours Mismatch and Subjective Well-being: Empirical Evidence from the Netherlands’, *Bureau d’Economie Théorique et Appliquée*, UDS.

Presentation, scope and relevance

This thesis brings together a compilation of three papers. All three have been peer-reviewed by colleagues and are published as working paper from the Bureau d’Economie Théorique et Appliquée of the UDS. The contribution of my thesis is mainly empirical.

Table 5 – Scientific Contributions: Summary

	PAPER I	PAPER II	PAPER III
Title	Parental Leave and Life Satisfaction: The Dutch case	Informal Caregivers and Life Satisfaction: Empirical Evidence from the Netherlands	Working Hours Mismatch and Subjective Well-being: Empirical Evidence from the Netherlands
Under submission to the journal	Applied Research in Quality of Life	Journal of Economic Psychology	Journal of Happiness Studies

Justification of the Thematic Unity

Given the importance of work-life balance issues in the public debate, I have explored how life events that can generate work-life conflict affect overall life satisfaction in the Netherlands. Against the backdrop of each of my analyses, reforms aimed at improving employees' work-life balance were carried out by the Dutch government. I start my empirical analysis by studying the effect of parental leave schemes on life satisfaction (Chapter 1). I pay particular attention to the moderating role of gender, education level, income, and sector activities on this relationship. Then, I enquire about the causal effect of informal care provision on caregivers' life satisfaction (Chapter 2). Finally, chapter 3 uses a work-life balance proxy - working hours mismatch - to study how the perceived imbalance between work demands and personal life's demand impact life satisfaction. Moreover, chapter 3 explores the moderating roles of job features and socio-economic characteristics on this relationship. In sum, chapter 1 and chapter 2 are focus on the effect potential antecedents of work-life imbalances on life satisfaction, while chapter 3 attempt to evaluate the direct effect of work-life imbalances on overall life satisfaction.

The three chapters share a similar geographical scope, as all three deal with the Netherlands. Besides, all my empirical analyses are based on panel data from the LISS.

The thematic links between the three chapters of this compendium are summarized in Table 6. The main subjects analyzed in this thesis are related to subjective well-being, as well as individual socio-demographic characteristics, work-life balance and the Netherlands.

Table 6 – Justification of the Thematic Unity

	CHAPTER 1	CHAPTER 2	CHAPTER 3
Life satisfaction	✓	✓	✓
Work-life balance	✓	✓	✓
Time-bind	✓	✓	✓
Socio-demographic characteristics	✓	✓	✓
Work characteristics	✓		✓
Parental leave scheme	✓		
Informal care		✓	
working hours mismatch			✓
The Netherlands	✓	✓	✓

Introduction générale

Introduction générale

Cette thèse explore la relation entre les politiques d'équilibre travail/vie privée et le bien-être subjectif aux Pays-Bas. Dans cette introduction générale, je motive tout d'abord le sujet de la thèse. Ensuite, je présente la manière dont le bien-être a été théorisé par les économistes, les psychologues, les sociologues et d'autres spécialistes des sciences sociales. Puis, j'introduis le concept d' *'équilibre entre travail et vie privée* et détail les spécificités des Pays-Bas. Enfin, je décris les objectifs et les questions de recherche de cette étude et je présente ma contribution académique.

Motivations

Cette thèse aborde des questions relatives à l'équilibre entre vie professionnelle et vie privée dans un contexte de mondialisation et de changements profonds et continus des constructions sociales et des lieux de travail. En effet, l'arrivée des femmes sur le marché du travail à la fin des années 1960, la prévalence croissante des couples à double revenu, la demande d'égalité des chances entre les hommes et les femmes dans les années 1990, la valeur croissante accordée par la société à l'accomplissement professionnel, l'intensification du travail, les changements technologiques et le vieillissement de la population ont considérablement modifié la nature de l'équilibre entre la vie professionnelle et la vie privée.

À la fin des années 1960, les femmes ont fait une entrée remarquée sur le marché du travail. Elles ont progressivement brisé les plafonds de verre pour suivre des parcours professionnels auparavant réservés aux hommes, tout en assurant leurs devoirs familiaux (Lewis and Cooper, 1999). Au cours des années 1970, les chercheurs en sciences sociales ont commencé à constater l'existence de couples à double revenu et à reconnaître que les hommes ne pouvaient plus s'attendre au soutien d'une femme à temps plein à la maison (Rapoport and Rapoport, 1969). Comme l'a remarqué Lewis and Cooper (1999), à cette époque, la recherche sur le travail et la famille analysait ces questions émergentes d'un point de vue individuel plutôt que comme un problème organisationnel. La plupart des publications mettaient l'accent sur les dilemmes identitaires, les attitudes face aux attentes traditionnelles en matière de rôles et les conflits de rôles chez les couples de la classe moyenne. Dans les années 1980, l'accent a commencé à être mis sur la reconnaissance de l'existence du stress et du conflit travail-famille pour les femmes employées et étant dans un couple à double revenu.

Parallèlement, l'essor des nouvelles technologies a laissé entrevoir la possibilité de réduire la durée des semaines de travail et d'augmenter le temps de loisirs (Lewis and Cooper, 1999). Mais cela ne s'est pas produit. Au contraire, les années 1970 ont été le terreau d'une période de conflits sociaux et de licenciements (Lewis and Cooper, 1999). Plus tard, dans les années 1980, la "culture d'entreprise" s'est accompagnée d'une intensification du travail et d'une concurrence accrue. C'est une période où le terme burnout est entré dans le vocabulaire courant de nombreux travailleurs (Meier, 1983). L'appel à des politiques d'emploi favorables à la famille a commencé à se faire entendre à la fin des années 1980 et au début des années 1990. L'Union européenne a commencé à élaborer et à soutenir des politiques favorables à la famille pour faire face aux pénuries de main-d'œuvre et à la baisse des taux de fécondité due à l'évolution démographique (Jacobs and Gerson, 1997).

La nécessité de développer des politiques visant à soutenir les employés ayant des obligations familiales était également due au vieillissement de la population et à la reconnaissance croissante du fait que les soins aux personnes âgées, ainsi que les soins aux enfants, affectaient le bien-être de plus en plus d'employés (Gornick and Meyers, 2003; Allen et al., 2000). De plus, le partage des responsabilités professionnelles et familiales entre les hommes et les femmes était un argument explicite pour développer des politiques de conciliation travail-famille au milieu des années 1990 (Lewis, 2006). Lewis (2006) remarque que la conciliation travail-famille, l'égalité des chances et les politiques sociales sont des problématiques historiquement imbriquées au niveau européen.

Selon la Commission européenne (2006, 2008, 2011), les politiques visant à concilier vie professionnelle et vie privée sont une condition nécessaire à une croissance durable et à l'intégration sociale. Cette idée a fait son chemin. Une directive du Parlement européen sur l'équilibre entre vie professionnelle et vie privée des parents et des aidant est entrée en vigueur en juillet 2019 (Commission européenne, 2017). Cette directive détermine un minimum de droits à accorder aux parents et aux aidant. Il s'agit notamment de dix jours de congé de paternité payé et de la non-transférabilité de deux des quatre mois de congé parental d'un parent à l'autre. Le congé parental doit être indemnisé à un niveau fixé par les États membres. La directive demande également l'introduction de cinq jours de congé pour les aidant par an, et l'extension du droit existant de demander des arrangements de travail flexibles pour tous les parents qui travaillent et qui ont des enfants jusqu'à au

moins huit ans, ainsi que pour tous les aidant. On peut remarquer que la plupart de ces dispositions concernent les politiques de conciliation travail-famille. Dans le cadre de cette thèse, je ne réduirai pas l'équilibre entre vie professionnelle et vie privée à l'équilibre entre vie professionnelle et vie familiale, puisque la vie familiale n'est qu'un aspect de la vie en dehors du travail. Par conséquent, les politiques d'équilibre entre le travail et la vie privée concernent la flexibilité du temps de travail, la législation sur le temps de travail et les jours de congés, les congés de proche aidant, les congés parentaux, le congé maternité, et le congé paternité.

Au niveau de l'entreprise, l'intégration de la vie professionnelle et de la vie privée remet en question les formes contemporaines d'organisation du travail en mettant l'accent sur la productivité plutôt que sur le "*face time*", et en offrant aux employés une autonomie dans la façon dont le travail est accompli afin de combiner travail et vie personnelle épanouie. Les initiatives organisationnelles visant à faciliter l'équilibre entre vie professionnelle et vie privée comprennent également la mise en place de garderies d'entreprise, le télétravail, les emplois partagés, la possibilité de disposer de ses jours de congés de manière flexible, et un climat favorable aux familles.

Dans ce contexte, il est d'autant plus intéressant de s'interroger sur l'impact des politiques d'équilibre travail/vie privée et des conflits entre vie professionnelle et vie privée sur le bien-être subjectif. Une réflexion est nécessaire sur la manière dont l'évolution vers une plus grande autonomie au travail affecte l'équilibre entre vie professionnelle et vie privée des individus et donc la satisfaction de vie des travailleurs. En outre, il est pertinent d'analyser comment les aménagements de la vie professionnelle et de la vie privée sont expérimentés au sein des couples à double revenu. Une autre question ouverte concerne le changement des attitudes et des valeurs de la nouvelle génération concernant le travail. Plus particulièrement, les individus nés après la génération X (Coupland, 2007) accordent une plus grande priorité à la recherche d'un équilibre entre le travail et le reste de la vie (Klun, 2008). Nous avons peu d'informations sur la façon dont les différentes pratiques d'équilibre entre le travail et la vie privée peuvent affecter le bien-être subjectif des travailleurs en fonction de la prédominance du travail dans leur vie.

L'importance d'explorer la relation entre travail/vie privée et le bien-être subjectif est démontrée par la demande croissante d'études sur le bien-être de la part des décideurs politiques. Le rapport "Stiglitz, Sen et Fitoussi" (Stiglitz, 2009)

commandé par Nicolas Sarkozy et publié en 2009, insiste sur la nécessité de considérer d'autres indicateurs que le PIB dans l'évaluation des politiques publiques. Tels que l'évaluation subjective du bien-être des citoyens, leurs expériences hédoniques et leurs priorités. Dans le prolongement de ce rapport, l'Union européenne a développé le programme "Beyond GDP" afin de développer des indicateurs prenant en compte l'évolution des aspects environnementaux et sociaux dans les pays européens. Ainsi, dix-huit indicateurs de bien-être subjectif ont été introduits dans l'enquête "Statistiques Européennes sur le Revenu et les Conditions de Vie" (EU-SILC - 2013). Par ailleurs, l'OCDE a lancé l'initiative "Better Life" et l'indice "Better Life Index" en 2011. L'indice de vie meilleure mesure 11 aspects clés de la vie, dont le bien-être subjectif. En outre, l'Angleterre, la Suisse, la France, les Pays-Bas, l'Autriche et l'Allemagne ont inclus des indicateurs de bien-être subjectif dans leurs enquêtes nationales. De plus, un petit groupe de pays, dont l'Écosse, la Nouvelle-Zélande, l'Islande, le Pays de Galles et la Finlande, a formé "*The Well-being Economy Alliance*" qui vise à construire une économie axée sur le bien-être des citoyens. Ces initiatives montrent que la mesure du bonheur est au cœur des préoccupations des décideurs politiques.

Pour relever ces défis, il est nécessaire d'étudier davantage la relation entre la satisfaction de vie globale et l'équilibre entre vie professionnelle et vie privée. C'est l'objet de cette thèse, qui étudie comment les régimes de congé parental, la prestation de soins informels et le sous et sur-emploi affectent la satisfaction de vie aux Pays-Bas. En outre, cette thèse explore le rôle modérateur des caractéristiques socio-démographiques dans les relations entre les dispositifs d'équilibre travail-vie privée et la satisfaction de vie.

Cadre théorique

Dans cette partie, je définis les concepts centraux de ma thèse, ‘*Bien-être subjectif*’ et ‘*Equilibre entre travail et vie privée*’. Ensuite, je contextualise le cadre de mon étude en précisant les spécificités socio-économiques et législatives du cas néerlandais.

Bien-être subjectif

Selon [Diener et al. \(1999\)](#), le bien-être subjectif comprend les réactions émotionnelles des personnes, la satisfaction dans différents domaines de la vie (e.g. travail, loisir, famille, etc.) et les jugements globaux de satisfaction de vie. Ils distinguent deux composantes du bien-être subjectif : une partie affective, qui fait référence à la fois à la présence d’affects positifs et à l’absence d’affects négatifs, et une partie cognitive. La partie affective est une évaluation hédonique guidée par les émotions et les sentiments, tandis que la partie cognitive est une information basée sur l’évaluation de la vie actuelle d’une personne et sa situation par rapport à ses attentes, ainsi que sur l’écart entre la vie qu’elle/il envisageait et sa vie actuelle. Une autre approche du bien-être subjectif est *Eudaimonia* ou *la bonne vie* qui est la qualité de vie obtenue en développant et en réalisant son potentiel, c’est-à-dire lorsque les personnes agissent en accord avec leurs valeurs profondes et sont pleinement engagées ([Frey and Stutzer, 2002](#)).

L’évaluation subjective de la qualité de vie d’une personne se fonde sur deux sources d’information plus ou moins distinctes : ce que l’on ressent la plupart du temps, le niveau hédonique d’affect, et dans quelle mesure la vie nous a apporté ce que l’on en attend, le contentement ([Veenhoven, 2000](#)). Ce que l’on ressent s’appelle le niveau hédonique d’affect, c’est-à-dire la mesure dans laquelle les diverses émotions que l’on éprouve ont un caractère agréable. Le niveau hédonique de l’affect est différent du “*mood*” : humeurs nostalgiques, humeurs calmes, mauvaises humeurs, etc. Un mélange unique d’expériences affectives, ‘*tonalité hédonique ou caractère agréable*’, caractérise chacune de ces humeurs. Le concept de niveau hédonique concerne uniquement le plaisir éprouvé dans les affects, c’est-à-dire le plaisir dans les sentiments, dans les émotions, ainsi que dans les humeurs ([Veenhoven, 2000](#)). Ainsi, une personne peut éprouver un sentiment de plaisir élevé à partir d’émotions amoureuses fortes mais passagères, ainsi qu’à partir d’une humeur calme et stable.

Le contentement est le degré auquel une personne perçoit que ses aspirations sont satisfaites (Veenhoven, 2000). Cette perception implique un processus cognitif dans lequel la personne réfléchit à ses aspirations passées et observe si elles ont été satisfaites ou non. De plus, la personne va estimer ses chances des réaliser ses attentes pour l’avenir. Ce processus cognitif peut être considéré comme une évaluation subjective. Toutefois, les objectifs et les aspirations ne sont pas des caractéristiques intrinsèques de l’être humain, comme les sentiments.

En résumé, le contentement et le niveau des affects font partie de l’évaluation de la satisfaction subjective de la vie. Dans le cadre de cette thèse, nous mesurons la satisfaction subjective à l’égard de la vie à l’aide de la question suivante : “*Etes-vous satisfait de la vie que vous menez actuellement ?*”. Le répondant répond à l’aide d’une échelle ordinale allant de zéro, pas du tout satisfait, à dix, complètement satisfait. Cette échelle à un seul item a été reconnue comme une mesure valide du bien-être subjectif ; comme mentionné précédemment, cette question est utilisée dans des enquêtes nationales, européennes et internationales. Pour une revue plus complète de la littérature relative au bien-être subjectif, voir Dillenseger et al. (2018). Selon Veenhoven (2000) et Frey and Stutzer (2002), la satisfaction dans la vie est fiable puisqu’elle est fortement corrélée aux indicateurs objectifs de bien-être, tels que le revenu, l’individualisme, les droits de l’homme et l’égalité sociétale dans toutes les enquêtes. Bond and Lang (2019) constatent que les résultats des estimations utilisant le modèle probit ordonné et la satisfaction dans la vie comme variable dépendante peuvent être inversés par des transformations lognormales. Kaiser and Vendrik (2020) répondent à cette critique en soutenant que les conditions d’inversion de Bond et Lang impliquent que les répondants répondent aux questions de bonheur d’une manière peu plausible et qui est contredite par des recherches empiriques antérieures. En outre, ils montrent que ces inversions sont dues à l’hétérogénéité de la distribution des mesures de bonheur déclarées.

L’économie du bonheur trouve son origine dans le célèbre ‘*Paradoxe d’Easterlin*’ (Easterlin, 1974). Il met en évidence le fait stylisé suivant : des enquêtes menées dans de nombreux pays pendant des décennies indiquent qu’en moyenne, des augmentations significatives du produit intérieur brut par habitant ont eu peu d’effet sur les jugements globaux déclarés de la satisfaction de la vie ou du bonheur au fil du temps. Bien que la satisfaction de vie déclarée et le revenu du ménage soient positivement corrélés dans un échantillon représentatif de personnes à un moment donné. En d’autres termes, à un moment donné, le bonheur varie directement

avec le revenu, tant entre les nations qu'au sein de celle-ci, mais au fil du temps, l'augmentation du revenu n'est pas liée à un niveau de bonheur plus élevé. À cette époque, les résultats d'Easterlin ont été considérés comme un paradoxe, car ils contredisaient les principes de l'économie orthodoxe, selon laquelle la richesse économique est la définition du bonheur. Easterlin (1974) a émis l'hypothèse que deux facteurs peuvent expliquer l'absence de relation entre le revenu et le bonheur dans le temps. Le premier argument est l'effet de la comparaison sociale sur le bonheur, par exemple, si d'autres individus s'enrichissent par rapport à nous, cela réduit encore l'effet d'un revenu donné sur le bonheur individuel. En outre, Wolbring et al. (2013) ont montré que le revenu relatif a un impact significatif sur le bien-être subjectif et que les individus sont d'autant plus heureux lorsque leur revenu est élevé, comparé au revenu de leur groupe de référence, y compris la famille, les amis et les collègues (Wolbring et al., 2013).

Comment définir l'équilibre entre vie professionnelle et vie privée ?

Afin de clarifier le concept d'équilibre entre vie professionnelle et vie privée, je vais maintenant donner quelques éléments de définition. Selon le dictionnaire de Cambridge, le terme équilibre correspond à un "état où les choses ont un poids ou une force égale"²⁰. Par conséquent, la notion d'équilibre entre vie professionnelle et vie privée considère implicitement un niveau égal d'attention, de temps, d'implication ou d'engagement entre chaque rôle lié au travail et à la vie personnelle (Greenhaus et al., 2003). Dans la littérature, sur l'équilibre entre le travail et la vie privée, une distinction est faite entre l'équilibre positif des rôles et l'équilibre négatif des rôles. Marks and MacDermid (1996) définissent l'équilibre positif des rôles comme "la tendance à s'engager pleinement dans la performance de chaque rôle de son système de rôles total, à aborder chaque rôle et partenaire de rôle avec une attitude d'attention et de soin. En d'autres termes, c'est la pratique de cette vigilance équilibrée connue parfois sous le nom de pleine conscience". (Marks and MacDermid (1996), p. 421). L'expression '*s'engager pleinement*' désigne un équilibre positif des rôles, par opposition à un équilibre négatif des rôles dans lequel les individus sont totalement désengagés dans chaque rôle. Une autre définition positive de l'expression "*équilibre entre vie professionnelle et vie privée*" fournie par Kofodimos (1993) est "une vie satisfaisante, saine et productive qui inclut le travail, le jeu et l'amour." (Kofodimos (1993) ; p. xiii). Kirchmeyer (2000) caractérise

²⁰Pour plus de détails, voir <https://dictionary.cambridge.org/dictionary/english/balance>

une vie équilibrée “comme la réalisation d’expériences satisfaisantes dans tous les domaines de la vie, et pour ce faire, il faut que les ressources personnelles telles que l’énergie, le temps et l’engagement soient bien réparties entre les domaines”. (Kirchmeyer, 2000, p.81). Cette définition de l’équilibre entre vie professionnelle et vie privée s’aligne sur la théorie de la conservation des ressources (Hobfoll and Schumm, 2002). Cette théorie suggère que les individus s’efforcent d’obtenir, de protéger et de maintenir des ressources. Les ressources englobent les objets (ex., une maison), les caractéristiques personnelles (ex., l’estime de soi), les conditions (ex., être marié) ou les énergies (par exemple, la vigueur, le temps) qui sont appréciés et recherchés.

La vision négative de l’équilibre entre vie professionnelle et vie privée est mise en avant par la théorie de la rareté (Edwards and Rothbard, 2000; Marks, 1977; Sieber, 1974) et la théorie du conflit (Greenhaus and Beutell, 1985). La théorie de la rareté suppose que le temps, l’énergie et l’attention sont limités et que l’on consacre des ressources moindres à l’autre rôle. La théorie du conflit propose que les domaines professionnels et familiaux sont incompatibles en raison de leurs normes et responsabilités différentes. La combinaison de ces deux théories implique que l’exposition à des facteurs de stress dans un domaine donné (e.g. le travail) peut entraîner de l’irritabilité, de la fatigue ou une préoccupation à l’égard de ces problèmes, ce qui limite la capacité d’une personne à répondre aux exigences d’autres domaines de la vie (ex., la famille), d’où le conflit travail-famille. Greenhaus et al. (2003) voient l’équilibre travail-famille “comme une question de degré, un continuum ancré à une extrémité par un déséquilibre important en faveur d’un rôle particulier (ex., la famille), en passant par un état relativement équilibré jusqu’à un déséquilibre important en faveur de l’autre rôle (ex., le travail) comme autre point d’ancrage” (Greenhaus et al. (2003), p.513).

Le concept d’équilibre entre vie professionnelle et vie privée contient également les mots "*work*" et "*life*". Le "*work*" peut être défini comme un emploi rémunéré. Selon l’Organisation Internationale du Travail (OIT), une personne employée est une personne âgée de 15 ans ou plus qui a travaillé - contre rémunération ou profit - pendant au moins une heure au cours d’une semaine donnée ou qui a un emploi dont elle est absente sous certaines conditions relatives au motif de l’absence (par exemple; vacances, congé de maladie, congé de maternité, etc.). Dans le cadre de ce chapitre, nous limitons toutefois la définition du travail rémunéré à l’*emploi rémunéré*.

La définition de ‘*vie*’ ou ‘d’*activités non professionnelles*’ est également complexe car elle inclut tous les aspects de la vie qui ne sont pas liés au travail (par exemple; les activités de loisirs, les soins personnels, les voyages, le bénévolat, la vie familiale), comme si le *travail* et la *vie* étaient deux concepts complètement distincts. En réalité, les sphères du travail et de la vie privée peuvent être poreuses. Les expériences professionnelles peuvent avoir des retombées positives ou négatives sur la vie personnelle. Par exemple, une personne qui subit un stress et une surcharge au travail peut être plus facilement irritée dans sa vie privée et voir ainsi ses relations familiales se détériorer. Inversement, la vie personnelle peut générer des retombées positives ou négatives sur le fonctionnement au travail (Cho and Tay, 2016). Un autre exemple marquant d’effets d’entraînement concerne l’utilisation des technologies de l’information et de la communication. De nombreux travailleurs n’hésitent pas à communiquer avec leurs proches sur les réseaux sociaux (par exemple; Instagram, Facebook, Snapchat, etc.) pendant leur temps de travail - *conflit vie privée/vie professionnelle*. Tandis que d’autres continuent à consulter leurs emails après le travail ou à communiquer sur leur travail via LinkedIn ou tweeter - *conflit vie professionnelle/vie privée* (Brulé and Munier, 2021). En somme, Guest (2002) affirme que le terme “*équilibre entre le travail et la vie* est en soi un terme impropre et sert simplement de raccourci pratique pour le travail et le reste de la vie”. (Guest (2002), p. 262).

Stratégie de gestion des frontières entre vie professionnelle et vie personnelle

Par conséquent, lorsqu’on examine le concept de l’équilibre entre le travail et la vie privée, il est essentiel d’analyser la façon dont la frontière entre le travail et la vie privée est conceptualisée. Les stratégies de gestion des frontières concernent les stratégies, les principes et les pratiques que les gens construisent pour organiser et séparer les exigences et les attentes de leurs rôles dans des domaines spécifiques (Nippert-Eng, 1996). Selon Baltes et al. (2009), deux modèles conceptuels de gestion des frontières entre le travail et la famille ont été élaborés : La théorie de la frontière (Clark, 2000) et la théorie de la limite (Ashforth et al., 2000). La théorie de la frontière se concentre sur la signification que les gens attribuent à la maison et au travail et sur la facilité et la fréquence de la transition entre les rôles (Ashforth et al., 2000). Cette théorie considère le lien entre le domaine domestique et le domaine professionnel comme un continuum allant de la segmentation à l’intégration

(Voydanoff, 2005). Par exemple, une segmentation complète entre la vie personnelle et le travail peut concerner un.e strip-teaseur.se qui préfère cacher son travail à sa famille parce qu'il/elle craint leurs jugements. À l'inverse, une intégration complète peut se produire pour une personne gérant un restaurant familial et vivant sur son lieu de travail. La plupart du temps, les employés se situent au milieu du spectre entre la segmentation complète et l'intégration complète. Contrairement à la théorie des frontières, la théorie de la frontière travail-famille concerne exclusivement les domaines du travail et de la famille, l'équilibre travail-famille étant le résultat d'intérêt. La théorie suppose que l'équilibre travail-famille, qui fait référence à la satisfaction et à un fonctionnement supérieur au travail et à la maison avec un minimum de conflits de rôles, peut être atteint de différentes manières selon la similitude des domaines professionnels et familiaux, la force des frontières entre ces domaines et une variété d'autres facteurs (Desrochers et al., 2005). Selon (Baltes et al., 2009), la question de savoir si la segmentation est plus efficace que l'intégration reste ouverte. D'un côté, la stratégie d'intégration pourrait aider les employés à résoudre une partie de la tension découlant de l'occupation de plusieurs rôles en offrant une plus grande flexibilité et en brouillant les limites des rôles (Ashforth et al., 2000). De l'autre côté, les employés peuvent souhaiter une plus grande segmentation, car elle peut les protéger contre le débordement d'émotions et d'expériences négatives d'un domaine à l'autre (Edwards and Rothbard, 2000).

Comme mentionné précédemment, la théorie de conservation des ressources stipule que les individus cherchent à obtenir, protéger et maintenir leurs ressources. Si un temps ou des énergies sont sur-utilisés dans un domaine (ex., le travail), cela peut conduire à un conflit travail-vie personnel. Afin de prévenir le conflit travail-vie personnel, les individus peuvent développer des stratégies d'adaptation pour atteindre l'équilibre travail-vie personnel. Le premier modèle général est la stratégie de gestion de la vie appelée Sélection, Optimisation et Compensation (SOC)²¹ (Baltes et al., 2009). La sélection concerne la détermination par un individu d'une hiérarchie de buts²², l'optimisation concerne l'allocation des ressources afin d'atteindre les buts que l'on s'est fixés. Enfin, les comportements de compensation

²¹SOC est basé sur l'hypothèse sous-jacente que "l'utilisation coordonnée de comportements impliquant la Sélection (élective et basée sur les pertes), l'Optimisation et la Compensation peuvent (a) augmenter les ressources dans le sens d'une amélioration du développement, (b) aider à maintenir le fonctionnement d'une personne face aux défis, et (c) aider à réguler les pertes de ressources" (Baltes and Heydens-Gahir (2003), p. 1006)

²²La sélection basée sur la perte se produit lorsqu'un individu est poussé à changer sa hiérarchie de buts par la perte de certaines ressources internes ou externes, tandis que la sélection élective a lieu lorsque la détermination par un individu d'une hiérarchie de buts n'est pas le résultat d'une perte de ressources.

ont lieu lorsque des moyens alternatifs sont utilisés pour maintenir le niveau de fonctionnement souhaité face à une diminution réelle ou anticipée des ressources (Freund and Baltes, 1998). Selon Baltes and Heydens-Gahir (2003), l'utilisation de la stratégie SOC entraîne des niveaux plus faibles de stress au travail et dans la famille et, par conséquent, des niveaux plus faibles de conflit travail-famille. Le deuxième modèle d'adaptation qui a été testé de façon empirique est le modèle de gestion du temps (Macan et al., 1990). Le modèle de gestion du temps peut être caractérisé par trois dimensions : (1) la fixation d'objectifs et l'établissement de priorités, qui impliquent des décisions quotidiennes sur ce qu'il est essentiel d'accomplir ; (2) les mécanismes de gestion du temps, qui comprennent des activités telles que l'établissement de listes de choses à faire ; (3) la préférence pour l'organisation, qui implique le maintien d'une approche méthodique et organisée du travail.

D'autres modèles consistent à améliorer la facilitation ou l'enrichissement de la vie professionnelle et de la vie privée en affirmant que les expériences dans un rôle peuvent améliorer la qualité de vie dans l'autre rôle (Greenhaus and Powell, 2006). La facilitation du travail et de la vie personnelle peut être définie comme "la mesure dans laquelle l'engagement d'une personne dans un domaine de la vie (c.à.d. travail/famille) procure des gains (c.à.d. développement affectif, capital ou efficacité) qui contribuent à améliorer le fonctionnement d'un autre domaine de la vie (c.à.d. famille/travail)" (Wayne et al. (2007), p.64)²³. Il existe deux grands modèles de facilitation de la vie professionnelle et de la vie privée. Le premier modèle, le modèle de développement des ressources et des gains, a été développé par (Wayne et al., 2007). Selon ce modèle, les caractéristiques de la personnalité telles que des affects positifs et une auto-efficacité élevée amènent un individu à éprouver plus facilement des états émotionnels positifs, à rechercher des opportunités de développement positives et à gagner un statut dans un domaine (ex., le travail), ce qui peut faciliter le fonctionnement dans un autre domaine (ex., la famille), et vice versa. De plus, les ressources environnementales, comme le fait d'avoir un emploi qui offre des possibilités de développement, d'avoir un superviseur qui apporte son soutien ou de travailler dans une organisation dont la culture travail-vie privée est favorable, peuvent également favoriser les expériences positives dans un domaine (ex., le travail) et l'acquisition de gains (développement affectifs, d'efficacité) qui peuvent améliorer le fonctionnement dans un autre domaine (ex., la famille). Le

²³Certains chercheurs soulignent que le fait qu'une personne perçoive ses rôles professionnels et familiaux comme étant en conflit l'un avec l'autre, ou comme se facilitant l'un l'autre, dépend largement de sa perception ou de son évaluation cognitive des deux domaines (Higgins et al., 2000).

deuxième modèle est celui de l'adéquation Personne-Environnement (P-E fit) : Cette théorie stipule que s'il y a une adéquation perçue entre les valeurs d'une personne et les ressources que l'environnement fournit pour satisfaire ces valeurs, alors l'individu ressentira un plus grand bien-être et un niveau plus élevés de facilitation travail-famille.

Le travail de recherche contenu dans ma thèse concerne principalement les conflits temporels. Selon [Michel et al. \(2011\)](#) "Le conflit basé sur le temps se produit lorsque le temps ou l'attention alloués à un domaine, comme la rigidité des horaires de travail et les exigences en matière de temps professionnel ou familial, entravent la performance d'un rôle lié à un autre domaine." ([Michel et al. \(2011\)](#), p.691). Un concept connexe est le '*time bind*' ([Hochschild, 1997](#)), représentant le déséquilibre perçu entre les exigences du travail et les exigences de la famille, ou plus généralement de la vie personnelle.

Le fait de devenir parent (chapitre 1), de s'occuper d'un proche en situation de handicap physique ou mental (chapitre 2) ou d'être confronté à un décalage entre les horaires de travail réels et les horaires de travail que l'on souhaiterait effectuer (chapitre 3) sont autant d'événements directement liés au '*time bind*'. En effet, le fait de s'occuper de jeunes enfants ou d'être un aidant réduit considérablement la mesure dans laquelle les travailleurs ont le sentiment de réussir à équilibrer leur travail et leur vie personnelle ([Tausig and Fenwick, 2001](#); [Kossek et al., 2001](#)). Par ailleurs, la flexibilité du temps de travail est un élément qui peut diminuer les conflits travail-famille ([Tausig and Fenwick, 2001](#)). Par conséquent, tous ces événements sont susceptibles de consommer des ressources en temps et en énergie, et donc de générer des conflits travail-vie privée.

Enfin, un large corpus de littérature met en évidence une relation positive entre les '*Spillovers*' positif de la vie privée sur le travail et la satisfaction de vie, ainsi qu'une relation négative entre les conflits travail-vie privée et la satisfaction de vie ([Cho and Tay, 2016](#); [Greenhaus et al., 2003](#); [Amstad et al., 2011](#); [Marks and MacDermid, 1996](#)). Une revue plus détaillée de la littérature sur les mécanismes expliquant la relation entre les conflits vie professionnelle/vie privée et le bien-être subjectif est présentée dans chaque chapitre.

Les spécificités du cas Néerlandais

Cette thèse se concentre sur le cas d'étude des Pays-Bas. Il existe plusieurs raisons pour lesquelles les Pays-Bas sont un cas intéressant. Tout d'abord, selon l'indice du 'better life' de l'OCDE, les Pays-Bas sont en tête de liste en ce qui concerne l'équilibre entre vie professionnelle et vie privée. En effet, aux Pays-Bas, 0,4% des salariés travaillent de très longues heures ²⁴, soit le taux le plus bas de l'OCDE, où la proportion moyenne de salariés travaillant de très longues heures est de 11%. En outre, aux Pays-Bas, les travailleurs à temps plein consacrent en moyenne 16,1 heures de leur journée aux soins personnels (par exemple, manger, dormir, etc.) et aux loisirs (socialisation avec les amis et la famille, passe-temps, jeux, utilisation de l'ordinateur et de la télévision, etc.), contre 15 heures en moyenne dans l'OCDE. Par ailleurs, les Pays-Bas sont également en tête de liste en ce qui concerne la satisfaction générale à l'égard de la vie. Comme mentionné précédemment, l'indice du "mieux vivre" de l'OCDE fournit des données sur l'auto-évaluation moyenne de la satisfaction à l'égard de la vie dans les pays de l'OCDE. Les Néerlandais lui ont attribué en moyenne une note de 7,4 en 2020, ce qui est supérieur à la moyenne de 6,5 de l'OCDE. En conclusion, les Pays-Bas semblent être un exemple à suivre. Il s'agit donc d'un cas intéressant pour explorer la relation entre l'équilibre vie professionnelle et vie privée et la satisfaction de la vie. Afin de mieux comprendre la structure du marché du travail et la législation sur l'équilibre entre vie professionnelle et vie privée, je vais maintenant donner quelques éléments factuels sur ces sujets.

Les Pays-Bas sont la première économie à temps partiel au monde (Visser, 2002). Selon Eurostat, environ 46% des salariés néerlandais travaillaient à temps partiel en 2019²⁵. En outre, environ deux femmes salariées sur trois travaillaient à temps partiel²⁶. Selon Fouarge and Baaijens (2004), la part importante de travailleurs à temps partiel parmi les salariés néerlandais est principalement due au processus spontané de l'entrée tardive des femmes sur le marché du travail dans les années 80 ²⁷, combiné à la nécessité d'adapter les horaires de travail à un secteur des services

²⁴Selon l'indice du mieux vivre de l'OCDE, les très longues heures de travail sont définies comme le fait de travailler cinquante heures ou plus par semaine.

²⁵Le travail à temps partiel est enregistré comme auto-déclaré par les individus. Pour plus de détails sur les données, voir http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_eppgacob&lang=en

²⁶Pour plus de détails, voir <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>.

²⁷Pour une explication plus détaillée de l'entrée des femmes sur le marché du travail, voir Hakim (2006) et Hakim et al. (1998)

en pleine croissance pendant une période de pénurie économique. Les Pays-Bas ont pris la première place en tant qu'économie à temps partiel dans les années 1980. Cette place était occupée auparavant par la Suède, le Danemark et le Royaume-Uni. En 1971 encore, les Pays-Bas avaient la participation féminine la plus faible sur le marché du travail (Visser et al., 2004). Cela s'explique en partie par le fait que les Néerlandaises sont arrivées relativement tard sur le marché du travail en raison de politiques discriminatoires à l'égard des femmes qui étaient considérées comme des femmes au foyer alors que l'homme était celui qui apportait un soutien financier. En outre, l'offre de service de garde d'enfants était pratiquement absente (Misra and Jude, 2008). La politique néerlandaise a été dominée par des valeurs chrétiennes jusqu'à la fin des années 1980, de sorte que les femmes étaient interdites de certaines professions ²⁸ et l'État fournissait des aides pour que les femmes puissent s'occuper de leurs enfants à la maison. La puissance économique relative des Pays-Bas permettait à la plupart des gens de maintenir un niveau de vie relativement élevé avec un seul revenu. De plus, par rapport à d'autres pays, peu d'hommes ont dû partir se battre dans les guerres mondiales du 20e siècle. Ainsi, les femmes ne travaillaient pas dans les usines comme en France et en Grande-Bretagne.

En 1974, une commission pour la promotion de l'égalité des sexes est créée au plus haut niveau politique²⁹. Dans les années 1980, le gouvernement a fait de l'égalité des sexes et de la possibilité pour les femmes de mener une existence indépendante, ainsi que d'une juste répartition des tâches ménagères entre les hommes et les femmes, de nouveaux objectifs politiques (Pfau-Effinger, 1999). Dans le même temps, certains éléments de l'État-providence ont été démantelés, donnant lieu à une période de modération salariale et de promotion des emplois à temps partiel. En 1990, une réforme fiscale a réduit l'abattement fiscal de base pour le soutien des familles, réduisant ainsi les facteurs qui dissuadent les partenaires du second emploi de prendre un travail rémunéré (Visser, 2002). Cette réforme

²⁸Par exemple, en 1924, il a été interdit aux femmes mariées d'occuper des emplois dans la fonction publique, y compris des emplois d'enseignantes (Pott-Buter, 1993). Cette interdiction, soutenue par la plupart des syndicats, a été retirée en 1957, mais a persisté dans de nombreuses municipalités, même dix ans plus tard. Les employeurs pouvaient légalement licencier une femme en raison d'une grossesse, d'un accouchement ou d'un mariage jusqu'à ce qu'une nouvelle législation soit adoptée en 1973.

²⁹Dans les années 1960, des groupes d'action féministes apparaissent dans le cadre du mouvement féministe pour contester la dépendance des femmes à l'égard des hommes et l'impossibilité de combiner la maternité et le travail à l'extérieur du foyer (Bussemaker and Voet, 1998). En réponse aux demandes féministes, le gouvernement dirigé par les sociaux-démocrates a créé en 1974 un comité consultatif externe appelé Emancipatie commissie (commission d'émancipation). Pourtant, le premier rapport de la commission, adopté en 1977, ne fait que conforter les femmes dans leur rôle d'épouses et de mères (Swiebel and Outshoorn, 1998).

s'est accompagnée d'une expansion des structures d'accueil pour les enfants et du développement des contrats à temps partiel. La restructuration de la protection sociale au cours de cette période a conduit au démantèlement de certains éléments de l'État-providence, au gel des salaires et à la promotion des emplois à temps partiel (Misra and Jude, 2008). Le gouvernement a présenté le travail à temps partiel comme un moyen pour les femmes de concilier travail et famille, et comme un instrument permettant de donner plus de flexibilité aux employeurs tout en réduisant le chômage (Plantenga et al., 1999). Ces mesures ont généré une économie en plein essor dans les années 1980 et ont créé une pénurie de main-d'œuvre, ce qui a renforcé le souhait de faire entrer les femmes sur le marché du travail (Visser, 2002).

Sur le marché du travail en flux tendu des années 1990, la promotion du travail à temps partiel a permis de répondre aux besoins de la demande et de l'offre de travail en donnant de la flexibilité aux employeurs, en élargissant le nombre de travailleurs potentiels et en aidant les employés à concilier travail et famille (Berg et al., 2004). Contrairement à l'argument selon lequel le travail à temps partiel permet la "flexibilité économique", c'est-à-dire la réduction du temps de travail en période de ralentissement économique. Les Pays-Bas ont utilisé le travail à temps partiel comme un moyen de répondre à la demande de main-d'œuvre dans une économie en croissance. Bien que le travail à temps partiel permette aux entreprises de disposer d'une flexibilité interne et aux travailleurs de concilier vie professionnelle et vie privée, il peut tout de même être pénalisant. Nottament, à cause du risque de pauvreté, des possibilités de formation et des perspectives de carrière restreintes, d'une ancienneté moindre et d'un différentiel de salaire par rapport aux travailleurs à temps plein (OECD, 2010).

Depuis 1990, une série de réformes nationales ont encouragé le travail à temps partiel et les aménagements d'horaires flexibles. Ces réformes ont été une conséquence des changements survenus sur le marché du travail au cours des années 1980. Dans le cadre de cette thèse, je présenterai brièvement les réformes néerlandaises concernant le congé parental (chapitre 1), les soins informels (chapitre 2) et la flexibilité du temps de travail (chapitre 3).

Législation sur le congé parental

Les Pays-Bas ont mis en œuvre un droit au congé parental à temps partiel non rémunéré par le biais de la "*Wet op het ouderschapsverlof*" (loi sur le congé parental) en 1991. Cette loi accordait un congé parental à temps partiel non rémunéré d'une durée maximale de six mois aux salariés employés par leur employeur actuel depuis au moins un an, à prendre dans les quatre ans suivant la naissance d'un enfant. Puis, en janvier 2009, la durée du congé parental a été portée à 26 fois le nombre d'heures de travail contractuel. En résumé, le régime néerlandais de congé parental garantit un congé avec protection de l'emploi, mais l'aide au revenu est laissée à la décision des employeurs. Certaines incitations fiscales ont toutefois été introduites depuis, mais elles ont un impact marginal, car seule une minorité des personnes qui prennent un congé parental ont droit à un congé parental rémunéré ([Plantenga and Remery, 2009](#)). En outre, bien que les Pays-Bas aient fait le premier pas vers un congé parental rémunéré généralisé, le taux d'utilisation est encore loin d'atteindre 100% et les inégalités entre les sexes persistent.

Législation sur les soins informels

En 1968, les Pays-Bas ont mis en place un régime public universel d'assurance soins de longue durée : "*De Algemene Wet Bijzondere Ziektekosten*", AWBZ. La couverture de l'AWBZ a été étendue au fil des ans aux soins de santé à domicile (1980), aux soins ambulatoires de santé mentale (1982), à l'aide sociale en cas de fragilité, de problèmes psychosociaux et après l'accouchement (1989) et aux soins résidentiels pour les personnes âgées (1997). Selon Maarse et Jeurissen (2016), en janvier 2014, environ 5% de la population recevait des soins de longue durée (SLD), la catégorie la plus importante - 56% - étant constituée de personnes âgées (plus de 65 ans).

Ce régime, principalement financé par des contributions liées au revenu, était un programme à payeur unique administré par des responsables des soins mis en place par des assureurs dominants au niveau régional. Le régime public d'assurance dépendance, complet et généreux, a fait des Pays-Bas le pays de l'OCDE qui dépense le plus pour les soins de longue durée. Selon les statistiques de l'OCDE sur la santé, en 2014, les Pays-Bas ont consacré 4,3% de leur produit intérieur brut aux SLD. Les droits étendus, la forte dépendance aux soins en institution et le gouvernement en tant qu'entité supportant un seul risque limitant l'efficacité du

ystème ont entraîné des préoccupations politiques croissantes quant à la viabilité financière du système.

L'année 2007 a été un tournant, marquant le début de la réduction des dépenses, de la décentralisation des SLD et de la réorientation normative vers une plus grande responsabilité individuelle dans les SLD. Les soins à domicile (par exemple, les services d'entretien ménager, les services de transport, les services de repas, l'adaptation du logement et l'hébergement social des sans-abris), qui représentaient environ 4% des dépenses de l'AWBZ, ont été exclus de la couverture de l'assurance SLD publique et transférés sous la responsabilité des municipalités en vertu de la nouvelle *Wet maatschappelijke ondersteuning*. (nouvelle loi sur l'aide sociale, en abrégé Wmo). En outre, les municipalités disposaient d'une grande marge de manœuvre dans la mise en œuvre de la Wmo et étaient autorisées à facturer des copaiements liés au revenu et aux ressources pour les dispositions individuelles jusqu'à un montant légal maximum. En outre, le budget que les municipalités reçoivent du gouvernement national a été réduit de 32%. L'idée derrière cette réduction budgétaire était de créer des incitations plus substantielles pour négocier des prix plus bas avec les municipalités à risque qu'avec les bureaux de soins régionaux sans risque et de disposer de plus d'instruments pour adapter la fourniture de soins et d'installations aux besoins spécifiques des citoyens.

En 2013, le gouvernement néerlandais a fait un pas de plus en restreignant les critères d'admission aux soins en institution. Les nouveaux clients présentant des déficiences relativement légères (c'est-à-dire les trois premières échelles d'un indice de gravité à huit échelles) n'avaient plus droit aux soins en institution. La diminution du nombre de bénéficiaires de soins en institution a entraîné la fermeture de foyers de soins résidentiels et la transformation de ces derniers en maisons de repos.

Pour garantir le caractère abordable, l'accessibilité et la qualité des soins de longue durée à l'avenir, l'AWBZ a fait l'objet d'une réforme importante en 2015. Cette réforme avait trois objectifs principaux : économiser des coûts ³⁰, maintenir les personnes autonomes le plus longtemps possible, et améliorer la qualité et la coordination des soins par une approche adaptée au client ([Maarse and Jeurissen, 2016](#)). Une partie des prestations couvertes par l'Ancien Régime de SLD (AWBZ)

³⁰Les réformes se sont accompagnées d'une réduction du budget du projet de 3,5 milliards d'euros sur la période 2014-2017

est passée sous la responsabilité des municipalités et des assureurs maladie. Un autre élément de la réforme est le remplacement de l'Ancien Régime public d'assurance dépendance (AWBZ) par un régime moins inclusif (abrégé en WLZ). Le nouveau régime WLZ ne couvre qu'une minorité (environ 35 %) des bénéficiaires initiaux de l'AWBZ. Les prestations comprennent les soins en institution et les soins intensifs à domicile. Une personne a droit aux prestations WLZ lorsqu'elle a structurellement besoin d'une surveillance ou de soins de proximité 24 heures sur 24. Les demandeurs sont soumis à une procédure nationale d'évaluation des besoins selon des normes uniformes et strictes.

En outre, le gouvernement encouragerait les membres de la famille et les réseaux communautaires locaux (c'est-à-dire les réseaux de voisinage) à fournir divers soins sociaux (par exemple, une aide à domicile). Cependant, il est difficile de savoir dans quelle mesure les municipalités parviennent à encourager les soins informels, puisqu'elles ne peuvent pas obliger les gens à les fournir. Selon [Maarse and Jeurissen \(2016\)](#), une critique importante est que le potentiel des soins informels inexplorés est surestimé, et les externalités négatives pour les aidants informels sont sous-estimées. En effet, le nouvel arrangement peut faire des soins informels une obligation, alors qu'ils offrent des heures de travail limitées. Selon le site web du gouvernement néerlandais, les employés sont légalement autorisés à prendre un congé de soins de courte durée pour s'occuper de d'un parent malade tel qu'un enfant, un partenaire ou un parent. En 2015, le congé de soins a été élargi pour inclure le temps libre pour s'occuper des membres de la famille élargie (par exemple, frères et sœurs ou grands-parents) et des connaissances (par exemple, colocataire, voisin ou ami). Ce type de congé est disponible parce que la personne malade a besoin de soins et n'est pas à l'hôpital. Au cours d'une période de 12 mois, les employés ont le droit de prendre un congé pour soins de courte durée égal à deux fois leur temps de travail hebdomadaire. Pendant cette période, l'employeur doit payer au moins 70% de leur salaire. En cas de maladie potentiellement mortelle, un congé de soins de longue durée est également possible : jusqu'à six fois le nombre d'heures de travail hebdomadaire. Toutefois, l'employeur n'est pas tenu de verser un salaire pendant cette période. En concertation avec leur employeur, ils peuvent répartir différemment les heures prises en congé de soins.

Dans l'ensemble, le gouvernement néerlandais a mis en œuvre des réformes successives pour transférer la responsabilité des soins vers la famille ou la communauté locale. Par conséquent, il est d'autant plus intéressant d'étudier l'effet des soins

informels sur la satisfaction de vie des soignants.

Législation sur la flexibilité du temps de travail

Enfin, les Pays-Bas ont l'une des plus faibles parts de travailleurs à temps partiel sous-employés parmi les pays européens. Selon les statistiques de l'OCDE, 5,5% des travailleurs à temps partiel étaient sous-employés en 2020. Ce pourcentage est bien inférieur à la moyenne européenne de 15,5%. Ce faible taux de travailleurs à temps partiel involontaire a été en partie rendu possible grâce à la "*Wet Flexibel Werken*" (loi sur les heures de travail flexibles) qui est entrée en vigueur le 1er janvier 2016 afin d'améliorer l'équilibre entre vie professionnelle et vie privée des salariés néerlandais. En vertu de cette loi, le salarié peut demander une augmentation ou une réduction de ses heures de travail. La loi ne concerne que les employés qui sont sous contrat avec le même employeur depuis plus de six mois. La demande doit être faite au moins deux mois avant la date d'entrée en vigueur souhaitée. L'employeur ne peut refuser la demande que si des intérêts commerciaux impérieux s'opposent à celle-ci. En somme, cette réforme vise à offrir plus d'autonomie au salarié et à lui permettre de mieux concilier son travail et sa vie privée.

En résumé, cette thèse apporte un éclairage nouveau sur les nombreuses réformes entreprises par le gouvernement néerlandais depuis 2001. Le premier chapitre montre indirectement que le cadre juridique du congé parental néerlandais consolidé par la loi sur le travail et les soins (*Wet Arbeid en Zorg*) est crucial pour améliorer le bien-être des parents (chapitre 1). Le deuxième chapitre souligne l'effet négatif de la charge des soins sur la satisfaction de la vie. Par conséquent, la loi sur l'aide sociale (*Wet Maatschappelijke Ondersteuning, WMO*), mise en place en 2015, qui a déplacé la responsabilité des soins vers la famille ou la communauté locale, a pu se faire au détriment de la satisfaction de vie des aidants (chapitre 2). Ensuite, le troisième chapitre est une mise en perspective avec la loi sur les heures de travail flexibles (*Wet Flexibel Werken*) qui est entrée en vigueur le 1er janvier 2016 (chapitre 3). Mes résultats vont dans le sens de cette loi qui soutient l'aménagement des horaires de travail des salariés.

Objectifs de recherche et questions de recherche

L'objectif général de cette thèse est d'étudier *comment les conflits entre le travail et la vie privée, et plus particulièrement la contrainte de temps, affectent la satisfaction de vie globale des Néerlandais ?*. L'objectif principal de la recherche est d'élucider les implications du conflit entre le travail et la vie privée sur le bien-être subjectif autodéclaré.

Des recherches antérieures à mes travaux mettent en évidence une relation négative entre les conflit travail/vie privé et le bien-être subjectif. Cette thèse explore l'effet du régime de congé parental sur le bien-être subjectif (chapitre 1) ; l'impact de la charge des soins informels sur la satisfaction dans la vie (chapitre 2) ; et la différence de bien-être subjectif entre les travailleurs qui expérimentent un décalage entre le nombre d'heures qu'ils souhaitent travailler et le nombre d'heures qu'ils travaillent effectivement et ceux qui sont alignement (chapitre 3). En outre, pour chaque étude de cas, j'analyse l'effet modérateur des caractéristiques sociodémographiques. Dans le tableau 7, je présente les objectifs et les questions de recherche qui sont associés à chacun de mes chapitres.

Table 7 – Objectifs de recherche et questions de recherche

CHAPITRE	OBJECTIFS	PROBLEMATIQUES	DONNEES
CHAPITRE 1	Examine l'effet du congé parental sur la satisfaction dans la vie de différents groupes de travailleurs.	<p>(1) Le congé parental modère-t-il l'effet du fait d'avoir des enfants sur le bien-être subjectif?</p> <p>(2) Comment la durer, l'intensité et le mode de paiement du programme de congé parental affectent-ils la satisfaction dans la vie?</p> <p>(3) Pour quel groupe de travailleurs le congé parental est-il plus à même de contribuer au bien-être subjectif?</p>	Dutch Longitudinal Internet Studies for the Social Sciences (LISS), de 2008 à 2013
CHAPITRE 2	Identifie l'effet causal de la prestation de soins informels sur le bien-être subjectif des aidants.	<p>(1) Quel est l'impact causal de la prestation de soins informels sur le bien-être subjectif des aidants?</p> <p>(2) Comment la marge intensive de soins, le type de soins fournis et la relation avec le bénéficiaire des soins modèrent-ils l'effet de la prestation de soins sur la satisfaction de vie des aidants?</p>	Dutch LISS, de 2009 à 2018
CHAPITRE 3	Explore le rôle modérateur des caractéristiques socio-démographiques et professionnelles sur la relation entre le sous-emploi, le sur-emploi et le bien-être subjectif.	<p>(1) Quels sont les effets du sous-emploi et du sur-emploi sur la satisfaction de vie des travailleurs néerlandais?</p> <p>(2) Quel est le rôle modérateur des caractéristiques sociodémographiques et professionnelles sur la relation entre l'inadéquation des horaires de travail et la satisfaction de vie?</p> <p>(3) Comment les heures de travail et la marge intensive du sous-emploi influencent-elles la satisfaction de vie des travailleurs?</p>	Dutch LISS, de 2008 à 2019

Stratégie de recherche

Les résultats de mes recherches exploitent la base de données Néerlandaise LISS du CentER data ³¹. Le choix d’exploiter la même source de données répond à un besoin de cohérence sur la population étudiée à travers les trois chapitres.

Les détails de la source de données utilisées sont présentés dans chacun des trois chapitres. Un aperçu des objectifs et des questions de recherche est mis en avant dans le tableau 7. L’enquête Néerlandaise LISS est présentée dans les tableaux 8 et 9, le tableau 10 présente les techniques quantitatives utilisées dans chaque chapitre, le tableau 11 met en avant la contribution scientifique de chaque chapitre, et le tableau 12 souligne l’unité de la thématique de recherche.

Table 8 – Description de l’enquête

	Chapitre 1	Chapitre 2	Chapitre 3
Echantillons	Données de panel, échantillon représentatif des ménages Néerlandais issu du registre de la population élaboré par Statistics Netherlands. L’échantillon commun inclut les personnes âgées de 21 ans et plus qui ont été employées par leur employeur actuel pendant au moins un an. Country : Pays-Bas	Données de panel, échantillon représentatif des ménages Néerlandais issu du registre de la population élaboré par Statistics Netherlands. L’échantillon commun inclut les personnes âgées de 18 ans et plus. Country : Pays-Bas	Données de panel, échantillon représentatif des ménages Néerlandais issu du registre de la population élaboré par Statistics Netherlands. L’échantillon commun inclut les personnes âgées de 18 ans et plus, travaillant au moins 12 heures par semaine. Country : Pays-Bas
Fréquence	Six modules concernant différentes thématiques sont collectés chaque mois.	Six modules concernant différentes thématiques sont collectés chaque mois.	Six modules concernant différentes thématiques sont collectés chaque mois.
Collecte des données	Questionnaire en ligne	Questionnaire en ligne	Questionnaire en ligne
Echantillon commun	2,943 personnes et 8,590 Observations	1,188 personnes et 9,180 Observations	753 personnes et 5,165 Observations
Selection des données	Nous avons sélectionné une observation pour chaque individu chaque année de 2008 à 2013.	Nous avons sélectionné une observation pour chaque individu chaque année de 2008 à 2019.	J’ai sélectionné une observation pour chaque individu chaque année de 2008 à 2019.

³¹Tilburg University, Les Pays-Bas

Table 9 – Description de l'enquête - Suite

	Chapitre 1	Chapitre 2	Chapitre 3
Modules	L'enquête LISS enregistre les changements de vie des personnes interrogées, leur réaction aux événements de la vie et les effets des changements sociétaux et des politiques publiques. Nous utilisons les informations de 6 modules de l'enquête de base qui couvrent des questions sur les informations socio-démographiques, la santé, la personnalité, la famille, le travail et la scolarité, et la situation économique	Nous utilisons les informations de 6 modules de l'enquête de base qui couvrent des questions sur les informations socio-démographiques, la santé, la personnalité, la famille, le travail et la scolarité, et l'intégration sociale et les loisirs	Nous utilisons les informations de 6 modules de l'enquête de base qui couvrent des questions sur les informations socio-démographiques, la santé, la personnalité, la famille, le travail, et l'intégration sociale et les loisirs.
Fournisseur	Données de panel LISS collectées par centERdata (Tilburg University, les Pays-bas)	Données de panel LISS collectées par centERdata (Tilburg University, les Pays-bas)	Données de panel LISS collectées par centERdata (Tilburg University, les Pays-bas)
Accès	Accès gratuit à des fins académiques.	Accès gratuit à des fins académiques.	Accès gratuit à des fins académiques.
Période	Données de panel LISS (2008-2013)	Données de panel LISS (2008-2018)	Données de panel LISS (2008-2019)

Table 10 – Techniques quantitatives

	Chapter 1	Chapter 2	Chapter 3
Variable dépendante	Satisfaction dans la Vie.	Satisfaction dans la Vie.	Satisfaction dans la Vie.
Analyse économétrique	Méthode des moindres carrés ordinaire (MCO) avec effets fixes (Ferrer-i Carbonell and Frijters, 2004)	MCO avec effets fixes et méthode générale des moments (GMM) en deux étapes. (Arellano and Bover, 1995a; Blundell and Bond, 1998)	MCO avec effets fixes. (Ferrer-i Carbonell and Frijters, 2004)
Analyse de sensibilité	Bonheur comme variable dépendante. Logit ordonné avec effets fixes. Distinction entre travailler moins à la suite d'un congé parental et travailler moins en dehors du régime de congé parental.	Nearest-Neighbor Matching. Bonheur comme variable dépendante. marge intensive de l'aide informelle. Différentes calibrations du model	Bonheur comme variable dépendante. Au moins 4 heures de décalage entre horaires actuels et horaires désirés, marge intensive du sous-emploi et du sur-emploi, temps de travail.
Analyse d'hétérogénéité	Durée du congé parental, nombre d'heures hebdomadaires de congé parental, distinction entre diminution du temps de travail du au congé parental et travail réduit en dehors du régime de congé parental. Caractéristiques socio-démographiques; Genre, niveau d'éducation, catégorie de revenus, temps de travail, secteur d'activité.	Relation avec le bénéficiaire des soins, résidence du bénéficiaire des soins, fréquence des soins fournis, type de soins fournis. Caractéristiques socio-démographiques; Genre, statut d'emploi, statut conjugal	Caractéristiques de l'emploi; Autonomie, reconnaissance du travail, perspective de carrière, sécurité de l'emploi. Caractéristiques socio-démographiques; Genre, Statut conjugal, Statuts parentaux, Niveau d'éducation.
Echantillon	2,943 employées de 21 ans ou plus.	1,188 personne de 18 ans ou plus.	753 employés de 18 ans ou plus.

Contribution Scientifique

Article I. Dillenseger, L.; Burger, M.; Munier, F. (2019) ‘Parental Leave and Life Satisfaction: The Dutch case’, *Bureau d’Economie Théorique et Appliquée*, UDS, Working Paper No.2019-26.

<https://ideas.repec.org/p/ulp/sbbeta/2019-26.html>

Article II. Blaise, M.; **Dillenseger, L.** (2020) ‘Informal Caregivers and Life Satisfaction: Empirical Evidence from the Netherlands’, *Bureau d’Economie Théorique et Appliquée*, UDS, Working Paper No.2020-55.

<https://ideas.repec.org/p/ulp/sbbeta/2019-26.html>

Article III. Dillenseger, L. (2021) ‘Working Hours Mismatch and Subjective Well-being: Empirical Evidence from the Netherlands’, *Bureau d’Economie Théorique et Appliquée*, UDS.

Contribution scientifique

Cette thèse compile trois articles. Tous trois ont été évalués par des collègues et sont publiés comme *Working paper* du Bureau d’Economie Théorique et Appliquée de l’UDS. La contribution de ma thèse est principalement empirique.

Table 11 – Contribution scientifique: Résumé

	Article I	Article II	Article III
Title	Parental Leave and Life Satisfaction: The Dutch case	Informal Caregivers and Life Satisfaction: Empirical Evidence from the Netherlands	Working Hours Mismatch and Subjective Well-being: Empirical Evidence from the Netherlands
Article soumis au journal	Applied Research in Quality of Life	Journal of Economic Psychology	Journal of Happiness Studies

Justification de l'unité de la thématique de recherche

Compte tenu de l'importance des questions relatives à l'équilibre entre vie professionnelle et vie privée dans le débat public, j'ai étudié comment les événements de la vie susceptibles de générer un conflit entre vie professionnelle et vie privée affectent la satisfaction de vie globale des Néerlandais. En toile de fond de chacune de mes analyses, des réformes visant à améliorer l'équilibre entre vie professionnelle et vie privée des salariés ont été menées par le gouvernement néerlandais. Je commence mon analyse empirique en étudiant l'effet des régimes de congé parental sur la satisfaction dans la vie (chapitre 1). Je porte une attention particulière au rôle modérateur du genre, du niveau d'éducation, du revenu et des activités sectorielles sur cette relation. Ensuite, je m'interroge sur l'effet causal de la prestation de soins informels sur le bien-être subjectif des aidants (chapitre 2). Enfin, le chapitre 3 utilise un indicateur de l'équilibre entre vie professionnelle et vie privée - le décalage entre heures de travail actuelles et souhaitées - pour étudier comment le déséquilibre perçu entre les exigences du travail et les exigences de la vie personnelle a un impact sur la satisfaction dans la vie. De plus, le chapitre 3 explore le rôle modérateur des caractéristiques du travail et des caractéristiques socio-économiques sur cette relation. En résumé, les chapitres 1 et 2 se concentrent sur l'effet des antécédents potentiels des déséquilibres entre vie professionnelle et vie privée sur la satisfaction dans la vie, tandis que le chapitre 3 tente d'évaluer l'effet direct des déséquilibres entre vie professionnelle et vie privée sur le bien-être subjectif.

Les trois chapitres ont une portée géographique similaire, puisqu'ils traitent tous trois des Pays-Bas. En outre, toutes mes analyses empiriques sont basées sur des données de panel provenant du LISS.

Les liens thématiques entre les trois chapitres de ce recueil sont résumés dans le tableau 12. Les sujets d'études principaux de cette thèse concernent bien-être subjectif, les caractéristiques sociodémographiques individuelles, l'équilibre entre vie professionnelle et vie privée et les Pays-Bas.

Table 12 – Unité de la thématique de recherche

	Chapitre 1	Chapitre 2	Chapitre 3
Satisfaction dans la vie	✓	✓	✓
Equilibre travail/vie privée	✓	✓	✓
Contrainte temporelle	✓	✓	✓
Caractéristiques socio-démographiques	✓	✓	✓
Caractéristiques de l'emploi	✓		✓
Congé parental	✓		
Aide informelle		✓	
Sur et sous-emploi			✓
Les Pays-bas	✓	✓	✓

Chapter 1

Parental leave and life satisfaction

This chapter was co-authored with
Martijn Burger and Francis Munier.

Summary of the Chapter

There is extensive literature on ambiguous effects of having children on life satisfaction. Although parenthood can provide a meaning of life, parenting may increase the amount of obligations and decrease leisure time, which in turn reduce life satisfaction. In the Netherlands, parental leave is a part-time work arrangement which allows parents with young children to reconcile better work and family commitments. Using data from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS), we estimated with an ordinary least square with fixed-effects model the impact of taking parental leave on the life satisfaction of parents with young children. We found that the legal framework of Dutch parental leave offering job protected leave and fiscal benefits are crucial to enhance parents' life satisfaction. Our finding holds using different model specifications. Additionally, we did not find evidence for existing reverse causality. Further, we estimated that short parental leave schemes are more conducive to life satisfaction than long parental leave schemes.

Classification

JEL Classification: C10, H53, I31

Keywords: Parental Leave scheme, Children, Happiness, Life Satisfaction, Work-life balance, the Netherlands

1.1 Introduction

Does having children make us happy? Although there is a widespread belief that children raise happiness and that parenthood gives meaning of life, many parents indicate that parenting can also bring negative feelings (Hansen, 2012). In the popular book "All Joy and No Fun", Senior (2014) argues that a parent sense of self-worth and joy during time with children goes hand-in-hand with frustration, worry, and boredom. In this regard, researchers have found ambiguous evidence on the association between having children and changes in parental subjective well-being. A meta-analysis performed by Luhmann et al. (2012) report a small negative association between child birth and parents' life satisfaction. This negative effect is mainly driven by a deterioration of the relationship with partner. Although parents tend to be less satisfied after child birth, they also feel more positive affect in daily life. Child birth does not impact life satisfaction in the same way depending on individual characteristics and countries specific institutional settings. Cetre et al. (2016) provide a systematic analysis showing that having children have a positive impact on subjective well-being only in developed countries, and for those who become parents after the age of 30 and who have higher income. The generosity of family policies, particularly paid time off and childcare subsidies, also reduce disparities in happiness between parents and non-parents (Glass et al., 2016).

All in all, as indicated by Hansen (2012) and Pollmann-Schult (2014), it seems that parenting comes with some well-being costs, ranging from psychological costs such as depression (Evenson and Simon, 2005), marital costs such as a decline in conjugal relationship satisfaction (Twenge et al., 2003), increase in marital conflict (Shapiro et al., 2000), financial costs (Stanca, 2012) to role conflict between work and family domains (Tausig and Fenwick, 2001). These costs are more or less high subject to age, educational level, income and family policies in living country. The widespread belief that children bring happiness is a focusing illusion: when thinking about children we think about cute children and joyful moments without thinking about potential costs to our well-being (Powdthavee, 2009).

Becoming a parent increase time constraints and family obligations which in turn reduces life satisfaction. In this regard, Hochschild (1997) speaks of an increasing 'time-bind' or a perceived imbalance between work obligations and family obligations. Individuals suffering from a 'time-bind' have the feeling that both work and family are legitimately time demanding, but that they cannot control the

balance between them.

Tausig and Fenwick (2001) find that having children consistently reduces the extent to which workers feel successful in balancing their work and personal lives. In this regard, it is not surprising that single individuals and couples with no children generally report a higher levels of work-life balance than single parents and couples with children. Parents may experience role conflict between work and family domains because work life and family life can be incompatible due to their different role demands (Greenhaus and Beutell, 1985). Research on work and family roles has shown that work-family role conflict is associated with life dissatisfaction. Pichler (2009), using European Social Survey II and International Social Survey Programme (ISSP) data, concludes that a higher work-life imbalance is associated with lower levels of life satisfaction, happiness, subjective health, and emotional well-being. Drobnič et al. (2010) find that the meaning and importance of the work-home interface is stronger in Nordic and Western Europeans countries than in southern and Eastern European countries. Despite the fact that reported conflict between work and home is in effect weaker in North-West European societies, its negative effect on quality of life is stronger. This is called the "affluence work-home paradox": although the conflict between work and home is less in richer countries, it has a stronger negative impact on life satisfaction (Drobnič et al. (2010), p.222).

The literature on family involvement shows that spending leisure time with family has a positive impact on life satisfaction. The concept of family involvement includes the time and energy an individual devotes to family (Clarke et al., 2004). Parenthood in itself is not related to a wife's role balance, while a husband's involvement in childcare is: the more leisure time husbands devote to their children when wives are not present and the less they work, the better the wife's role balance (Marks et al., 2001). Related research shows that parents experienced a higher levels of quality of life when they spent more time on their family than on work (Greenhaus et al., 2003; Musick et al., 2016). Therefore, it has also been found that being involved with family is associated with a higher levels of emotional and social support from family members, which, in turn, is related to increased overall life satisfaction (Adams et al., 1996; Tausig and Fenwick, 2001).

The most consistent work characteristic predicting work-life imbalance is the number of hours worked, thus a family leave scheme may reduce the perceived 'time-bind' of working parents and increase subjective well-being (Gornick and

Meyers, 2003). Although there is an extensive literature on part-time work and life satisfaction (Booth and Van Ours, 2008, 2009, 2013; Lepinteur et al., 2016; Gash et al., 2010a) few studies have examined the impact of parental leave on life satisfaction.

D’Addio et al. (2014) studied variation in women’s life satisfaction around the date of reforms on birth related leave. Using the Eurobarometer, the German Socio-Economic panel (SOEP) and the British Household Panel Survey (BHPS), they find consistent evidence that women on birth-related leave score higher on life satisfaction than women who are not on leave. In contrast to the findings of D’Addio et al. (2014), Pezzini (2005) found no effect of a high levels of work related maternity protection on women’s life satisfaction. Hamplová (2018) explores the link between employment and subjective well-being among mothers with children under three years of age using the European Social Survey. She found that homemakers are usually happier than full-time workers, however, she did not find significant differences in subjective well-being between homemakers and part-time workers. Furthermore, the cross-national variation is not linked to the length of parental leave. Using SOEP, Berger (2009) has concluded that being out of the labor force due to family duties and part-time employment has a more detrimental effect on a mother’s happiness than unemployment.

Building on the existing literature on parental leave and subjective well-being, we examine in this research how parental leave policies moderate the relationship between having children and life satisfaction. Specifically, we focus on the impact of taking parental leave on life satisfaction in The Netherlands. To better understand our purpose, we present below some legislative elements of parental leave scheme in a diachronic and synchronic form. These elements seem necessary to us in the specific analysis of the Dutch case.

Parental leave scheme can increase the life satisfaction of parents with a young child in two complementary ways: (1) by offering job protected leave and (2) by offering financial support during the leave (Ray et al., 2010).

The European Council revised in 2010 the directive on parental leave (1995) to ensure four months of job protected leave for each parents, however, paid parental leave is not yet mandatory¹.

¹On 6 February 2019 the Council of the European Union endorsed a provisional agreement on

The Netherlands introduced a right to unpaid part-time parental leave through the Act on parental leave implemented in 1991². Although the parental leave legislation was welcomed as a first step towards a society favoring work-life balance for parents, its design was controversial. The arguments referred to the rigid part-time orientation of the parental leave not promoting an equal take-up between men and women and being not in line with the directive on parental leave of the European Unions, which favored a full-time leave (Plantenga and Remery, 2009).

In 1997 a new draft of the parental leave directive was proposed to tackle these problems³. Then, in January 2009, the length of parental leave was extended at 26 times the contractual number of working hours.

The Dutch parental leave scheme ensures job protected leave but income support is left to the decision of employers, however, some fiscal incentives exist⁴, but they have a marginal impact, as only a minority of the potential leave takers are entitled to a paid parental leave (Plantenga and Remery, 2009)⁵.

The employees also have the possibility to finance their leave through a specific saving scheme and fiscal benefit. The Netherlands introduced the idea of an individualized adult worker model family in 2006 with the Life Course Saving Scheme (LCSS)⁶.

the directive about work-life balance for parents and careers. This provisional agreement now has to be formally adopted by the European Parliament and the Council. This directive will replace the directive on parental leave. It strengthens the existing right to four months of parental leave, by making two months non-transferable between parents and introducing compensation for these two months at a level to be determined by the member state.

²This act gave an unpaid part-time parental leave of a maximum of six months to employees who had been employed by their current employer for at least one year to be taken within four years after the birth of a child.

³The new proposal was still part-time but more individual oriented: Parents were entitled to lower their working hours by 50 percent over a period of 26 weeks and the leave could be take until the child is eight years old. Additionally, employees may request the employer's permission to spread the leave hours over a longer period than six months or to take more hours per week. Employers may not refuse unless compelling business reasons.

⁴Since the Work and Care Act in 2001, employers could deduct 50 percent of the costs of paid leave, under the condition that payment during parental leave was at least 70 percent of the minimum wage. In addition, payment has to be included in the collective agreement or made available to at least three-quarter of the employees in the firm

⁵According to Statistics Netherlands (CBS), between 2005 and 2009 nearly 25 percent of employees in the private sector taking parental leave was partly or fully paid, while around 80 percent of employees in the public sector, health care and welfare sectors was partly or fully paid

⁶Workers can save up to 12 percent of their gross annual income to take time out of the labor market. A maximum of 210 percent of the last-earned yearly wage may be saved, which amounts to three years of leave at 70 percent of the last earned income. The money is treated as deferred income and is only taxed on withdrawal. Additionally, saving on the LCSS gives the

Although the Netherlands did a first step towards a generalized paid parental leave, the take-up rate is still far from 100 percent⁷. Fathers were afraid that claiming parental leave will have an unfavorable effect on their careers, while mothers judged that the pay during parental leave was too low. Lewis and Cooper (1999) calls this phenomena “the gap between policy and practice”: employers do not always implement work-life policies as expected, nor do employees utilize them as extensively as they could.

To sum up, parenting implies family obligations and time constraints leading to an increase in work-family role conflict (Tausig and Fenwick, 2001). Those conflicts have a negative impact on parent’s life satisfaction (Amstad et al., 2011; ?). Moreover, family involvement is associated with a higher levels of well-being. Thus, a way to minimize the adverse effect of parenting on parents’ life satisfaction may be to provide specific working time arrangements to parents. The Dutch parental leave scheme is an example of such arrangement. It entitled parents with a child younger than eight to take a parental leave under the form of a part-time work. Although this leave is most often unpaid in the private sector, some fiscal incentives exist to encourage parents to take it. In this regards, the Dutch parental leave scheme may help parents to reconcile their family and work life and improve their life satisfaction.

Our study contributes to the literature in several ways. Firstly, few studies have addressed the relationship between parental leave schemes and subjective well-being. To fulfill this gap, we examined the association between parental leave and life satisfaction, and explore the existence of adaptation effects by studying how the length, intensity, and payment scheme of the parental leave program moderates the effect between parental leave and life satisfaction. Secondly, we payed attention to the heterogeneous relationship between parental leave and life satisfaction by examining for whom parental leave is most conducive to parental well-being. Finally, we analyzed the relationship between parental leave and life satisfaction in the case of the Netherlands, where we was, as we know, the first ones to study this relationship for this country.

savers access to income tax relief of up to 195 euros per year (Lewis et al., 2008). Moreover, Since 2009, all employees taking parental leave get access to an extra fiscal benefit of 50 percent of the minimum wage for the statutory period of leave. In the case of full-time leave, parents will be given approximately 650 euros per month.

⁷According to the Netherlands Institute for Social Research (SCP) in 2006, 44 percent of mothers entitled to parental leave toke it, compared to 21 percent of the fathers. Moreover, according to CBS, between 2005 and 2009 around 10 percent of parents who wanted parental leave did not claim it.

The remainder of this paper is organized as follows: We focus on the data and methodology in Section 2. An empirical analysis of the relationship between parental leave and life satisfaction is provided in section 3, The discussion and conclusion are presented in section 4.

1.2 Data and Methodology

In this section we presented the variables from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS), we used to study the effect of the Dutch parental leave scheme on parents' life satisfaction. Additionally, we provided descriptive statistics on life satisfaction, decision to take a parental leave, having young children, and decision to reduce working time outside the parental leave scheme.

1.2.1 Data

Our research was based on data taken from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel administered by CentERdata⁸ (see for details: www.lissdata.nl). The panel is based on a true probability sample of households drawn from the population register by Statistics Netherlands consisting of more than 4500 households over 8000 individuals and 93 monthly waves from November 2007 to September 2016. In the LISS survey, individuals report on several aspects of their life, including their satisfaction with life, parental leave and background information⁹. Our common sample was unbalanced¹⁰ and included 8,590 observations and 2,943 individuals observed over the period 2008-2013¹¹.

To be on parental leave a person must have at least worked with the same employer during one year, this allowed us to exclude individuals who had never worked during the entire observation period. We exclude years 2014, 2015 and 2016 from our analysis because the life satisfaction question was asked six month after the question on parental leave¹². During the period between 2008-2013, the personality questionnaire was asked only one month after the question on parental leave.

To analyze the impact of taking parental leave on life satisfaction, we first investigated the effect of having children younger than eight on subjective well-being. We chose the age of eight as a cutoff because only parents with children younger than eight are entitled to use the Dutch parental leave scheme. Then, we studied whether

⁸ Tilburg University, The Netherlands

⁹ The panel was extracted from the LISS database and uses information from 5 panels of the core study: "Personality Questionnaire, LISS Core Study", "Family and Household Questionnaire, LISS Core Study", "Health Questionnaire, LISS Core Study", "Work and Schooling Questionnaire, LISS Core Study", "Economic Situation: Income Questionnaire, LISS Core Study".

¹⁰ The definitions and description of the relevant variables in the main models are provided in Tables A.1.1 and A.1.2 in the Appendix A1.

¹¹ Our common sample was based on observations of the last column of our baseline estimation.

¹² Note: observations after 2014 may bias our results, as individuals who answered the question on life satisfaction may no longer be on parental leave.

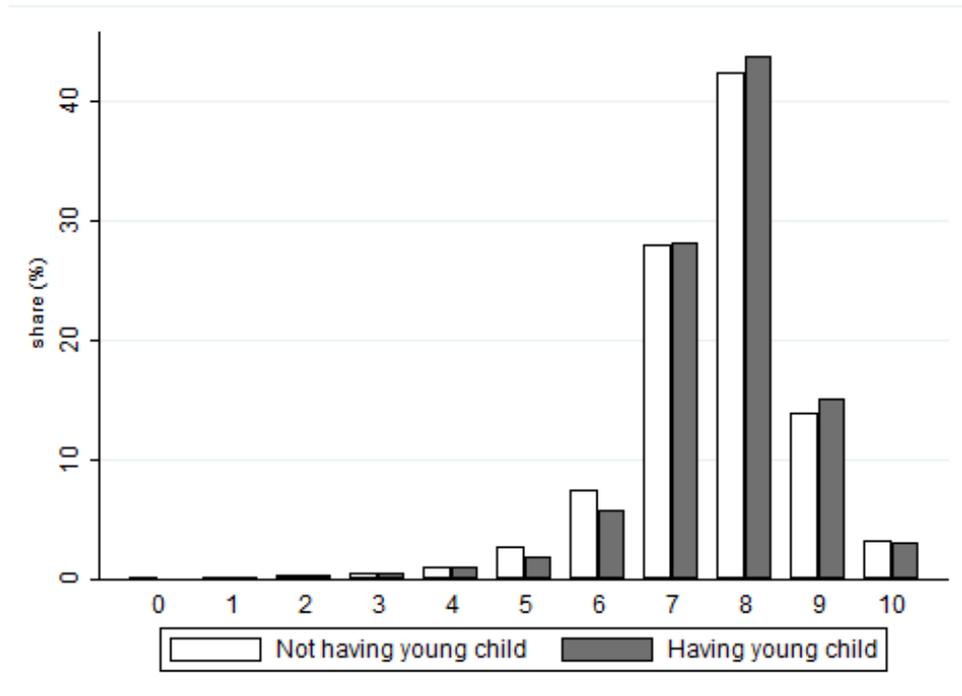
taking parental leave might influence the relationship between having young children and life satisfaction. As parental leave is a part-time work arrangement that allows parents to have more time for their children and themselves, it is reasonable to assume that while having young children has no clear impact on life satisfaction (Luhmann et al., 2012), having more free time for them does (Tausig and Fenwick, 2001; Pichler, 2009; Drobnič et al., 2010; Adams et al., 1996; Greenhaus et al., 2003). Further, parental leave was distinguish from working less because of children¹³. Our goal was to compare the effects of working time reduction outside the parental leave scheme with reduction of working time induced by parental leave on life satisfaction.

Our indicator for life satisfaction was based on the question "How satisfied are you with the life you lead at the moment?" the respondent was asked to use an ordinal scale from zero to ten, from not at all satisfied to completely satisfied. This single-item scale life satisfaction question is a widely used measure of subjective well-being. It has the advantage of asking the respondent to focus on an overall evaluation of their life rather than on current feelings or specific psychosomatic symptoms. Veenhoven (2000) and Frey and Stutzer (2002), have shown that life satisfaction is closely related to a number of other potentially more objective measures of happiness.

The well-being distribution of having a child under eight or not in the Netherlands is illustrated in Figure 1. Very few individuals reported a level of well-being below five or over nine, which is standard in the literature. At a first glance the average value of life satisfaction among the two groups is about the same. In Figure 2, we further distinguish between parents with young children who took parental leave and those who had not. In the middle and higher score groups of seven and eight individuals not on parental leave dominate those on parental leave in percentage, while a wider share of parents on parental leave scored nine out of ten.

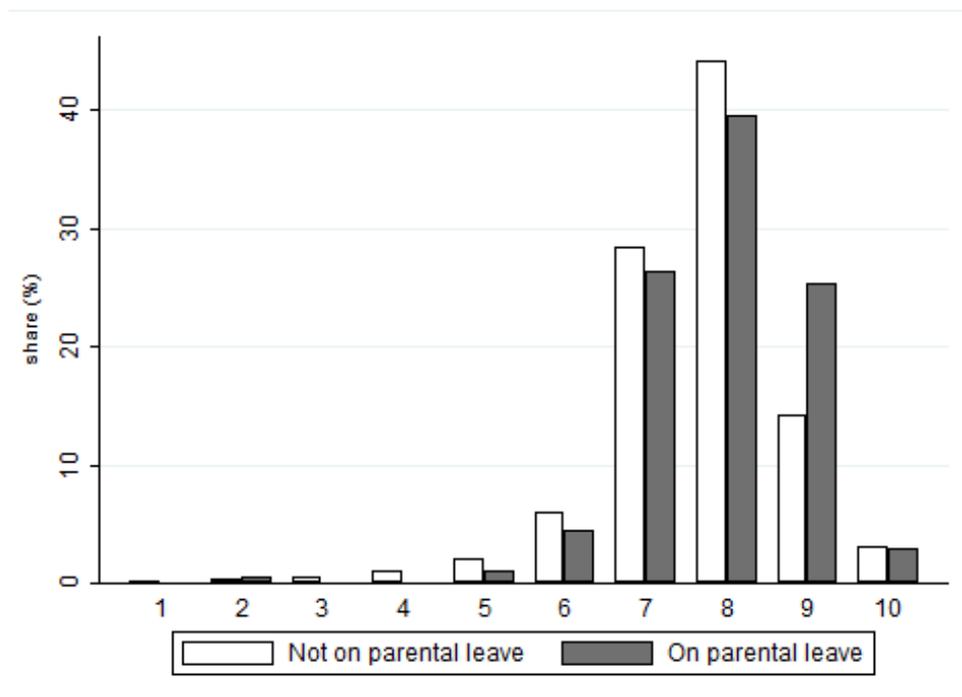
¹³Working less because of children is based on the question "How many hours per week are you working less on account of the care for your (grand) children? Do not include the hours that you have possibly taken as your parental leave". In our common sample we observed 1,584 observations of individuals reducing their working hours to take care of their children outside the parental leave scheme.

Figure 1.1 – Well-being and Having a Young Child



Descriptive statistics are based on our common sample from LISS panel data (2008-2013)

Figure 1.2 – Well-being of Parents and Parental Leave



Descriptive statistics are based on our common sample from LISS panel data (2008-2013)

An overview of average well-being of parents with under eight children split by gender is given in Table 1. The last column in Table 1 confirms the findings shown in Figure 1 and 2. Average well-being does not differ noticeably between having children younger than eight or not, and between individuals working less hours to take care of their children or not, while individuals taking parental leave are on average more satisfied with their life than those who did not. On the scale from zero to ten, parents who have not taken parental leave scored on average 7,6 while those who took parental leave scored on average 7,9. Comparing the first two columns of Table 1, the average gap between parents who took parental leave and those who did not was slightly higher for women than for men.

Table 1.1 – Life Satisfaction having a Young Child, Taking Parental Leave and Working Less in the Netherlands; Averages and Number of Observations

	Men	Women	Average
a. Young child			
No Young child	7.6 (2,817)	7.6 (3,167)	7.6 (5,984)
Young child	7.6 (1,357)	7.7 (1,249)	7.7 (2,606)
b. Parental leave			
No parental leave	7.6 (1,281)	7.7 (1,127)	7.6 (2,408)
Parental leave	7.8 (76)	7.9 (122)	7.9 (198)
c. Work less hours			
Not working less hours	7.6 (1,220)	7.7 (442)	7.6 (1,662)
Working less hours	7.8 (137)	7.7 (807)	7.7 (944)

Averages life satisfaction of sample a are based on our common sample from LISS panel data (2008-2013) including 8,590 observations.

Averages life satisfaction of sample b and c are based on a sub-sample of individuals having children under eight years old including 2,606 observations.

The distribution of individuals having young children and not reducing their working hours, taking parental leave and working less outside the Dutch parental leave scheme is presented in Table 2. The second column of Table 2 describes the distribution of individuals taking parental leave; with the largest group being middle income, highly educated women in cohabitation with a single child under two years old. We observed an equal distribution across the public and private sectors, living environment and number of hours taking leave per week. The duration of parental leave generally exceed two years, however 43 percent of the respondents were effectively on parental leave for six months to up to two years.

Finally, a majority of parents in the Netherlands take parental leave as a part-time work arrangement, allowing them more easily to reconcile work and parenting without completely withdrawing from the labor market.

The first column of Table 2 reports the distribution of individuals having young children and not reducing their working hours. These parents have different characteristics than those taking parental leave; they mainly belong to high income category and work full-time in the private sector. The third column of Table 2 shows the distribution of parents reducing their working time outside the parental leave scheme. A vast majority of them belongs to the lowest income category and are women working part-time. Note that 10 percent of those reducing their working time are already on parental leave¹⁴.

All in all, we observed a potential selection effect on time-varying observables, namely income category, level of education, working time arrangements and working in the private or public sector.

¹⁴It represented 94 observations in our common sample. To ensure that these observations does not bias our estimated parameters we distinguished, in section Table 6, working less only, taking parental leave only, and working less and taking parental leave.

Table 1.2 – Descriptive Statistics of People Having Young Children and Taking Parental Leave, Working Less or Not Reducing their Working Time

	Young child (%)	Parental leave (%)	Work less (%)
Sex			
Men	52	38	15
Women	48	62	85
Monthly income			
0€ - 1,600€	32	39	76
1,601€ - 1,900€	24	32	10
1,901€ and more	44	29	14
Education level			
Stop before junior school	59	31	52
Higher Education	41	69	48
Marital status			
Single	8	4	8
(Un)married co-habitation	92	96	92
Working hours category excluding hours leave			
Part-time	25	49	90
Full-time	75	51	10
Sector			
Private	73	44	56
Public	27	56	44
living environment			
Rural	65	55	63
Urban	35	45	37
Age children			
Between 0 and 2 years old	30	55	31
Between 3 and 4 years old	34	33	37
Between 5 and 6 years old	33	28	37
Between 7 and 8 years old	34	19	33
Number of young children at home			
One child	67	59	61
Two children	28	35	34
Three children	4	5	4
Four children	1	1	1
Duration of parental leave			
No parental leave	100	0	90
Between one month and six months	0	26	3
Between six months and two years	0	34	4
More than two years	0	40	3
Month of leave since the person fulfill the inquiry			
No parental leave	100	0	90
Between one month and six months	0	38	5
Between six months and eighteen months	0	35	3
More than eighteen months	0	27	2
Number of hours leave per week			
No parental leave	100	0	90
One - seven hours leave (full day)	0	54	5
More than one day leave	0	46	5
Duration of parental leave and number of hours leave per week			
No parental leave	100	0	90
Full day and less than six month leave	0	11	1
Full day and Between six month and two years leave	0	18	2
Full day and more than two years leave	0	25	2
More than full day and six month leave	0	15	2
More than full day and between six month and two years leave	0	16	2
More than full day and more than two years leave	0	15	1
Observations	2,606	198	944

Descriptive statistics are based on our common sample from LISS panel data (2008-2013)

1.2.2 Econometric Model

Our dependent variable life satisfaction was measured on an ordinal scale from zero to ten. Panel data allowed us to control for time-invariant unobserved personal characteristics using a linear robust fixed-effects model. In this model the dependent variable was assumed to be cardinal, however when analyzing subjective well-being, the linear fixed-effects estimation performs as well as the fixed-effects ordered logit estimation (Ferrer-i Carbonell and Frijters, 2004)¹⁵. Our model was specified as:

$$LS_{it} = \beta_0 + \beta_1 YoungNoLeave_{it} + \beta_2 (Young_{it} \times Leave_{it}) \\ + \beta_3 (Young_{it} \times Work.Less_{it}) + X_{it}\beta_4 + \alpha_i + \varepsilon_{it}$$

Where i ($i = 1, 2, \dots, n$) refers to individuals t ($t = 1, 2, \dots, T$) stands for year and LS_{it} is the self-reported life satisfaction of individual on a scale from zero to ten. β_0 is the constant, $YoungNoLeave_{it}$ is a dummy vector of having a child younger than eight and not taking parental leave, $Young_{it} \times Leave_{it}$, denotes the interaction effect between having a *young child* and taking a *parental leave*, $Young_{it} \times Work.Less_{it}$ designate the interaction effect between having a *young child* and *working less* to take care of young child¹⁶ and X_{it} represents the vector of covariates that may be correlated to both *parental leave* and *Life satisfaction* for example *work hours categories* (Booth and Van Ours, 2013), having a *one year old child*¹⁷, *work satisfaction*, *social contact satisfaction* and *moment feeling*. Additionally, we controled for the usual demographic and socio-economic variables like *age*, *living environment*, *health*, *the education level* of the respondent, *marital status*, *employment status*, *the log of personal net monthly income in Euros* and *year dummies* (Booth and Van Ours, 2008). α_i represents individual specific time-invariant effects, such as *personality* and ε_{it} is the error term.

¹⁵According to (Ferrer-i Carbonell and Frijters, 2004) assuming ordinality or cardinality of life satisfaction scores makes qualitatively little difference, whilst allowing for fixed-effects may change results substantially.

¹⁶It is the hours working less to take care of young child in addition to parental leave hours i.e. parental leave hours are not taking into account.

¹⁷Booth and Van Ours (2008) control for *child age categories*, as our variable *young child* is a dummy we could not control for each young child age categories, otherwise we would have colinearity issues. So, we only controled for having a *one year old child*, because parents of a new born child or newly adopted child are entitled to paternity and maternity leave.

1.3 Empirical Results

In this section we presented results from our baseline estimates. Further, we performed a sensitivity analysis to test the validity of our results. Then, we investigated the existence of reverse causality. Finally, we analyzed of how the life satisfaction of different parental sub-groups is influenced by the Dutch parental scheme.

1.3.1 Baseline Estimates

The results of our linear fixed-effects model are presented in Table 3¹⁸. All of our models were estimated using cluster-robust standard errors at the individual level. Our results confirmed the U-shaped relationship between life satisfaction and age (Blanchflower and Oswald, 2008). we found that having a child younger than eight has no significant effect for life satisfaction, while taking parental leave increases life satisfaction on average by 0.2 points. The total effect of having young child and taking parental leave was denoted by the sum of the two estimated coefficients β_2 and β_3 . Considering the last model specification in Table 3, having a child younger than eight and taking parental leave increase life satisfaction by 0.17 on average. The Wald-test revealed a significant difference in estimated coefficients between having a young child and not being on parental leave and the interaction between having a young child and taking parental leave. Thus, having a young child but not taking parental leave does not significantly impact life satisfaction, while taking parental leave increases life satisfaction.

Reduction of working time that is not part of the parental leave scheme does not have a significant association with life satisfaction, although the difference in coefficients between working less to take care of a young child and taking parental leave is not statistically significant. Looking at Column 5 of Table 3, we noticed that when we added subjective control variables, namely work satisfaction, social contact satisfaction and moment feelings the significance and the size of the coefficient slightly decreased, but remained statistically significant.

We found a positive moderating role of parental leave on the relationship between having a young child and life satisfaction. This result confirmed our first hypothesis that, in the Netherlands, parental leave reduces the "time-bind" (Hochschild, 1997) generated by having young child i.e. it increases the extent to which workers feel successful in balancing their work and personal lives. Parental leave in the Netherlands

¹⁸Full estimates can be found in the appendix Table B.1

induces a reduction in work-life imbalances leading to higher life satisfaction.

Table 1.3 – Summary Baseline Model - Parameter Estimates Effects of Parental leave on Life satisfaction in the Netherlands

Variable	(1)	(2)	(3)	(4)	(5)
Young child (β_1)	0.04 (0.06)	-	-	-	-
Young child and not on parental leave (β_2)	-	-0.00 (0.07)	-0.02 (0.07)	-0.05 (0.05)	-0.05 (0.06)
Young child and on parental leave (β_3)	-	0.22 (0.07)***	0.21 (0.08)***	0.21 (0.08)***	0.17 (0.08)**
Young child and working less because of child (β_4)	-	0.08 (0.07)	0.06 (0.07)	0.06 (0.07)	0.07 (0.06)
$\beta_2 + \beta_3$	-	0.22	0.19	0.16	0.12
$\beta_2 + \beta_4$	-	0.08	0.04	0.01	0.02
Wald tests					
p-value ($\beta_1=\beta_2$)	-	0.01***	0.01***	0.01***	0.01***
p-value ($\beta_2=\beta_3$)	-	0.17	0.12	0.13	0.31
R-Squared within	0.01	0.01	0.01	0.02	0.23
Control variables	Year Dummies	Year Dummies	Set of covariates	Set of covariates	Set of covariates
Observations	8,590	8,590	8,590	8,590	8,590
Individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

All estimates include dummy variables for year of survey and constant term

Column 3, 4 and 5 includes each additional set of covariates described in the statistical method section

1.3.2 Robustness Test

We perform a sensitivity analysis to confirm the robustness of our results. Using an alternative definition for the dependent variable life satisfaction, re-running the regressions using an ordered logit fixed-effects model and distinguishing working less in addition from parental leave from working less outside the parental leave scheme. Then, we looked at the reverse causality issue and estimated the impact of lag life satisfaction on the actual decision to take parental leave.

Sensitivity Analysis

First we replaced the dependent variable life satisfaction with happiness¹⁹. Our estimation results are presented in Table 4²⁰. Having re-estimated the model using the happiness as dependent variable, our conclusions did not change in that there was still a positive association between parental leave and happiness as a subjective well-being indicator.

The estimated results using ordered logit fixed-effects are displayed in Table 5²¹. In line with the findings of Ferrer-i Carbonell and Frijters (2004) assuming cardinality or ordinality in the subjective well-being data makes qualitatively little difference, and re-running the regression using an ordered logit fixed-effects model gave similar results to those found using linear fixed-effects model. In contrast to our baseline estimates, however, the estimated effect of taking parental leave on life satisfaction was significantly different from the estimated impact of working less to care of children on life satisfaction.

In a last specification we distinguished working less in addition from parental leave from working less outside the parental leave scheme in Table 6²². As mentioned in the descriptive statistics part there was 94 observations for which individuals are taking parental leave and reducing their working hours at the same time. This distinction does not change our main findings. Taking parental leave and additionally reducing working hours, or not still largely and significantly impact life satisfaction, while reducing working hours outside the parental leave scheme does not affect life satisfaction. Nevertheless, the Wald-test revealed a significant

¹⁹The respondent answered the question; "On the whole, how happy would you say you are ?" on an ordinal scale from zero (totally unhappy) to ten (totally happy).

²⁰Full estimates can be found in the appendix Table C.1

²¹Full estimates can be found in the appendix Table C.2

²²Full estimates can be found in the appendix Table C.3

difference in estimated coefficients between taking parental leave and additionally reducing working hours and only reducing working hours outside parental leave scheme. Thus, only reducing working hours without the legal framework of parental leave does not significantly impact life satisfaction, while taking parental leave and reducing working hours increases life satisfaction.

To conclude, using happiness as a dependent variable in Table 4, re-running the analysis using ordered logit fixed-effect in Table 5 and distinguishing working less in addition from parental leave from working less outside the parental leave scheme produced substantively the same results as those presented in our baseline estimate in Table 3.

Table 1.4 – Sensitivity analysis - Parameter Estimates Effects of Parental leave on Happiness

Variable	(1)	(2)	(3)	(4)	(5)
Young child (β_1)	0.08 (0.06)	-	-	-	-
Young child and not on parental leave (β_2)	-	0.04 (0.07)	0.01 (0.07)	0.02 (0.07)	-0.00 (0.06)
Young child and on parental leave (β_3)	-	0.21 (0.09)**	0.21 (0.09)**	0.20 (0.09)**	0.16 (0.08)**
Young child and working less because of child (β_4)	-	0.09 (0.07)	0.06 (0.07)	0.07 (0.07)	0.09 (0.06)
Wald tests					
p-value ($\beta_2=\beta_3$)	-	0.06*	0.04**	0.06*	0.03**
p-value ($\beta_3=\beta_4$)	-	0.25	0.18	0.22	0.40
R-Squared within	0.01	0.01	0.01	0.02	0.22
Control variables	Year Dummies	Year Dummies	Set of covariates	Set of covariates	Set of covariates
Observations	8,541	8,541	8,541	8,541	8,541
Individuals	2,938	2,938	2,938	2,938	2,938

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

All estimates include dummy variables for year of survey and constant term

Column 3, 4 and 5 includes each additional set of covariates described in the statistical method section

Table 1.5 – Sensitivity analysis - Parameter Estimates Effects of Parental leave on Life Satisfaction - Ordered Logit Fixed-Effects

Variable	(1)	(2)	(3)	(4)	(5)
Young child (β_1)	0.11 (0.18)	-	-	-	-
Young child and not on parental leave (β_2)	-	-0.09 (0.17)	-0.13 (0.17)	-0.14 (0.17)	-0.21 (0.16)
Young child and on parental leave (β_3)	-	0.66 (0.22)***	0.66 (0.23)***	0.65 (0.23)***	0.69 (0.27)**
Young child and working less because of child (β_4)	-	0.05 (0.08)	0.05 (0.08)	0.03 (0.08)	-0.01 (0.08)
Wald tests					
p-value ($\beta_2=\beta_3$)	-	0.00***	0.00***	0.00***	0.00***
p-value ($\beta_3=\beta_4$)	-	0.01***	0.01***	0.01**	0.01**
log likelihood	-3.453	-3.447	-3.441	-3.408	-2.635
Control variables	Year Dummies	Year Dummies	Set of covariates	Set of covariates	Set of covariates
Observations	8,590	8,590	8,590	8,590	8,590
Individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Ordered logit fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

All estimates include dummy variables for year of survey and constant term

Column 3, 4 and 5 includes each additional set of covariates described in the statistical method section

Table 1.6 – Sensitivity analysis - Parameter Estimates Effects of Working Less on Life Satisfaction

Variable	(1)	(2)	(3)	(4)	(5)
Young child (β_1)	0.04 (0.06)	-	-	-	-
Young child and not on parental leave (β_2)	-	0.01 (0.07)	-0.02 (0.07)	-0.01 (0.07)	-0.04 (0.06)
Young child and on parental leave (β_3)	-	0.28 (0.11)**	0.25 (0.11)**	0.25 (0.11)**	0.19 (0.10)*
Young child and on parental leave and working less (β_4)	-	0.28 (0.11)**	0.25 (0.11)**	0.24 (0.11)**	0.23 (0.11)**
Young child and working less (β_5)	-	0.10 (0.08)	0.07 (0.08)	0.07 (0.08)	0.08 (0.06)
Wald tests					
p-value ($\beta_2=\beta_3$)	-	0.01***	0.01***	0.01***	0.01**
p-value ($\beta_3=\beta_4$)	-	0.99	0.96	0.93	0.74
p-value ($\beta_3=\beta_5$)	-	0.11	0.09*	0.09*	0.27
p-value ($\beta_4=\beta_5$)	-	0.08*	0.08*	0.09*	0.16
R-squared within	0.01	0.01	0.01	0.02	0.23
Control variables	Year Dummies	Year Dummies	Set of covariates	Set of covariates	Set of covariates
Observations	8,590	8,590	8,590	8,590	8,590
Individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

All estimates include dummy variables for year of survey and constant term

Column 3, 4 and 5 includes each additional set of covariates described in the statistical method section

Reverse causality

To check the validity of our results we needed to take into account the possibility of omitted variable bias and reverse causality in the estimation of the coefficient of taking parental leave on life satisfaction. Using the linear fixed-effects model, we removed omitted fixed variable bias due to individual-specific unobserved heterogeneity related to both parental leave and life satisfaction, i.e. the phenomenon that fixed individual characteristics, such as personality, may influence the choice to take parental leave and life satisfaction at the same time. The linear fixed-effects model does not consider possible reverse causality, i.e. the fact that an individual whose life satisfaction increases is more likely to take parental leave. Someone who becomes more satisfied with his or her life may be more willing to take free time to enjoy spending time with his or her children. Likewise, a person going through a depressive episode after the birth of a child may be more disposed to spend time at work.

To examine whether or not reverse causality was an issue, we looked at changes in life satisfaction over time and if they might influence the decision to take parental leave. We estimated a linear fixed-effects model in which the dependent variable was the interaction effect between having a *child younger than eight* or not and *taking parental leave* or not with independent variables *life satisfaction* divided by 100²³ in earlier periods and the same covariates as before.

If a higher level of life satisfaction increased the probability of being on parental leave later on we could have a reverse causality issue. We used three different lags for life satisfaction to allow for effects that take shape quickly or more slowly. The relevant parameter estimates of lagged life satisfaction are presented in Table 7. Estimations a, b and c indicated that a positive shock to happiness of an individual not on parental leave does not increase his or her probability to take parental leave one, two or three years later. Rows d to f show that after controlling for covariates, past life satisfaction does not influence the choice to take parental leave. The same estimation in the sub sample of parents with a young child are shown in Table 8. None of the results are sizable or significant, from this we concluded that reverse causality from life satisfaction to future choice to take parental leave was not an issue (see also [Chen and Van Ours \(2018\)](#)).

²³We divide the life satisfaction by 100 to display larger marginal effects.

Table 1.7 – Parameter Estimates Effects of Subjective Well-being on the Choice to Take Parental Leave; Individual Fixed-Effects

	Parental leave _t	Nb. observations	R-squared within	Nb. Individuals
a. Life satisfaction _{t-1}	0.18 (0.19)	5,360	0.07	2,029
b. Life satisfaction _{t-2}	-0.55 (0.40)	3,607	0.10	1,456
c. Life satisfaction _{t-3}	-0.32 (0.30)	2,474	0.11	1,228
d. Life satisfaction _{t-1}	0.12 (0.17)	5,360	0.01	2,029
e. Life satisfaction _{t-2}	-0.66 (0.40)	3,607	0.01	1,456
f. Life satisfaction _{t-3}	-0.03 (0.29)	2,474	0.04	1,228

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

Estimates of sample a, b, c include dummy variables for year of survey and constant term

Estimates of sample d, e, f additionally include a set of covariates described in the statistical method section

Table 1.8 – Parameter Estimates Effects of Subjective Well-being on The Choice to Take Parental Leave - Subsample of parents; Individual Fixed-Effects

	Parental leave _t	Nb. observations	R-squared within	Nb. Individuals
a. Life satisfaction _{t-1}	0.99 (0.62)	1,388	0.42	668
b. Life satisfaction _{t-2}	-1.03 (1.44)	816	0.51	413
c. Life satisfaction _{t-3}	-0.68 (0.99)	504	0.47	297
d. Life satisfaction _{t-1}	0.57 (0.70)	1,388	0.03	668
e. Life satisfaction _{t-2}	-2.30 (1.39)*	816	0.04	413
f. Life satisfaction _{t-3}	0.19 (1.73)	504	0.09	297

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)

Estimates of sample a, b, c include dummy variables for year of survey and constant term

Estimates of sample d, e, f additionally include a set of covariates described in the statistical method section

1.3.3 Heterogeneity Analysis

In this section, we present an analysis of how the life satisfaction of different parental sub-groups is associated with parental leave in the Netherlands. Firstly, we examined how the Dutch parental leave scheme may shape the relationship. Secondly, we explored the influence of socio-demographic characteristics on the estimate impact of parental leave on life satisfaction.

Variation in Parental Leave Scheme

The estimated coefficient of our linear fixed-effects model by length of parental leave is shown in Table 9, panel a. Taking parental leave is related to an average life satisfaction increase of about 0.3 points for parents who are on parental leave for one month up to one and a half years. A similar significant coefficient size is found for parents during parental leave of between six months to eighteen months. Parents on parental leave for more than one and a half years, however, no longer enjoyed the benefits of this leave. This result may be explain by the process of hedonic adaptation ([Brickman and Campbell, 1971](#)) which suggest that individuals return to baseline levels of happiness following a change in life circumstance²⁴. A possible explanation is that after two years parents get used to their part-time work arrangement and their extra free time no longer increases their life satisfaction. Additionally, [Adema et al. \(2015\)](#) find that across European countries negative wage and slower career opportunity progression largely follow long periods of leave from work, e.g. one or two years or more. As a consequence, when the parental leave arrangement is spread over an extended period it may generate negative work outcomes for career progression and wages that offset the work-life balance benefits of taking parental leave.

Estimated effects of parental leave weekly hours on life satisfaction are presented in Table 9, panel b. The size of estimated coefficient does not differ significantly by the number of weekly working hours of parental leave. A reduction of working hours may impact life satisfaction in two contrasting ways. Firstly, taking more hours per week off may help an individual to balance life and work in a better way, leading to an increase in life satisfaction. Secondly, in contrast, reducing an individual weekly working hours can induce lower earnings, reduce their capacity to deal with work demands, restrict their career opportunities, and encourage negative

²⁴[Clark et al. \(2008\)](#) find that individuals may completely adapt to life events such as marriage, divorce, widowhood, birth of child, and layoff.

judgments from co-workers ([Garnero, 2016](#)). Hence, taking beyond a certain amount of leave per week may have negative work outcomes for an individual: reducing weekly working hours may exceed the work-life balance benefits of parental leave.

Table 1.9 – Heterogeneity Analysis - Parameter Estimates Effects of Parental Leave Scheme on Life Satisfaction in the Netherlands

Variable	Life satisfaction
Panel a. Length of Parental Leave	
Young child and not on parental leave (β_1)	-0.10 (0.14)
Betw. one month and six months leave (β_2)	0.30 (0.13)**
Betw. six month and eighteen month leave (β_3)	0.27 (0.12)**
More than one and a half year leave (β_4)	-0.03 (0.16)
Young child and working less because of child (β_5)	0.01 (0.13)
p-value ($\beta_1=\beta_2$)	0.07*
p-value ($\beta_1=\beta_3$)	0.07*
p-value ($\beta_1=\beta_4$)	0.78
p-value ($\beta_2=\beta_3$)	0.84
p-value ($\beta_2=\beta_4$)	0.04**
p-value ($\beta_3=\beta_4$)	0.29
p-value ($\beta_2=\beta_5$)	0.19
p-value ($\beta_3=\beta_5$)	0.21
p-value ($\beta_4=\beta_5$)	0.86
R-Squared within	0.24
Control variables	Set of covariates
Observations	8,590
Individuals	2,943
Panel b. Parental Leave Weekly Hours	
Young child and not on parental leave (β_6)	-0.08 (0.14)
Betw. one and seven hours leave per week (β_7)	0.21 (0.11)*
More than one day leave per week (β_8)	0.15 (0.14)
Young child and working less because of child (β_9)	0.04 (0.13)
p-value ($\beta_6=\beta_7$)	0.17
p-value ($\beta_6=\beta_8$)	0.34
p-value ($\beta_7=\beta_8$)	0.66
p-value ($\beta_7=\beta_9$)	0.40
p-value ($\beta_8=\beta_9$)	0.64
R-Squared within	0.24
Control variables	Set of covariates
Observations	8,590
Individuals	2,943

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)
 Estimates include dummy variables for year of survey, constant term and all controls of our baseline model

Socio-Demographic Characteristics

The estimated coefficient of our linear fixed-effects model by socio-demographic characteristics are shown in Table 10. Although we can see that taking parental leave has a more profound impact on the life satisfaction of (1) men, (2) the lower educated, (3) those belonging to the high income category, (4) and employees working in the public sector, none of the differences are statistically significant. In part, the non-significance of the results can be explained by the limited number of people in the sample taking parental leave. Follow-up research is necessary to examine those differences e.g. gender discrepancy in the effects of parental leave.

Table 1.10 – Life satisfaction and Parental Leave by Socio-economic Characteristics in the Netherlands

	Young child and on parental leave	Observations	R-squared within	Individuals
Panel a. Sex				
Males (β_1)	0.30 (0.12)***	4,174	0.23	1,404
Females (β_2)	0.12 (0.10)	4,416	0.24	1,539
p-value ($\beta_1=\beta_2$)	0.12			
Panel b. Education Level				
Stop at junior college level or before (β_3)	0.28 (0.15)*	5,394	0.24	1,864
Higher education (β_4)	0.11 (0.09)	3,196	0.23	1,096
p-value ($\beta_3=\beta_4$)	0.18			
Panel c. Income category				
0 - 1,600€ (β_5)	0.03 (0.14)	4,000	0.23	1,500
1,601€ - 1,900€ (β_6)	0.30 (0.16)*	1,583	0.23	721
1,901€ and more (β_7)	0.38 (0.14)***	3,007	0.25	1,120
p-value ($\beta_5=\beta_6$)	0.70			
p-value ($\beta_5=\beta_7$)	0.24			
p-value ($\beta_6=\beta_7$)	0.37			
Panel d. Work Hours Category				
Part-time (β_8)	0.16 (0.11)	4,182	0.24	1,527
Full-time (β_9)	0.18 (0.11)	4,154	0.22	1,504
p-value ($\beta_8=\beta_9$)	0.90			
Panel e. Sector				
Private (β_{12})	0.16 (0.12)	5,050	0.22	1,802
Public (β_{13})	0.20 (0.10)**	3,483	0.27	1,194
p-value ($\beta_{12}=\beta_{13}$)	0.81			

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Individual fixed-effects specifications; based on our common sample from LISS panel data (2008-2013)
Estimates include dummy variables for year of survey, constant term and all controls of our baseline model

1.4 Discussion

We investigated the relationship between parental leave and life satisfaction. We showed that although having a child younger than eight has no significant effect on parental life satisfaction, life satisfaction is significantly higher among parents with a young child who are on parental leave. This finding confirms the idea that a family leave scheme reduces the perceived ‘*time bind*’ of parents and increases their subjective well-being. At the same time, a reduction of working time to take care of children outside the Dutch parental leave scheme does not affect life satisfaction, indicating that the legal framework of parental leave offering job protected leave, the legal obligation for an employer to accept rescheduling a parents’ work arrangement, the possibility to use the LCSS, access to fiscal benefit, and in some case financial support is crucial to enhance parents life satisfaction when taking temporary leave of absence in the form of parental leave to take care of their children. To test the robustness of our results we performed several sensitivity analyses. The findings hold using different estimation strategies and alternative definitions of the dependent variable. Additionally, we did not find evidence of existing reverse causality. The heterogeneity analysis revealed that short parental leave schemes are significantly more conducive to life satisfaction than long parental leave schemes, and no significant differences between subgroups were found.

Our results may have some implications for public policy. The use of parental leave should be promoted and encouraged by the State and by companies. The recent European directive on work-life balance for parents careers will, in this regard, help to promote paid parental leave supported by national laws. More generally, family friendly policies could be encouraged by public policy in order to avoid work life imbalances caused by parenthood.

Our study has some limitations that should be addressed in future research. One, we have an external validity issue as the analysis was restricted to the Netherlands the results we have found may not be generalized to other countries. In this regard, cultural specificities and legislation on birth-related leave and childcare systems may moderate the effect of parental leave on life satisfaction. Two, we dealt with reverse causality by estimating the impact of parental leave on past life satisfaction but this did not allow us to resolve this issue completely in the absence of a good instrumental variable or natural experiment. An experimental analysis needs to be undertaken to identify clearly the causal impact of parental leave on life satisfaction.

Three, although we included a number of time-varying covariates and applied fixed-effects model to account for time-invariant unobservables, we cannot entirely settle the concern of the possible time-varying unobservables. Four, although we explored for whom the relationship is prevalent, a more detailed heterogeneity analysis is needed. We should look at how different life styles may shape the relationship between parental leave and life satisfaction. For instance, family and career oriented individuals may experience parental leave in different ways. Such a study would require a larger number of people taking parental leave in the data set. Five, we assumed that parental leave reduces work-life imbalances, and so induces higher life satisfaction, however, we lacked the information needed to undertake a mediation analysis. All these limitations need to be addressed in future research.

1.5 Appendix

1.5.1 Appendix A: Details on our Data

Definitions and Description of Variables

The life satisfaction indicator and other variables on parental leave are collected on a monthly basis, but each module is repeated in different months during the year. Merging module by month implies an important data loss. In our analysis all variables were specified on an annual basis.

Table A.1 – Variables Definition

Variable	Definition
Life satisfaction	Score on question "How satisfied are you with the life you lead at the moment?" (zero to ten)
Young child	Dummy variable if children younger than eight
Parental leave	Dummy variable if currently on parental leave
Parental leave hours	0 "No parental leave" 1 "1-7 hours per week" 2 "More than one day leave per week"
Duration of parental leave	0 "No parental leave" 1 "between 1 month and 6 months" 2 "between 6 months and two years" 3 "More than two years"
Parental leave number of month	Number of month the individual is on parental leave at the moment he fulfill the inquiry
Work less for child	Dummy variable if currently working less in order to take care of children (excluding parental leave hours)
Age	Age of the respondent
Living environment	Urban character of place of residence (one to five)
Disease	Dummy variable if suffer from any kind of long-standing disease
Education level	0 "Stop before junior high school" 1 "higher education"
Marital status	Dummy variable if (un)married co-habitation, with(out) children
Log personal net income	log of net monthly individual income in euros
Part-time	Weekly working hours between 11-35 hours according to employment contract (including parental leave hours)
Full-time	Weekly More than 35 hours according to employment contract (including parental leave hours)
One year children	Dummy variable if having one year old child
Number of young children	Number of children younger than eight
Happiness	Score on question "On the whole how happy would you say you are?" (zero to ten)
Moment feel	Score on the question "Did you felt happy over the past month? How do you feel at the moment" (one to seven)
Work satisfaction	Score on the question "How satisfied are you with your current work ?" (zero to ten)
Social contact satisfaction	Score on the question "How satisfied are you with your social contacts?" (zero to ten)
Year	Year dummies (2008-2013), reference year is 2013

Descriptive statistics are based on our common sample from LISS panel data (2008-2013)

Table A.2 – Descriptives Statistics

Variables	Mean	Standard deviation	Min	Max	Observations
Life satisfaction	7.6	1.2	0	10	8,590
Happy	7.7	1.1	0	10	8,541
Young child	0.3	0.5	0	1	8,590
Young child and no parental leave	0.2	0.4	0	1	8,590
Number of young child	0.4	0.8	0	5	8,590
Parental leave	0.02	0,15	0	1	8,590
Parental leave weekly hours	0.22	1.5	0	40	8,589
Length of parental leave (number of month)	28	26	1	216	8,579
Length of parental leave since the person fulfill the inquiry (number of month)	14.5	17	1	136	8,579
Work less for child	0,18	0,39	0	1	8,590
Sex	0.5	0.5	0	1	8,590
Age	47.4	9.3	21	90	8,590
Urban	3	1.2	1	5	8,590
Public	0.4	0.5	0	1	8,533
Disease	0.2	0.4	0	1	8,590
Missing(Disease)	0.1	0.3	0	1	8,590
Education level	1.1	0.8	0	2	8,590
Marital status	0,9	0,3	0	1	8,590
Part-time	0.5	0.5	0	1	8,590
Full-time	0.5	0.5	0	1	8,590
Log net income	7.3	0.8	0	12.1	8,590
One year children	0.05	0.2	0	1	8,590
Moment feel	5.8	0.9	1	7	8,590
Work satisfaction	7.5	1.5	0	10	8,590
Social contact satisfaction	7.2	1.5	0	10	8,590

Descriptive statistics are based on our common sample from LISS panel data (2008-2013)

1.5.2 Appendix B: Parameter Estimates Baseline model

Table B.1 – Parameter Estimates Effects of Parental Leave on Life Satisfaction in the Netherlands

VARIABLES	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	(4) Life satisfaction	(5) Life satisfaction
Young child	0.04 (0.06)	-	-	-	-
Young child and not on parental leave	-	-0.00 (0.07)	-0.02 (0.07)	-0.02 (0.07)	-0.05 (0.06)
Young child and on Parental leave	-	0.22*** (0.08)	0.21*** (0.08)	0.20*** (0.08)	0.16** (0.08)
Young child and working less because of children	-	0.08 (0.07)	0.06 (0.07)	0.05 (0.07)	0.07 (0.06)
Age	-	-	-0.15** (0.07)	-0.13** (0.06)	-0.09* (0.06)
Age square times 100	-	-	0.10** (0.05)	0.09* (0.05)	0.06 (0.04)
Living environment	-	-	-0.05 (0.12)	-0.05 (0.11)	-0.06 (0.09)
Disease	-	-	-	-0.19*** (0.06)	-0.12** (0.05)
Missing(Disease)	-	-	-	-0.07 (0.05)	-0.04 (0.04)
Education level	-	-	-	0.36* (0.19)	0.34** (0.17)
Marital status	-	-	-	0.56*** (0.17)	0.43*** (0.13)
Part-time (ref: Unemployed or OLF)	-	-	-	0.11 (0.13)	0.12 (0.11)
Full-time (ref: Unemployed or OLF)	-	-	-	0.02 (0.15)	0.05 (0.13)
Log of net individual income	-	-	-	-0.00 (0.03)	-0.03 (0.03)
One year old child	-	-	-	0.00 (0.05)	0.01 (0.05)
Work satisfaction	-	-	-	-	0.07*** (0.01)
Moment feeling	-	-	-	-	0.44*** (0.02)
Social contact satisfaction	-	-	-	-	0.08*** (0.01)
2009	-0.04 (0.03)	-0.04 (0.03)	0.01 (0.04)	0.01 (0.03)	0.05* (0.03)
2010	-0.05* (0.03)	-0.06* (0.03)	0.06 (0.05)	0.05 (0.05)	0.06 (0.04)
2011	-0.10*** (0.03)	-0.10*** (0.03)	0.06 (0.06)	0.06 (0.06)	0.07 (0.05)
2012	-0.18*** (0.038)	-0.18*** (0.038)	0.03 (0.08)	0.03 (0.08)	0.06 (0.07)
2013	-0.18*** (0.04)	-0.18*** (0.04)	0.09 (0.10)	0.09 (0.10)	0.12 (0.08)
Constant	7.68*** (0.03)	7.68*** (0.03)	12.57*** (1.94)	11.14*** (1.97)	6.71*** (1.70)
Observations	8,590	8,590	8,590	8,590	8,590
R-squared	0.01	0.01	0.01	0.02	0.23
Number of individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimation based on our common sample from LISS panel data (2008-2013)

1.5.3 Appendix C: Robustness Test

Table C.1 – Parameter Estimates Effects of Parental Leave on Happiness

VARIABLES	(1) Happy	(2) Happy	(3) Happy	(4) Happy	(5) Happy
Young child	0.08 (0.06)	-	-	-	-
Young child and not on parental leave	-	0.04 (0.07)	0.01 (0.07)	0.02 (0.07)	-0.00 (0.06)
Young child and on Parental leave	-	0.21** (0.09)	0.21** (0.09)	0.20** (0.09)	0.16** (0.08)
Young child and working less because of children	-	0.09 (0.07)	0.06 (0.07)	0.07 (0.07)	0.09 (0.06)
Age	-	-	-0.18*** (0.06)	-0.17*** (0.06)	-0.14*** (0.05)
Age square times 100	-	-	0.12*** (0.04)	0.11*** (0.04)	0.09** (0.04)
Living environment	-	-	0.06 (0.08)	0.06 (0.08)	0.05 (0.06)
Disease	-	-	-	-0.18*** (0.06)	-0.11** (0.05)
Missing(Disease)	-	-	-	-0.09** (0.05)	-0.06 (0.04)
Education level	-	-	-	0.22 (0.19)	0.20 (0.18)
Marital status	-	-	-	0.32** (0.13)	0.20** (0.10)
Part-time (ref: Unemployed or OLF)	-	-	-	0.18 (0.13)	0.21* (0.11)
Full-time (ref: Unemployed or OLF)	-	-	-	0.22 (0.14)	0.26** (0.13)
Log of net individual income	-	-	-	0.01 (0.02)	-0.02 (0.02)
One year old child	-	-	-	0.02 (0.05)	0.02 (0.04)
Work satisfaction	-	-	-	-	0.04*** (0.01)
Moment feeling	-	-	-	-	0.41*** (0.02)
Social contact satisfaction	-	-	-	-	0.05*** (0.01)
2009	-0.07** (0.03)	-0.07** (0.03)	-0.00 (0.03)	0.00 (0.03)	0.04 (0.03)
2010	-0.09*** (0.03)	-0.09*** (0.03)	0.04 (0.04)	0.05 (0.04)	0.05 (0.04)
2011	-0.11*** (0.03)	-0.11*** (0.03)	0.08 (0.06)	0.09 (0.06)	0.10* (0.05)
2012	-0.18*** (0.04)	-0.18*** (0.04)	0.06 (0.07)	0.07 (0.07)	0.09 (0.06)
2013	-0.15*** (0.04)	-0.15*** (0.04)	0.15* (0.09)	0.17* (0.09)	0.19*** (0.08)
Constant	7.75*** (0.03)	7.75*** (0.03)	13.13*** (1.67)	12.11*** (1.74)	8.35*** (1.55)
Observations	8,541	8,541	8,541	8,541	8,541
R-squared	0.008	0.009	0.012	0.018	0.219
Number of individuals	2,938	2,938	2,938	2,938	2,938

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimation based on our common sample from LISS panel data (2008-2013)

Table C.2 – Parameter Estimates Effects of Parental Leave on Life Satisfaction - Ordered Logit Fixed-Effects

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction
Young child	0.11 (0.18)	-	-	-	-
Young child and not on parental leave	-	-0.09 (0.17)	-0.13 (0.17)	-0.14 (0.17)	-0.21 (0.16)
Young child and on parental leave	-	0.66*** (0.22)	0.66*** (0.23)	0.65*** (0.23)	0.69** (0.27)
Young child and working less because of children	-	0.05 (0.08)	0.05 (0.08)	0.03 (0.08)	-0.01 (0.08)
Age	-	-	-0.40** (0.18)	-0.35* (0.18)	-0.32* (0.18)
Age square times 100	-	-	0.27** (0.14)	0.24* (0.14)	0.22 (0.13)
Living environment	-	-	-0.12 (0.24)	-0.15 (0.20)	-0.34** (0.14)
Disease	-	-	-	-0.53*** (0.16)	-0.17 (0.16)
Missing(Disease)	-	-	-	-0.20 (0.14)	-0.19 (0.14)
Education level	-	-	-	1.25*** (0.39)	0.61 (0.50)
Marital status	-	-	-	0.97*** (0.30)	0.75*** (0.25)
Part-time (ref: Unemployed or OLF)	-	-	-	0.22 (0.36)	0.46 (0.32)
Full-time (ref: Unemployed or OLF)	-	-	-	-0.01 (0.42)	0.32 (0.38)
log of net individual income	-	-	-	-0.01 (0.09)	-0.08 (0.09)
One year old child	-	-	-	-0.03 (0.15)	-0.01 (0.15)
Work satisfaction	-	-	-	-	0.23*** (0.03)
Moment feeling	-	-	-	-	1.18*** (0.07)
Social contact satisfaction	-	-	-	-	0.18*** (0.04)
2008	0.55*** (0.12)	0.55*** (0.29)	-0.12 (0.29)	-0.15 (0.28)	-0.28 (0.12)
2009	0.40*** (0.11)	0.40*** (0.11)	-0.12 (0.24)	-0.15 (0.24)	-0.11 (0.24)
2010	0.36*** (0.11)	0.36*** (0.11)	-0.02 (0.19)	-0.05 (0.19)	-0.15 (0.19)
2011	0.23*** (0.10)	0.23** (0.10)	-0.03 (0.15)	-0.06 (0.14)	-0.15 (0.14)
2012	-0.01 (0.10)	-0.01 (0.10)	-0.14 (0.11)	-0.16 (0.11)	-0.23** (0.11)
Observations	8,590	8,590	8,590	8,590	8,590
log likelihood	-3.453	-3.448	-3.441	-3.408	-2.635
Number of individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimation based on our common sample from LISS panel data (2008-2013)

Table C.3 – Parameter Estimates Effects of Working Less on Life Satisfaction

VARIABLES	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	(4) Life satisfaction	(5) Life satisfaction
Young child	0.04 (0.06)	-	-	-	-
Young child and not on parental leave	-	0.01 (0.07)	-0.02 (0.07)	-0.01 (0.07)	-0.04 (0.06)
Young child and on parental leave	-	0.28** (0.11)	0.25** (0.11)	0.25** (0.11)	0.19* (0.10)
Young child and on parental leave and working less	-	0.28** (0.11)	0.25** (0.11)	0.24** (0.12)	0.23** (0.11)
Young child and working less	-	0.10 (0.08)	0.07 (0.08)	0.07 (0.08)	0.08 (0.06)
Age	-	-	-0.15** (0.07)	-0.13** (0.07)	-0.09* (0.06)
Age square times 100	-	-	0.10** (0.05)	0.09* (0.05)	0.06 (0.04)
Living environment	-	-	-0.05 (0.12)	-0.04 (0.11)	-0.06 (0.09)
Disease	-	-	-	-0.19*** (0.06)	-0.12** (0.05)
Missing(Disease)	-	-	-	-0.07 (0.05)	-0.04 (0.04)
Education level	-	-	-	0.44*** (0.17)	0.30** (0.12)
Marital status	-	-	-	0.56*** (0.17)	0.43*** (0.13)
Part-time (ref: Unemployed or OLF)	-	-	-	0.11 (0.13)	0.12 (0.11)
Full-time (ref: Unemployed or OLF)	-	-	-	0.02 (0.15)	0.05 (0.13)
Log of net individual income	-	-	-	-0.00 (0.03)	-0.03 (0.03)
One year old child	-	-	-	0.01 (0.05)	0.01 (0.05)
Work satisfaction	-	-	-	-	0.07*** (0.01)
Moment feeling	-	-	-	-	0.44*** (0.02)
Social contact satisfaction	-	-	-	-	0.08*** (0.01)
2009	-0.04 (0.03)	-0.04 (0.03)	0.01 (0.03)	0.01 (0.03)	0.05* (0.03)
2010	-0.05* (0.03)	-0.05* (0.03)	0.06 (0.05)	0.06 (0.05)	0.06 (0.04)
2011	-0.10*** (0.03)	-0.10*** (0.0335)	0.06 (0.06)	0.06 (0.06)	0.08 (0.05)
2012	-0.18*** (0.04)	-0.18*** (0.04)	0.04 (0.08)	0.04 (0.08)	0.06 (0.07)
2013	-0.18*** (0.04)	-0.17*** (0.04)	0.09 (0.10)	0.09 (0.10)	0.13 (0.08)
Constant	7.68*** (0.03)	7.68*** (0.03)	12.52*** (1.95)	11.29*** (1.94)	6.92*** (1.66)
Observations	8,590	8,590	8,590	8,590	8,590
R-squared	0.01	0.01	0.01	0.02	0.23
Number of individuals	2,943	2,943	2,943	2,943	2,943

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimation based on our common sample from LISS panel data (2008-2013)

Chapter 2

Informal caregivers and Life satisfaction

This chapter was co-authored with
Marie Blaise.

Summary of the Chapter

The impact of informal care provision on life satisfaction remains an unsolved puzzle: because of reverse causality and unobserved heterogeneity, simple cross-sectional estimations or fixed-effect models may provide an unclear picture of the causal relation between the informal care supply and life satisfaction. Using panel data from the Longitudinal Internet Studies for the Social Sciences (LISS) for the Netherlands over the period 2009-2018, we first estimate a simple Ordinary-Least-Square (OLS) model with fixed-effects in order to analyse the impact of informal care on caregivers' life satisfaction. We then apply an Arellano-Bond system Generalized-Method-of-Moments (GMM) model to address endogeneity issues. Overall, we find that providing care has a causal negative effect on life satisfaction with spousal caregiving being the most harmful.

Classification

JEL Classification: D10, I10, I31

Keywords: Informal Care, Happiness, Life Satisfaction, work-life balance

2.1 Introduction

Considerable part of the European population, estimated by [Verbakel et al. \(2017\)](#) at 34,4%, of individuals provide informal care for older people, working age adults, young people and children with disabilities, as well as for people living with mental health problems. This trend is likely to increase against a background of Europe's ageing population and growing needs for long-term care. For policy makers, informal care is seen as a cost-effective way of preventing institutionalization and enabling care recipients to remain at home. These advantages, however, may be offset by the indirect costs of caregiving, such as reduced employment, possible loss in human capital, and higher health-care expenditures for caregivers. Additionally, informal care provision can generate psychological and physical costs as it is mentally stressful, time-consuming, and physically exhausting, which might in turn affect caregivers' life satisfaction ([Bauer and Sousa-Poza, 2015](#)).

The majority of studies focusing on the effects of providing informal care on subjective well-being are subject to methodological shortcomings as using cross-sectional databases ([Borg and Hallberg, 2006](#); [Van Den Berg and Ferrer-i Carbonell, 2007](#)) and not dealing with endogeneity biases such as unobserved heterogeneity and reverse causality. On one side, informal care estimates may be downward biased due to reverse causality, i.e. individuals providing informal care are more satisfied with their life, however, on the other side, the care effect might be overestimated if potential explanatory variables are missing. The study of [Chen et al. \(2019\)](#) attempted to deal with reverse causality between care provision and health by using an instrumental variable of "whether parents and parent-in-law need care". The authors, however, did not control for time constant heterogeneity such as personality traits. A second series of articles such as those of [Weatherly et al. \(2014\)](#) and [Leigh \(2010\)](#) used fixed-effect models to estimate the impact of informal care provision on subjective well-being and to control for time constant unobserved heterogeneity, but they failed to consider reverse causality bias.

In this article, we attempt to fill this gap by estimating the causal effect of providing care on Dutch caregivers' life satisfaction, while controlling for both reverse causality and unobserved heterogeneity. Using data from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS), we analyse whether respondents' life satisfaction could be explained by the informal care provision to their family members or close relatives, for the period 2009 to 2018 in the Netherlands. We

examine the impact of informal caregiving on life satisfaction using an OLS with fixed-effect model. Then, we apply a dynamic model using Arellano-Bond system GMM model that allows us to control for several sources of endogeneity, namely reverse causality, unobserved heterogeneity, and dynamic endogeneity. Further, a matching method is undertaken to deal with selection bias that might occur when dealing with the decision to care and no evidence supporting a selection issue is found. Our main findings suggest that providing informal care reduces caregivers' life satisfaction on average by 0.28 points, with spousal caregivers experiencing larger negative effects on reported life satisfaction.

We aim to contribute to the literature by identifying the causal impact of informal care provision on caregivers' life satisfaction leading to a better understanding of the relationship between informal care and life satisfaction. The second contribution of this paper is the case study of the Netherlands. The political context is all the more interesting as between 2007 and 2015 the Dutch government undertook a normative reorientation towards greater individual responsibility in long-term care. These reforms have been implemented to shift the responsibility of care towards the family and/or the local community. According to [Maarse and Jeurissen \(2016\)](#), the unexploited potential of informal caregivers has been overestimated. As a consequence, the new arrangement may make informal care an obligation, even while caregivers are offered limited opportunities to arrange their working hours accordingly.

To the best of our knowledge, few studies focused on the case of the Netherlands. [Van Den Berg and Ferrer-i Carbonell \(2007\)](#) studied Dutch caregivers by analysing the monetary value of providing informal care using a well-being valuation method, but they used cross-sectional data and so did not deal with endogeneity biases. Additionally, [Bom et al. \(2019\)](#), using four waves from the Dutch Study on Transitions in Employment, Ability and Motivation (STREAM) examined the health impact of informal caregiving while distinguishing the family effect from the caregiving effect. The former represents the fact that individuals' well-being is directly influenced by their close relatives' health whether or not they provide care, while the latter is about the welfare effects of the caregiving activity ([Bobinac et al., 2010](#)). The authors showed that not accounting for the family effect had no implications in itself for the caregiving effect that was still harmful for Dutch caregivers' mental health. They addressed endogeneity issues using Arellano-Bond difference GMM model, however, due to data limitations, failed to control for serial

correlation in the error terms thus potentially leading to inconsistent GMM results.

The remainder of this paper is organized as follows. The rest of the first Section presents the existing literature on the relationship between informal care and health outcomes with a focus on life satisfaction. We then describe the dataset and provide some descriptive statistics in Section two. Our empirical strategy, both the OLS with fixed-effects specification as well as the two-step system GMM, are described in Section three. We present our empirical results in Section four. The robustness tests are reported in Section five. The paper concludes in Section six.

2.1.1 Caregiving and Health Outcomes

Informal care and psychological health outcomes are linked because caregiving implies perceived overload due to the difficulty of combining leisure time, family duties, work demands and care tasks, and because the decline in health status of the care recipient affects one's emotions negatively. In this regard, in a review of the literature, [Schulz et al. \(1990\)](#) indicated that caregivers tend to show an above-average level of psychiatric symptoms. Additionally, [Bom et al. \(2018\)](#) summarised different studies showing that caregiving resulted in higher prevalence of depressive feelings and lower mental health scores. Estimates of the physical health effects of informal care were more ambiguous. Caregiving required physically demanding duties to be carried out over a long duration, thus it might lead to an unhealthy life style, stress and lower psychological health, possibly inducing hypertension and cardiovascular diseases ([Pinquart and Sörensen, 2007](#)).

Informal caregivers are not all equal when it comes to health issues. An extended literature highlighted how the impact of caregiving on physical and mental health varied depending on specific socio-demographic characteristics. The negative health effect of caregiving was larger for married individuals [Bom et al. \(2018\)](#) and working female caregivers [Kenny et al. \(2014\)](#). According to [Llacer et al. \(2002\)](#), spousal caregivers had a lower socio-economic status, poorer health and a lower level of well-being than child caregivers; however, child caregivers were significantly more burdened.

The patterns of care also matters. For instance, providing informal care to close family members induced a larger subjective burden than caring for non-family members ([García-Castro et al., 2019](#); [Kramer, 1997](#); [Bom and Stöckel, 2021](#)). [Bom and Stöckel \(2021\)](#) explored whether the health impact of providing informal care

differs between the United Kingdom and the Netherlands. They found that for both countries, individuals providing more than 20 hours of informal care per week, and those who faced a double burden of care and full-time employment experienced the most severe negative health effects. They highlighted, however, some differences between the two countries with Dutch low intensity caregivers experiencing smaller negative mental health effects than British's. In turn, women in the Netherlands experienced a larger mental health burden. [Pinquart and Sörensen \(2007\)](#) found that both care recipients' behavioral problems, e.g., disruptive and aggressive behavior, and the time spent on caregiving, placed a burden on the caregiver and increased symptoms of depression, with aggressive behavioral problems being particularly important when caring for people with dementia. Additionally, the authors pointed out that the most severe physical impairments were more likely to occur for older male caregivers in charge of dementia patients, while women bore higher psychological costs due to a higher perceived care burden.

The adverse impact of caregiving, however, could be softened by the use of psychological resources such as mastery, coping strategies, social support, and having sufficient financial resources. [Jansson et al. \(1997\)](#) demonstrated that informal caregivers meeting other caregivers in the same situation increased their spirit of community, their knowledge of caregiving and their ability to handle their personal situations. [Lin et al. \(2013\)](#) provided evidence that the correlation between caregivers' duties and the caregivers' level of depression was weaker when participants had a high level of feedback from others or had a good parent-child relationship. In another study, [García-Castro et al. \(2019\)](#) found that caregivers experiencing the greatest burden were those who perceived a decreasing leisure time and who were under high financial stress. They also found that personality traits such as hope, zest, social intelligence and love mediate the relationship between perceived stress and care burden.

The process of caring may generate negative feelings like stress because it is physically and mentally demanding. It creates a perceived burden that varies depending on the other duties that caregivers have to discharge, and on the psychological, financial and external resources they have at their disposal. Yet, some studies highlighted the positive effects of providing care ([Ashworth and Baker, 2000](#); [Grünwald et al., 2021](#)). Caregivers could derive positive utility from the process of caring itself, through an increase in self-esteem or by developing an affinity with the care recipient. [Cohen et al. \(2002\)](#) found that caregiving was associated with positive

aspects such as companionship and a sense of it being fulfilling and rewarding.

2.1.2 Caregiving and Life Satisfaction

Few researchers analysed the effect of providing informal care on subjective well-being. Most of the studies dealing with this topic focused on health outcomes. Since the seminal article of the American economist [Easterlin \(1974\)](#), the economists' theoretical debate on utility has shifted from an objective approach based on the concept of decision utility to an acceptance of a subjective approach. In this context, economists consider that subjective well-being can be used as a proxy for measuring subjective utility. According to the four-fold quality-of-life matrix developed by [Veenhoven \(2000\)](#), both concepts concern the inner qualities of individuals. Subjective well-being implies inner appreciation of life, while health is an individual objective condition for achieving well-being. However, these are different conceptions of quality of life. The former implies a self-appraisal of one's overall life while the latter focuses on the degree to which one's life meets the explicit normative standards of what defines a "good life". Thus, subjective well-being reflects one's past experiences, cognitive appreciation of life, and overall feelings of pleasure and pain. Moreover, the development of measures of social progress and well-being that go "beyond GDP" has seen a boom in recent decades. New measures of GDP have been proposed in policy circles, such as the better Life Initiative in 2011 ([Durand, 2015](#)): this framework measures well-being by considering 11 dimensions covering both current material conditions and quality of life including a measure of satisfaction with life.

Among the few studies focusing on how informal care could affect subjective well-being, mixed evidences were found. Collecting data on informal caregivers in Sweden, [Borg and Hallberg \(2006\)](#) determined that a high frequency of caregiving decreased life satisfaction, while no significant difference existed between less-frequent caregivers and non-caregivers. Using panel data from the Household, Income and Labour Dynamics in Australia survey (HILDA), [Leigh \(2010\)](#) studied the effect of informal care for an elderly or disabled person on labor market outcomes, including life satisfaction. The author found that informal caregivers had a lower level of life satisfaction than non-carers, although this effect became insignificant when individual fixed-effects were taken into account. [Weatherly et al. \(2014\)](#) used eleven waves of the HILDA to estimate the impact of informal caregiving on self-reported well-being. They applied a fixed-effect ordered logit and found that providing informal care had a negative effect on subjective well-being.

Both [Bookwala \(2009\)](#) and [Chen et al. \(2019\)](#) focused on female informal caregivers and provided different results. Based on a US sample of adult daughters and sons, the former found no significant effect of parental care on caregivers' life satisfaction. On the contrary, the latter, using three waves of the China Health and Nutrition Survey (CHNS), showed that informal care significantly reduced the subjective well-being of female caregivers using the Instrumental Variable (IV) ordered probit model. The caregiving effect on subjective well-being of female caregivers was more significant for rural caregivers than for urban's. Additionally, the authors identified two channels of "wealth" and "health" through which informal care lowered subjective well-being.

Other studies focused on the monetary evaluation of informal caregiving. [Van Den Berg and Ferrer-i Carbonell \(2007\)](#) examined the compensating variation necessary to keep the same level of well-being among Dutch informal caregivers. They estimated that an extra hour of informal care was worth about nine to ten euros, falling to about eight to nine euros if the care recipient was a family member and to about seven to nine euros if not. [MacDonald \(2019\)](#) used the well-being valuation approach to estimate and monetize the well-being impact of informal care provision on caregivers. They found that permanent income would have to increase by approximately 102k pounds per year on average to compensate for well-being losses due to informal caregiving.

2.2 Data and Summary Statistics

2.2.1 Data

We use data from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel administered by CentERdata, Tilburg University, The Netherlands (see for details: www.lissdata.nl). The LISS panel is a representative sample of Dutch individuals who participate in monthly Internet surveys. The panel is based on a true probability sample of households drawn from the population register, consisting of more than 4,500 households and over 7,000 individuals, and collected over 137 monthly waves since November 2007. In the LISS survey, individuals report several aspects of their life, including satisfaction with life, care related questions and background information. The panel is extracted from the LISS database and uses information from five panels of the core study: "Personality Questionnaire, LISS Core Study", "Family and Household Questionnaire, LISS

Core Study”, “Health Questionnaire, LISS Core Study”, “Work and Schooling Questionnaire, LISS Core Study”, “Social Integration and Leisure, LISS Core Study”. For more details on the merge procedure, see Table A.1, in Appendix A. The common sample is a strongly balanced panel, conditioned on the use of lagged variables. 70 percent of individuals are observed at least seven times, including 9,180 observations with 1,188 individuals observed over the period 2009-2018.

The outcome is an indicator of life satisfaction based on the question “How satisfied are you with the life you lead at the moment?”. The respondent was asked to use an ordinal scale from zero (not all satisfied) to ten (completely satisfied). This single-item scale life satisfaction question is a widely used measure of subjective well-being. It has the advantage of asking the respondent to focus on an overall evaluation of their life rather than on current feelings or specific psychosomatic symptoms. According to [Veenhoven \(2000\)](#) and [Frey and Stutzer \(2002\)](#), life satisfaction is an accurate measure of well-being, since it is strongly correlated with income, individualism, human rights, and societal equality across survey.

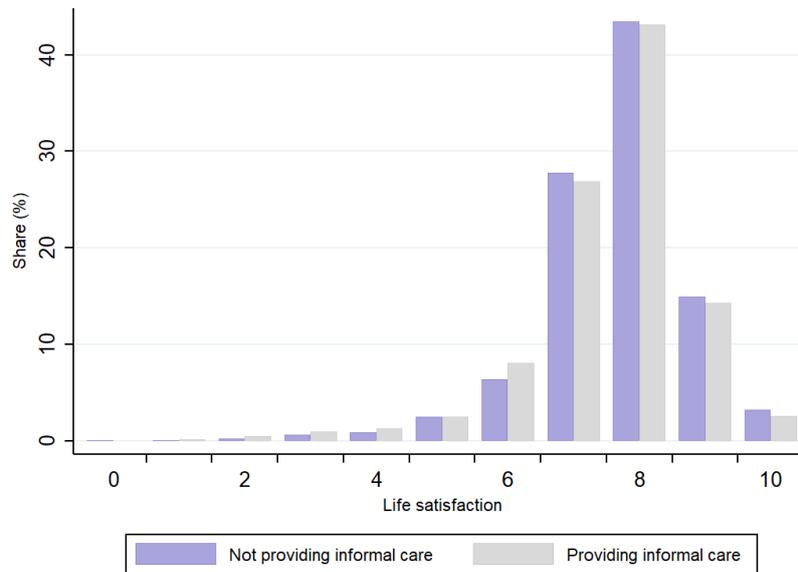
The variable of interest is whether or not the respondent has provided any kind of care in the last twelve months. Informal care may be provided to a partner, family member, young person, acquaintance, friend, colleague or neighbor. Due to the limited number of observations in each category, the analysis is not restricted to a specific relationship between the caregiver and the recipient, who could be partners, children, including children adopted, step and foster; parents, including step parents, parents-in-law and foster parents; siblings, grand-parents, other family members, friend, colleagues from work, or neighbors (non-family). Three types of care are considered: housekeeping help, e.g. cleaning, laundry, grocery shopping; personal care, e.g. bathing, showering, dressing; and personal support, e.g. arranging affairs, offering solace, listening. Since receiving informal care might imply being in poor health, or at least being in need, it directly impacts one’s life evaluation. Thus, the sample is restricted to respondents who did not receive themselves any kind of informal care.

Explanatory variables include age category, objective health, marital status, educational level, labor force status, children, working hours, log of standardized net household income, living environment and year dummies. Variable definitions are provided in see Table B.1, in Appendix B.

2.2.2 Descriptive Statistics

The distribution of life satisfaction by informal care provision is illustrated in Figure 2.1. The grade attributed to satisfaction with life for informal caregivers and non-caregivers follows a normal distribution centered around eight, which is standard in the literature. At a first glance, this figure indicates that satisfied people do not provide care for their relatives more than less satisfied people.

Figure 2.1 – Distribution of life satisfaction



Descriptive statistics are based on our common sample from LISS panel data (2009-2018) including 1,188 individuals and 9,180 observations.

An overview of respondents' socio-demographic characteristics is provided in Table 2.1. 638 individuals have provided care at least once across the nine years reported and 550 have never provided care. Comparing the raw percentages from the first column of Table 2.1, women are more likely to provide care than men. Additionally, the probability of providing care is higher for specific subgroups such as individuals aged 44 and over, individuals in co-habitation without children, individuals working between 0 - 11 hours per week and out of the labor force. Caregivers and non-caregivers are similar, however, in other respects such as the standardized net monthly household and the living environment. Thus, the decision to become a caregiver appears to be particularly related to specific individual characteristics, namely gender, age categories, labor force status and marital status.

Table 2.1 – Respondent Sociodemographic Characteristics

	Never Providing	Ever providing	<i>t</i> -test (1)-(2)
	Informal Care	Informal Care	
	%	%	
	(1)	(2)	
Gender			
Men	0.63	0.47	0.16***
Women	0.37	0.53	-0.16***
Age			
15 - 24 years	0.04	0.01	0.03***
25 - 34 years	0.09	0.02	0.07***
35 - 44 years	0.18	0.08	0.11***
45 - 54	0.19	0.20	-0.01
55 - 64	0.22	0.31	-0.09***
65 years and older	0.28	0.38	-0.10***
Occupational status			
Employed or self-employed	0.59	0.43	0.16***
Unemployed	0.02	0.02	-0.00
Out of the labor force	0.39	0.55	-0.16***
Objective health			
Disease	0.28	0.34	-0.06***
No disease	0.72	0.66	0.06***
Marital status			
Single	0.19	0.14	0.05***
(Un)married co-habitation without children	0.43	0.55	-0.12***
(Un)married co-habitation with children	0.32	0.26	0.06***
Single with children	0.05	0.03	0.02***
Other	0.01	0.02	-0.01***
Education level			
Primary school	0.03	0.05	-0.02***
Intermediate secondary education	0.26	0.29	-0.03**
Higher secondary education	0.08	0.10	-0.02***
Intermediate vocational education	0.28	0.23	0.05***
Higher vocational education	0.26	0.24	0.02**
University	0.08	0.07	0.01
Other	0.02	0.03	-0.01**
Not yet completed any education	0.00	0.00	-0.00
Not yet started any education	0.00	0.00	-0.00
Number of children at home			
None	0.63	0.71	-0.08***
One child	0.11	0.10	0.01
Two children	0.20	0.13	0.08***
Three children	0.05	0.05	-0.01
Four children and more	0.01	0.01	0.00
Weekly Working hours			
0 - 11 Hours	0.36	0.52	-0.16***
12 - 21 Hours	0.07	0.09	-0.02***
22 - 33 Hours	0.16	0.15	0.01
34 - 39 Hours	0.18	0.14	0.04***
More than 40 Hours	0.23	0.09	0.13***
Living environment			
Extremely urban	0.10	0.09	0.01
Very urban	0.26	0.25	0.01
Moderately urban	0.24	0.22	0.03**
Slightly urban	0.24	0.26	-0.01
Not urban	0.15	0.18	-0.03***
Standardized net monthly household income			
0€ - 1,350€	0.22	0.22	-0.01
1,351€ - 1,800€	0.29	0.27	0.03**
1,801€ - 2,300€	0.24	0.24	-0.00
2,300€ and more	0.25	0.27	-0.02
Individuals	550	638	1188

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$. Descriptive statistics are based on our common sample from LISS panel data (2009-2018) including 9,180 observations and 1,188 individuals.

The characteristics of informal caregivers are reported in Table 2.2. Respondents provide care mainly at a low frequency; 54 percent of caregivers help someone less than four hours per week. The type of informal care provided is mostly housekeeping and personal support; only 20 percent of caregivers provide personal care, e.g. bathing, showering, dressing. Finally, the care recipients are most often family members, not living with the caregivers.

Table 2.2 – Caregiving Characteristics

	Providing Informal Care (%)	Observations
Weekly Hours of Informal Care		
Less than two hours	31	711
two - four hours	23	512
five - ten hours	26	583
11 - 20 hours	11	248
More than 20 hours	9	199
Kind of care provided		
Housekeeping	60	1,347
Personal care	20	450
Personal support	85	1,907
Residence of the care recipient		
Partner	17	377
Living at home	4	97
Not-living at home	79	1,779
Relation with the care recipient		
Partner	17	377
Family	58	1,319
Friends or colleagues	25	557
Occurrence of care provision		
1 year	15	347
2 years	22	487
3 years	16	363
4 years	12	279
5 years	11	235
6 years and more	24	542

Note: Descriptive statistics are based on our common sample from LISS panel data. It includes 638 individuals and 2,253 observations. Individuals might provide more than one type of care within a given year that is why the sum of the number of observations exceeds 2,253.

2.3 Empirical strategy

This study aims at estimating the impact of informal care provision on the life satisfaction of caregivers. A simple OLS with fixed-effect model is specified such that:

$$LS_{it} = \beta_0 + \beta_1 C_{it} + \beta_2 X_{it} + \mu_i + \lambda_t + \epsilon_{it} \quad (2.1)$$

Where LS_{it} is the life satisfaction of individual i at time t , C_{it} represents the decision to care for any caregiver's family member or close relatives, and X_{it} is a vector of socioeconomic controls. μ_i , λ_t and ϵ_{it} represent, respectively, individual specific time-invariant effects, time fixed-effects, and the error term.

We use an OLS with fixed-effect model to control for fixed unobserved heterogeneity under the assumption of strict exogeneity of covariates. It allows researchers to control for unobserved characteristics that do not change over time, such as personality traits, that are likely to affect both one's life satisfaction and socio-economic variables. This analytic approach is commonly used in economic analyses of the correlates of well-being using panel data (Ferrer-i Carbonell and Frijters, 2004). According to these authors, economists usually assume ordinality and have mainly used ordered latent response models, thereby not taking satisfactory account for fixed individual traits. They found, however, that assuming ordinality or cardinality of happiness scores made little difference, while controlling for fixed-effects changed results.

It has been proved that the fixed-effect estimator leads to inconsistent and downward biased estimates in presence of endogeneity (Nickell, 1981). Following economic theory, the decision to care is suspected to be endogenous. Firstly, potential reverse causality between care and life satisfaction casts doubt on the direction of the causal influence. Secondly, a series of unobserved confounders might affect the decision to care, including time varying, e.g. family effect (Bobinac et al., 2010), substitutes for informal caregiving (Bonsang, 2009).

Adding lagged dependent variable as a right-hand side variable to overcome reverse causality when using OLS with fixed-effects is not possible as it would lead to dynamic panel bias. Instead, panel-based GMM methodology can be used to estimate a dynamic model of life satisfaction and to deal with reverse causality while

still controlling for unobserved heterogeneity issues (Powdthavee, 2009). Contrary to IV methods, GMM estimators use internal information to instrument endogenous regressors. The difference GMM model implemented by Arellano and Bond (1991a) estimated one single difference equation where variables were first differentiated and instrumented by lagged variables. To improve the efficiency of (Arellano and Bond, 1991a)'s model, as lagged values were sometimes poor instruments for first differences, Arellano and Bover (1995a), Blundell and Bond (1998) developed a system GMM model where the level equation is added to the difference equation, thus leading to additional instruments. Blundell et al. (2001) suggested a second rule-of-thumb to compare difference GMM with system GMM model. Following these authors, the autoregressive model should be initially estimated using pooled OLS and a fixed-effects approach. The pooled OLS estimate for the parameter of the lag of the dependent variable should be considered as an upper-bound estimate while the one of the fixed-effects estimate is the lower-bound estimate. A difference-GMM estimate close or below the fixed-effects estimate suggests a downward bias and points to the use of a system GMM estimator (see Table 9, in Appendix for detailed results). According to Arellano and Bover (1995a), the two-step system GMM model provided more efficient and consistent estimates in the case of panel data than the one-step GMM model.

A two-step system GMM model is performed such that:

$$LS_{it} = \beta_1 LS_{it-1} + \beta_2 C_{it} + \beta_3 X_{it} + \mu_i + \lambda_t + \epsilon_{it} \quad (2.2)$$

$$\Delta LS_{it} = \beta_1(\Delta LS_{it-1}) + \beta_2(\Delta C_{it}) + \beta_3(\Delta X_{it}) + (\Delta \lambda_t) + (\Delta \epsilon_{it}) \quad (2.3)$$

where LS_{it-1} denotes the first lag of the dependent variable. The rest of the covariates are as given in equation (2.1). As in fixed-effect regressions, the error term might be divided in two parts with ϵ_{it} which is the random part, varying over time and μ_i which is systematic and fixed over time. Time fixed-effects (λ_t) are included to avoid cross-individual correlation as suggested by Roodman (2009).

In equation (2.3), all variables are first-differentiated –the differences between two consecutive periods –referring to the difference operator Δ . By construction, the first equation eliminates time-invariant unobserved heterogeneity μ_i . In this equation, first differences – ΔLS_{it-1} , ΔC_{it} , ΔX_{it} –are instrumented with lagged

variables in levels. In the level equation, LS_{it-1} , C_{it} and X_{it} are instrumented with suitable lagged first-differences. The lagged dependent variable is assumed to be endogenous and so instrumented in both equations. The difference equation eliminates fixed unobserved heterogeneity but both equations account for other heterogeneity sources.

Following the economic theory, most variables potentially associated with informal caregiving are considered as endogenous. More specifically, except times dummies, gender and age, all other covariates are instrumented with suitable lags and first-differences. This allows us to overcome reverse causality and to go beyond most empirical applications to date.

The consistency and the strength of GMM results rely on two hypotheses. First, the set of instruments has to be exogenous, not correlated with the error term. This hypothesis is tested with the Hansen test for overidentification restrictions. Secondly, there might be serial autocorrelation, meaning that error terms are correlated. In order to overcome this issue, a first and a second order serial correlation tests are performed to examine whether the differenced error term is first –or second –order serially correlated.

A last matter of concern is the proliferation of instruments that may overfit endogenous variables (Roodman, 2009). Since there is no clear consensus on “how many is too many” instruments (Ruud et al., 2000; Windmeijer, 2005; Roodman, 2009), we follow the arbitrary rule-of-thumb mentioned by Roodman (2009) that instruments should not outnumber individual units by reducing the width of the instrument matrix. We use the command collapse in Stata 15 software. Finally, we apply the Windmeijer’s method to correct the reported standard errors that otherwise would have been downward biased in the two-step estimation when using finite sample (Windmeijer, 2005).

2.4 Empirical Results

2.4.1 Baseline Estimates

The results using both OLS with fixed-effect estimator and system GMM estimator are given in Table 2.3. The outcome is the respondent’s life satisfaction measured on a scale rated from 0 to 10; for comparison, the results using OLS

estimator with pooled data and clustered standard errors at the individual level, to account for the dependency of the observations, are also displayed. To avoid dynamic endogeneity bias, the lagged dependent variable is not included as a covariate in these specifications.

The informal care decision is negatively correlated with the respondent's life satisfaction, meaning that being a caregiver leads to lower satisfaction (Models (1) and (2) of Table 2.3). In other terms, providing care reduces the life satisfaction of the caregiver by 0.121 points on a scale scored from 0 to 10 when not accounting for fixed-effects (Model (1) of Table 2.3). It is worth noting that the magnitude of the informal care coefficient decreases by 42 percent ($0.121 > 0.07$) when including fixed-effects. This difference might be explained by the fixed unobserved heterogeneity, correlated with both the dependent variable and at least one individual regressor. In other words, the impact of giving informal care on life satisfaction decreases by 0.051 points when constant unobserved characteristics, such as, the respondents' personality traits are not accounted for (detailed results are in Appendix, see Table 10).

A Durbin-Wu-Hausman test is performed as estimates are likely to be biased due to several endogeneity sources. This method consists in the inclusion of the residuals of the endogenous variable as a function of the exogenous variable in the main specification (Davidson and Mackinnon, 1992). Unlike the simple OLS with fixed-effect model that fails to control for varying omitted variables, the Durbin-Wu-Hausman test shows that varying information contained in the residuals is correlated with individual regressors (detailed results of the Durbin-Wu-Hausman test are in Appendix C, see Table C.2).

A panel-based GMM-system estimator is applied to address the endogeneity of the informal care decision. Model (3) of Table 2.3 introduces the first lag of the life satisfaction as a right-hand side variable. In further system GMM specifications, all explanatory variables except for time dummies, gender and age categories are treated as endogenous and instrumented with internal information. In Model (3), in the difference equation, the lag of life satisfaction is considered a predetermined variable and instrumented with its first lag and further. Other endogenous variables are proxied with their second lag and further. In the level equation, the most recent first-differences are kept as advised by Roodman (2009).

Table 2.3 – OLS and two-step system GMM regressions.

	Pooled OLS	OLS with fixed-effects	Two-step system GMM	
	Model (1)	Model (2)	lagged first-differences Model (3)	further lagged first-differences Model (4)
L.Lifesat			0.091*** (0.03)	0.065** (0.03)
Informal	-0.121*** (0.05)	-0.070** (0.03)	-0.221** (0.11)	-0.279** (0.11)
Constant	5.364*** (0.44)	7.485*** (0.46)	4.683*** (0.98)	5.646*** (1.06)
Observations	9180	9180	9180	9180
No. of instruments			224	224
Time fixed-effects	Yes	Yes	Yes	Yes
AR1 (p-value)			0.000	0.000
AR2 (p-value)			0.040	0.135
Hansen-J (p-value)			0.422	0.334

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$. Robust standard errors are in parenthesis. In Model (1), standard errors are clustered at the individual level. In all Models, controls are included. In Models (3) and (4), all explanatory variables –except for time dummies, gender and age categories –are treated as endogenous.

The estimated coefficient of the lagged life satisfaction is positive and highly significant, which is in line with hedonic capital theory, i.e., that happiness today relies on past happiness (Graham and Oswald, 2010). The GMM estimator generates a coefficient on informal care provision that is significant, negative and larger than the one estimated using OLS fixed-effects. The magnitude of the informal care coefficient increases sharply between Model (2) and Model (3), Thus, the coefficient appears to be underestimated using an OLS model with fixed-effect. This may be due to the presence of reverse causality; i.e. more satisfied individuals tend to provide more care. At the same time, the high standard errors could reflect the heterogeneous effect of informal care. This would be in line with the highly inflated GMM estimates, capturing Local Average Treatment Effects (LATE) instead of Average Treatment Effects (ATE). An increase in coefficients indicates considerable heterogeneity in the studied population with some individuals moderately experiencing the negative burden of care, while (most) being strongly negatively impacted by informal care provision.

The results of Model (3) respect the rule-of-thumb by Roodman (2009) as the number of instruments does not exceed the number of individuals ($224 < 1188$). The results also pass the Hansen test of overidentifying restrictions in Model (3) with a p-value of 0.42, well above the significance level of 0.1. Specification of Model (3) is rejected by the first test of serial correlation, which is to be expected, however, the second-order correlation is also quite low, below the standard threshold of 0.1. This implies that the error term is serially correlated in differences probably

leading to inconsistent estimates. In general, according to [Roodman \(2009\)](#) “we can check serial correlation of order l in levels by looking for correlation of order $l + 1$ in differences”. Thus, the significant AR(2) in differences suggests first-order serial correlation in levels. Additionally, difference-in-Hansen tests of exogeneity of GMM instruments in the level equation are significant. These test results show that the instrument set in the level equation does not appear to be not strictly exogenous.

To tackle this issue, a fourth model (Model (4) in Table 2.3) is performed. It excludes the most recent first-differences of life satisfaction and other endogenous regressors in the level equation, relying on the hypothesis that serial autocorrelation would decrease with older realizations. This specification is supported by the second-order serial correlation in differences, which is insignificant and also respects the rule about the proliferation of instruments ($224 < 1188$).

Due to data missing information, both OLS and GMM specifications do not include the health of care recipient, referring to the so-called family effect highlighted by [Bobinac et al. \(2010\)](#). The authors explained that both the caregiving and the family effects could be conflated and that omitting the latter would upward biased the former. [Bom et al. \(2019\)](#), using a difference GMM, examined the impact of caregiving on Dutch’s health while disentangling the caregiving effect from the family effect. They showed that not accounting for the family effect did not changed the estimation of the caregiving effect that was still harmful for Dutch caregivers’ health. Additionally, non-significant Hansen tests demonstrate the exogeneity of the instrument set, uncorrelated with omitted factors.

2.4.2 Heterogeneity Analysis

Specificity of Care Provided

Previous work highlighted the heterogenous effects of informal caregiving on mental health related outcomes. Poorer subjective well-being levels are reported when the care is provided to a spouse ([Vlachantoni et al., 2013](#); [Bom et al., 2018](#)). The common sample is split into four categories depending on the relationship with the care recipient. In line with [Llacer et al. \(2002\)](#), taking care of a spouse is more harmful compared to caring for close relatives with spousal caregivers grading their life satisfaction on average 0.78 points lower. The outcome is measured on a scale from zero to ten, which allows sufficient variations to compare coefficient size differences between subgroups.

When cohabitating with care recipients, caregivers might experience more harmful effects as they assumed their role continuously. Therefore, they are sometimes unable to clearly estimate the time they actually dedicate to care when it is provided inside the household. [Van den Berg and Spauwen \(2006\)](#) pointed out this distinction to be made, between the help provided as a caregiver from that provided due to cohabitating. Spousal caregivers reduce their life satisfaction by 0.73 points, on average, compared with individuals caring for someone not living at home (see Model (2) of Table 2.4). There is no other significant difference depending on the place of residence of caregivers and care recipients.

Providing intensive care is likely to lower subjective well-being level ([Brenna and Di Novi, 2016](#); [Chen et al., 2019](#)). The estimated effects of the intensive margin on the life satisfaction of caregivers are displayed in Model (3) of Table 2.4. Not providing care and providing care between two to four hours a week lead to more satisfaction compared with providing care between four and ten hours a week. Unexpectedly, there is no significant difference between caring for between four to ten hours and over 20 hours a week.

Models (3), (4) and (5) of Table 2.4 estimate the effect of different kind of care on caregivers' life satisfaction. Three distinct specifications are provided to avoid overlap as caregivers might provide more than one type of care within a given year. Results are reported in Models (3), (4) and (5) of Table 2.4. The reference category includes individuals who have provided at least the type of care reported. Overall, non-caregivers are more satisfied than individuals providing housekeeping, support and personal care and no significant differences are found between care types.

Table 2.4 – GMM regressions - Heterogeneity Analysis of Informal Care - Specificity of Care Provided

	Two-step system GMM estimates on life satisfaction					
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
L.Lifesat	0.06** (0.03)	0.06** (0.03)	0.05* (0.03)	0.06** (0.03)	0.06** (0.03)	0.06** (0.03)
Relationship with the care recipient. Ref: close relatives.						
Broader relatives		0.14 (0.22)				
Partner		-0.78*** (0.30)				
No care provided		0.19 (0.13)				
Residence of the care recipient. Ref: not living with the caregiver.						
Living at home		-1.35 (1.13)				
Partner		-0.73** (0.30)				
No care provided		0.12 (0.12)				
Frequency of the care provided. Ref: 2-4h.						
< 2h			-0.49* (0.28)			
4-10h			-0.54* (0.31)			
11-20h			-0.69 (0.45)			
> 20h			-0.91** (0.42)			
No care provided			-0.20 (0.24)			
Type of care provided. Ref: at least housekeeping.						
Other type of care				0.23 (0.23)		
No care provided				0.36** (0.15)		
Type of care provided. Ref: at least support.						
Other type of care provided					-0.13 (0.24)	
No care provided					0.23* (0.13)	
Type of care provided. Ref: at least personal care.						
Other type of care provided						0.18 (0.25)
No care provided						0.41 (0.25)
Constant	5.46*** (1.14)	5.38*** (1.14)	5.91*** (1.28)	5.10*** (1.11)	5.39*** (1.08)	5.08*** (1.07)
Observations	9180	9180	9180	9180	9180	9180
Individuals	1188	1188	1188	1188	1188	1188
No. of instruments	242	242	260	233	233	233
Time fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
AR1 (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
AR2 (p-value)	0.12	0.16	0.20	0.18	0.15	0.14
Hansen-J (p-value)	0.42	0.56	0.37	0.18	0.40	0.38

Note: * p<0.10, ** p<0.05, *** p<0.010. Robust standard errors are in parenthesis. In all Models, controls are included.

Socio-demographic Characteristics

The literature on informal care and life satisfaction emphasizes that a heterogeneous relationship exists between informal care and life satisfaction. Firstly, Table 2.5 explores how socio-demographic characteristics influence this relation. According to [Bom and Stöckel \(2021\)](#) in the Netherlands women experienced a larger mental health burden. In Model (1) of Table 2.5 no evidence of gender difference was found. Additionally, Model (2) and Model (5) of Table 2.5 revealed that the marital status and the logarithm of the net personal income do not moderate the relationship between informal care and life satisfaction.

Secondly, an interaction effect with the categorical variable ‘*employment status*’ was performed in model (3). Interestingly, we estimated that individuals being out of the labor force bear a higher burden of care than individuals who are employed or self-employed. Indeed, being out of the labor force reduced the negative effect of informal care provision on life satisfaction by around 0.79 points - such as, individuals being out of the labor force experienced a significant loss of life satisfaction about 0.79, while employed or self-employed individuals are not significantly impacted by being caregivers. In line with this result [Pinquart and Sörensen \(2007\)](#) found that the most severe physical impairments were more likely to occur for older male caregivers in charge of dementia patients.

Finally, model (4) of Table 2.5 reduced the total sample to employed or self-employed individuals. We estimated that working long hours worsened the negative effect of informal care provision on life satisfaction compared to working between 13 hours and 30 hours a week. Similar results are pointed out by [Bom and Stöckel \(2021\)](#). They estimated that individuals combining full-time employment and being caregivers experienced the most severe negative health effect. Indeed, individuals working long hours and being caregivers have a double penalty.

Overall, it is worth noting that the Hansen test does not reject the null hypothesis of exogeneity and the second-order serial correlation is insignificant. Moreover, the number of instruments never exceeds the number of individual units.

Table 2.5 – GMM Regressions - Heterogeneity Analysis of Informal Care - Socio-demographic Characteristics

Two-step system GMM estimates on life satisfaction					
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
L.life satisfaction	0.06** (0.03)	0.07** (0.03)	0.07** (0.03)	0.06** (0.04)	0.06** (0.03)
Informal	-0.29 (0.26)	-0.13 (0.45)	-0.14 (0.26)	-0.04 (0.31)	-0.46 (0.31)
Interactions socio-demographic characteristics					
Gender. Ref: Men					
Informal x Women	0.01 (0.39)				
Marital status. Ref: Single					
Informal x Co-habitation without children		-0.32 (0.59)			
Informal x Co-habitation with children		0.25 (0.59)			
Informal x Single with children		-0.65 (0.92)			
Occupational status. Ref: employed or self-employed					
Informal x Unemployed			-1.20 (1.00)		
Informal x Out of the labor force			-0.79* (0.43)		
Work hours category. Ref: Working betw. 13-30 hours a week					
Informal x 1-12 hours				0.72 (0.68)	
Informal x 31-40 hours				0.01 (0.48)	
Informal x More than 40 hours				-0.31* (0.20)	
Log of Personal net income					
Informal x Income					0.05 (0.08)
Constant	5.56*** (1.04)	5.38*** (1.18)	5.06*** (1.21)	5.10*** (1.11)	6.33*** (1.08)
Observations	9180	9180	9180	5330	9180
Individuals	1188	1188	1188	833	1188
No. of instruments	224	224	224	224	224
Time fixed-effects	Yes	Yes	Yes	Yes	Yes
AR1 (p-value)	0.00	0.00	0.00	0.00	0.00
AR2 (p-value)	0.14	0.10	0.10	0.18	0.41
Hansen-J (p-value)	0.20	0.10	0.36	0.18	0.16

Standard errors are in parenthesis. * p<0.10, ** p<0.05, *** p<0.010

All explanatory variables -except for time dummies, gender and age categories- are treated as endogenous. As in the main specification, we instrument the lag of the life satisfaction with its second and third lags in all these models.

As in the main specification, we instrument other endogenous regressors with their first and second lags in all these models.

2.5 Robustness Tests

In this section, we tested the reliability of baseline results to self-selection of individuals into informal care decision using the Nearest-Neighbor matching method. This is followed by a series of robustness tests using alternative specifications and definitions of the outcome and informal care.

2.5.1 Sensitivity Analysis: Selection Bias and Propensity Score Matching

The observed effect of informal caregiving on life satisfaction might result from the self-selection of individuals into the provision of informal care. In other words, can specific personal characteristics predispose individuals to self-selection into informal care provision? More precisely, the “selection in” caregiving refers to people deciding to become caregiver (Do et al., 2015). We know from the literature that the individuals who become caregivers and keep on providing support over years are more often women, poorer and have lower opportunity costs (for a review, see Bauer and Sousa-Poza (2015)). Under these conditions, the level of life satisfaction that underemployed older women without children and working few hours would have reported if they had not provided informal care remains unclear. Another criteria inducing self-selection into caregiving might be mental health (Coe and Van Houtven, 2009). We might reasonably wonder whether health status determine who will provide care inside a family (Schulz et al., 1990). Is the unhealthiest child, compared with her siblings, less likely to care for her parents? Thereupon, the selection of caregivers with respect to health is increasing with age, as health deteriorates over time (Easterlin, 2003), meaning that age is also a determinant of the selection into caregiving duties. On top of that, we might wonder how life satisfaction, which is worsening with the decline in health, impacts selection into caregiving. For instance, we might worry that people who are least satisfied with their life have lower propensities to become caregivers, or that individuals need a given degree of satisfaction with their own life before diving into caregiving activities (Coe and Van Houtven, 2009).

Propensity score matching reduces this selection bias by comparing the happiness of informal caregivers to that of non-caregivers (Rosenbaum and Rubin, 1983; Caliendo and Kopeinig, 2008) who are as similar as possible in all other respects. This methodology has recently been applied in other happiness studies (Binder and

Coad, 2013; Nikolova and Graham, 2014; Tiefenbach and Kohlbacher, 2015; Hessels et al., 2018; Arampatzi et al., 2018) and could be compared to a randomized control trial in which two groups of individuals are randomly assigned to the treatment under study or to a control group.

The treatment is the informal care provision. The effect of the treatment is referred as the Average Treatment effect (ATE) and it can be defined as the difference between informal caregivers and non-informal caregivers regarding their expected life satisfaction. For the purpose of our present research, we use the Nearest-Neighbour Matching estimator, which is often used in propensity score matching (Becker and Ichino, 2002). We chose this matching estimator because there are many comparable untreated respondents in the common sample (Caliendo and Kopeinig, 2008), that is to say, many respondents that do not provide care. To apply the Nearest-Neighbor Matching method, of which the minimum matching request between observations is 1, respondents are matched on the following characteristics: gender, age category, mean of life satisfaction, occupational status, number of children, log of standardized net household income, weekly working hours and year, allowing us to match individuals with similar characteristics within a year. We also correct for a large-sample bias that exists when matching on more than one continuous covariate (Abadie and Imbens, 2006, 2011), namely log of standardized net household income and weekly working hours. The first model displayed in Table 2.6 shows the difference between the treated and the untreated based on the matching criteria mentioned above and considering the common sample. The significance of the difference means that there is a clear and negative effect of the treatment.

This is then combined with exact matching method that is the most powerful matching method to eliminate confounding as the distributions of covariates are exactly balanced. Usually, this method is not efficient with continuous variables due to the lack of matched observations, resulting in a limited population size and imprecise estimates. In this study, exact match on specific categorical characteristics that appeared to be a potential cause of selection is applied. We selected these variables based on descriptive statistics and the economic literature. More precisely, there is an exact balance on year, gender, age categories and occupational status and approximate balance on mean of life satisfaction, number of children, log of standardized net household income, weekly working hours. This makes it possible to gain benefits from both matching methods, that is to say maintaining a

sufficient sample size while controlling for confounding factors.

Results are provided in Table 2.6, from Model (2) to Model (5). The difference between the treated and the untreated is significant meaning that informal caregiving still have a negative impact on life satisfaction after exact match on specific confounding factors has been applied. Model (6) considers all exact matching criteria in one specification. 1084 observations are lost due to the lack of exact match in the sample, however, informal caregivers still grade their life satisfaction lower than non-caregivers. Direct comparison with both GMM results, estimating LATE, and with simple OLS, is, however, limited. Additionally, the Nearest-Neighbor matching method, which purpose is to compare the outcome of treatment and control individuals, fails to consider fixed-effects, such as personality traits.

Table 2.6 – Average Treatment Effect: Nearest-Neighbor Matching method

	Average Treatment Effect					
	Model (1) No exact match	Model (2) on Year	Model (3) on Gender	Model (4) on Age	Model (5) on Occupation	Model (6) on Year, Gender, Age and Occupation
Informal care	-0.068** (0.03)	-0.067** (0.03)	-0.064** (0.03)	-0.065** (0.03)	-0.064** (0.03)	-0.053** (0.02)
Observations	9180	9180	9180	9180	9180	8086
Individuals	1188	1188	1188	1188	1188	1113

Note: p<0.10, ** p<0.05, *** p<0.010. Standard errors are in parenthesis. The minimum matching request is 1.

In all models, respondents are matched on gender, age category, mean of life satisfaction, occupational status, number of children, household income, weekly working hours and year.

2.5.2 Alternative Definitions and Specifications

An alternative subjective well-being related outcome is happiness feelings. It differs from the life satisfaction question in the time period evaluated. The life satisfaction measure refers to an evaluation of the current life the individual is leading, while the happiness questions asks respondents to evaluate their life in the last month. More precisely, respondents answered the following question “How you felt over the last month? I felt happy”; the rating scale is from one, never

happy, to six, continuously happy. Additionally, the question on life satisfaction involves cognitive appraisals based on aspirations, expectations and values, while the question on happiness is more reliant on the sensory system (Veenhoven, 2000). The results are displayed in Model (1) of Table 2.7 (see Table D.2 in Appendix D, for detailed results). Informal care provision leads to lower happiness levels, reducing it by 0.45 points. Although the overall negative result of caregiving does not change, current happiness score does not rely on its past realisation. It is also noteworthy that the Hansen test p-value is below the standard threshold of 0.1, thus casting doubt on instruments validity.

The care provision is alternatively measured with the intensive margin, referring to the number of hours of care provided within a week. The result displayed in Model (2) of Table 2.7 shows a negative and significant effect of the intensive margin as providing care for one more hour would decrease the life satisfaction level of 0.13 on a scale from zero to ten, confirming the findings of Pinquart and Sörensen (2007).

Previous works on system GMM highlighted the importance of the number of lags as instruments and how the results might be sensitive to it. Initially, instruments from the first lag and further for the lagged dependent variable and from the second lag and further for other endogenous regressors in the difference equation were used. In the level equation, both the lagged outcome and other endogenous regressors were instrumented with first-differences, except the first. There is a trade-off between the remaining serial correlation and the statistical power when using GMM as both are likely to decrease with older realisations while keeping a number of instruments quite low is still necessary. For the purpose of robustness tests, other sets of instruments for the lagged outcome and other endogenous regressors are implemented in the difference equation. The number of instruments is restricted from the first to the third lag of the lagged dependent variable in the difference equation in Model (3) of Table 2.7 in order to focus on the statistical power by keeping the most recent lags. In Model (4) of Table 2.7, we aimed at avoiding any remaining serial correlation by dropping the most recent lags of other endogenous regressors, at the cost of statistical power. Full estimates are given in Appendix D, see Table D.2. Consequently, the p-value of the AR(2) in Model (3) is quite low, slightly above the threshold of 0.1, however, the lagged outcome estimate is higher than the baseline estimate. On the contrary, the p-value of the AR(2) in Model (4) is much more higher than the AR(2) compared with the baseline specification but the lagged outcome turns out insignificant. In these two

models, the number of instruments is well under the number of individuals. The negative and significant relationship between caregiving and life satisfaction holds regardless of the set of instruments.

Table 2.7 – GMM regressions - Alternative specifications

Two-step system GMM estimates on life satisfaction/life happiness				
	Model (1)	Model (2)	Model (3)	Model (4)
L.Happy feel	0.038 (0.02)			
Informal	-0.448*** (0.12)		-0.225* (0.12)	-0.348** (0.16)
L.Lifesat		0.060** (0.03)	0.075** (0.03)	-0.035 (0.06)
Intensive margin		-0.013** (0.01)		
Constant	4.404*** (1.15)	5.778*** (1.05)	5.298*** (1.16)	5.517*** (1.22)
Observations	8120	9180	9180	9180
No. of instruments	222	224	219	201
Time fixed-effects	Yes	Yes	Yes	Yes
AR1 (p-value)	0.000	0.000	0.000	0.000
AR2 (p-value)	0.159	0.124	0.107	0.740
Hansen-J (p-value)	0.013	0.292	0.379	0.239

Note: $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$. Robust standard errors are in parenthesis. In all Models, controls are included. All explanatory variables –except for time dummies, gender and age categories –are treated as endogenous.

2.6 Conclusion

Most of the informal care related literature to date is subject to methodological shortcomings. Cross-sectional studies failed to control for unobserved heterogeneity and longitudinal ones did not deal with reverse causality. Instead, system-GMM estimator makes it possible to reduce endogeneity concerns by using internal information. Applying this estimation method to the nine waves of the LISS data, we analysed the care effect on Dutch respondents' self-reported life satisfaction. Our findings contribute to the evidence base in a threefold way. First, dealing with the main sources of endogeneity, including confounding, allows to go beyond most empirical studies to date. We provide evidence that using a simple OLS with fixed-effects would underestimate the care effect by approximately 300 percent. This large coefficient size, however, might be partly explained by the heterogeneous nature of the informal care provision.

Secondly, in line with [Coe and Van Houtven \(2009\)](#), [Do et al. \(2015\)](#) and [Chen et al. \(2019\)](#), we find evidence for a harmful effect of caregiving on life satisfaction. This result is also consistent with [Bom et al. \(2019\)](#) findings, who focus on Dutch caregivers. Direct comparison with these studies is, however, limited by the use of different outcomes, time lengths, variable types and the choice of answers. To the best of our knowledge, there is no study focusing on life satisfaction of Dutch caregivers using LISS data that would allow a direct comparison of the results.

Thirdly, heterogeneity analyses indicate that spousal caregivers experience larger negative effects on reported life satisfaction ([Bom et al., 2019](#)). Explanations could be that spousal caregivers are more likely to provide regular and intensive support. This result may also derive from the difficulty to estimate the time actually dedicated to care when caregivers and care recipients live together. Additionally, we found that those who faced the double burden of care and full-time employment experienced the most severe negative life satisfaction effect. Overall, these results are robust to a number of identification and methodological issues and not sensitive to the use of alternative definitions and instruments.

This study had several limitations. The first lies in missing information on the care recipient health status prevent us from taking into account the family effect highlighted by [Bobinac et al. \(2010\)](#). Few studies considered the family effect as an explanatory variable of mental health outcomes. Among them, [Bom et al.](#)

(2019), dealing with the impact of caregiving on several mental health measures in the Netherlands found that not controlling for the family effect did not have implications for the estimated caregiving effect itself. Moreover, we rely on Hansen tests for which we do not reject the null hypothesis of exogeneity of instruments. This means that the set of instruments is not correlated with the error term including unobserved variables. Thus, we are not able to measure the effect of the family effect itself but we still confident that including it would not change the caregiving effect estimates.

Another limitation is an external validity issue. Focusing on the case of the Netherlands prevents us from generalizing the results which can be derived from the specific population targeted. This case is still interesting because the Dutch government undertook major reforms of the Dutch long-term care system in 2007 and 2015, with the most important set of measures being set in place in 2015. A key element of the reform laws is that social care, e.g. home help, transport facilities and home adjustments, is decentralized to municipalities under the Social Support Act (*Wet Maatschappelijke Ondersteuning, WMO*). The Social Support Act was revised to strengthen the role of people's social networks in providing care. Each municipality is free to organize non-residential care and its need-assessment procedures as it sees fit, while at the same time the government has encouraged family members and local community networks, i.e., neighborhood networks, to provide for various social care needs, e.g., through home help. All in all, successive reforms have been implemented by the Dutch government to shift the responsibility of care towards the family or local community, increasing the probability that Dutch citizens will need to provide informal care for relatives and others. It had three main goals with these reforms: saving costs, keeping people self-sufficient for as long as possible, and improving quality and coordination of care using a client-tailored approach (Maarse and Jeurissen, 2016).

There are underlying hypotheses in the implementation of these reforms: the increasing responsibility of family in care is supposed to keep constant the quality of the care provided. Firstly, the hypothesis of similar care supply quality suggests that informal care is a substitute for formal care, regardless of the type and the frequency of care required, which has not been proven yet in the literature to date (Bonsang, 2009). This implies that informal caregivers are able to provide care as effective as it would have been if provided by professional services. These reforms also assume that informal provision leads to similar, or even better health outcomes

for care recipients than formal care (Barnay and Juin, 2016), however, this issue suffers from a lack of empirical evidence and more work is needed. Secondly, public policy makers may not only focus on the potential monetary cost savings of these reforms that might come at the expense of caregivers' subjective well-being. These reforms may have underestimated the negative impact of care provision on the caregiver's subjective well-being. Overall, public policies of long term care should consider spillover effects faced by informal caregivers by helping them to deal with their responsibilities, such as extending psychological support and providing social support in cash or in kind..

2.7 Appendix

2.7.1 Appendix A: Merge Procedure

To run our analysis we combined different modules from the LISS panel data. The personality questionnaire from the LISS Core study contains information on subjective well-being, the questionnaire background incorporates sociodemographic information, the questionnaire on social integration and leisure includes information on informal care provisions, the questionnaire on work and schooling contains information on working time, and the questionnaire on health contains questions on objective health. In order to ensure consistency in our merge we made sure that for each year the selected questionnaire was the closest of the month on which the questionnaire about personality was administered as life satisfaction is the outcome. Table A.1 sums up this merge procedure.

Table A.1 – Merge procedure

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Personality	05-08/2008	05-06/2009	05-06/2010	05-06/2011	05-06/2012	05-06/2013	11-12/2014	11-12/2015	-	05-06/2017	05-06/2018
Background	07/2008	05/2009	05/2010	05/2011	05/2012	05/2013	12/2014	12/2015	-	05/2017	05/2018
Social integration and leisure	02-05/2008	02-03/2009	02-03/2010	02-03/2011	02-03/2012	02-03/2013	02-03/2014	10-11/2015	-	10-11/2016	10-11/2017
Work and schooling	04-05/2008	04-05/2009	04-05/2010	04-05/2011	04-05/2012	04-05/2013	04-05/2014	04-05/2015	-	05-06/2017	05-06/2018
Health	11/2007 and 02/2008	11-12/2008	11-12/2009	11-12/2010	11-12/2011	11-12/2012	11-12/2013	07-08/2015	-	11-12/2016	11-12/2017

2.7.2 Appendix B: Definitions of Variables

Table B.1 – Definitions of Variables

Variable	Definition
Age category	0 “15-24 years” 1 “25-34 years” 2 “35-44 years” 3 “45-54 years” 4 “55-64 years” 5 “65 years and older”
Care recipient living at home	0 “The care recipient is not living in the same household” 1 “The care recipient is living in the same household” 2 “The care recipient is our partner”
Care recipient relationship	0 “The care recipient is a close relative” 1 “The care recipient is a broader relative” 2 “The care recipient is our partner”
Child(ren)	Number of living-at-home children in the household
Education level	From the lowest to the highest level of education with diploma (one to nine).
Gender	Dummy (=1) if the respondent is a woman
Frequency of the care provided per week	1 “< 2h” 2 “2-4h” 3 “4-10h” 4 “11-20h” 5 “> 20h”
Happiness	Score on question “How you felt over the last month? I felt happy?” (zero to six)
Housekeeping help	Dummy variable if the caregiver helped the care recipient with cleaning, laundry, grocery shopping.
Informal care (extensive margin)	Dummy variable (=1) if the individual regularly help someone requiring help due to a disease or other affliction over the past 12 months.
Informal care (intensive margin)	Discrete variable of weekly hours of care provided.
Primary occupation	0 “Employed or self-employed” 1 “Unemployed” 2 “Out of the labor force”
Life satisfaction	Score on question “How satisfied are you with the life you lead at the moment?” (zero to ten)
Living environment	From urban character of place of residence to rural (one to five)
Log of standardized net household income	Log of the net monthly household income divided by the square root of household members
Marital status	0 “Single” 1 “(Un)married co-habitation, without child” 2 “(Un)married co-habitation, with child(ren)” 3 “Single, with child(ren)” 4 “Others”
Objective Health	Dummy variable (=1) if the respondent suffers from any kind of long-standing disease
Personal care	Dummy variable if the caregiver helped the care recipient with bathing, showering, dressing.
Personal support	Dummy variable if the caregiver helped the care recipient with arranging affairs, offering solace, listening.
Working hours	Weekly working hours according to employment contract.
Year	Year dummies (2009-2018), reference year is 2009

2.7.3 Appendix C: Parameter Estimates Baseline Model

Table C.1 – Rule-of-Thumb (Blundell et al., 2001)

	OLS		difference-GMM	
	Pooled	Fixed-effects	One-step	Two-step
L.Lifesat	0.62*** (0.02)	0.08*** (0.02)	0.01 (0.03)	0.03 (0.03)
Informal	-0.03 (0.02)	-0.06** (0.03)	-0.34* (0.18)	-0.34** (0.14)
Gender	0.02 (0.02)			
Age category. Ref: 15-24				
25-34	0.16** (0.07)	0.23** (0.12)	0.25 (0.17)	0.20 (0.16)
35-44	0.11 (0.07)	0.27** (0.14)	0.31 (0.22)	0.25 (0.22)
45-54	0.11 (0.07)	0.24 (0.16)	0.28 (0.24)	0.16 (0.24)
55-64	0.17** (0.07)	0.25 (0.17)	0.24 (0.26)	0.18 (0.25)
65 and over	0.12 (0.08)	0.15 (0.18)	0.10 (0.26)	0.08 (0.26)
Marital status. Ref: Single				
Married without children	0.14*** (0.03)	-0.05 (0.10)	0.36 (0.67)	0.75 (0.58)
Married with children	-0.05 (0.07)	-0.01 (0.13)	0.58 (0.63)	1.15** (0.56)
Single with children	-0.28*** (0.08)	0.04 (0.16)	1.08 (0.80)	1.60** (0.67)
Other	-0.19** (0.08)	-0.28 (0.23)	-0.77 (1.06)	-0.12 (0.79)
Children	0.05** (0.03)	-0.14*** (0.04)	-0.26 (0.21)	-0.30* (0.18)
Highest level of education. Ref: Primary school				
Intermediate secondary education	-0.01 (0.06)	-0.47 (0.34)	0.25 (1.00)	0.59 (0.73)
Higher secondary education	-0.04 (0.06)	-0.48 (0.35)	0.77 (0.90)	0.17 (0.87)
Intermediate vocational education	-0.03 (0.06)	-0.55 (0.35)	-0.06 (1.06)	-0.32 (0.80)
Higher vocational education	0.01 (0.06)	-0.33 (0.37)	0.77 (1.24)	0.77 (1.03)
University	0.04 (0.06)	-0.39 (0.39)	0.71 (1.59)	0.66 (1.34)
Others	-0.09 (0.10)	-0.59 (0.55)	0.08 (1.09)	0.95 (0.67)
Not yet completed any education	0.15 (0.16)	-0.34 (0.32)	1.40** (0.57)	1.24* (0.67)
Not yet started any education	-1.22*** (0.07)	-1.39*** (0.31)	3.13 (4.25)	5.15 (5.97)
Primary occupation. Ref: Employed or self-employed				
Unemployed	-0.32*** (0.10)	-0.27*** (0.09)	-0.09 (0.49)	-0.06 (0.45)
Out of the labor force	0.12*** (0.04)	0.20*** (0.05)	0.55** (0.27)	0.41* (0.22)
Working hours	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.01)	-0.00 (0.01)
Log of standardized net household income	0.05** (0.02)	0.02 (0.02)	-0.08 (0.17)	-0.10 (0.12)
Urban character of place of residence. Ref: Extremely urban				
Very urban	-0.04 (0.04)	-0.19 (0.27)	-1.09 (1.07)	-0.95 (1.11)
Moderately urban	0.00 (0.04)	0.19 (0.27)	-2.09 (1.47)	-1.77 (1.33)
Slightly urban	0.02 (0.04)	0.10 (0.26)	0.01 (1.27)	-1.09 (1.21)
Not urban	0.02 (0.04)	-0.04 (0.25)	-1.45 (1.54)	-0.66 (1.38)
Objective health	0.17*** (0.02)	0.11** (0.05)	0.02 (0.23)	0.10 (0.17)
Constant	1.99*** (0.22)	6.92*** (0.51)		
Observations	9180	9180	7888	7888
Time fixed-effects	Yes	Yes	Yes	Yes
No. of instruments			198	198
AR1 (p-value)			0.00	0.00
AR2 (p-value)			0.23	0.25
Hansen-J (p-value)			0.55	0.55

Robust standard errors are in parenthesis. * p<0.10, ** p<0.05, *** p<0.010. The sample includes 1188 individuals.

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Table C.2 – The Augmented Regression Test - Detailed Results-

	Pooled OLS	
	The informal care decision	Life satisfaction
Informal		3.09** (1.21)
Residuals		-3.21*** (1.21)
Gender	0.13*** (0.02)	-0.35** (0.16)
Age category. Ref: 15-24		
25-34	0.02 (0.03)	0.22 (0.14)
35-44	0.06** (0.03)	-0.04 (0.16)
45-54	0.23*** (0.03)	-0.59* (0.31)
55-64	0.27*** (0.03)	-0.61* (0.35)
65 and over	0.27*** (0.03)	-0.63* (0.33)
Marital status. Ref: Single		
Married without children		0.47*** (0.07)
Married with children		0.01 (0.15)
Single with children		-0.69*** (0.18)
Other		-0.32** (0.15)
Children		0.13** (0.05)
Highest level of education. Ref: Primary school		
Intermediate secondary education		-0.01 (0.13)
Higher secondary education		-0.15 (0.14)
Intermediate vocational education		-0.09 (0.13)
Higher vocational education		0.02 (0.13)
University		0.02 (0.14)
Others		-0.23 (0.21)
Not yet completed any education		-0.08 (0.18)
Not yet started any education		-1.32*** (0.16)
Primary occupation. Ref: Employed or self-employed		
Unemployed		-0.42*** (0.13)
Out of the labor force		0.22*** (0.08)
Working hours		0.00 (0.00)
Log of standardized net household income		0.12*** (0.05)
Urban character of place of residence. Ref:Extremely urban		
Very urban		-0.15 (0.10)
Moderately urban		-0.04 (0.10)
Slightly urban		0.03 (0.10)
Not urban		0.04 (0.10)
Objective health		0.43*** (0.06)
Constant	-0.13*** (0.04)	5.86*** (0.45)
Observations	9180	9180
Individuals	1188	1188
Time fixed-effects	Yes	Yes
Residuals test Prob > chi2 = 0.008		

Standard errors are in parenthesis. In the first column, standard errors are clustered at the individual level. * p<0.10, ** p<0.05, *** p<0.010.

2.7.4 Appendix D: Robustness Test

Table D.1 – OLS and two-step System GMM Regressions - Detailed Results-

	Pooled OLS	OLS with fixed-effects	Two-step system GMM	
	Model (1)	Model (2)	lagged first-differences Model (3)	further lagged first-differences Model (4)
L.Lifesat			0.091*** (0.03)	0.065** (0.03)
Informal	-0.121*** (0.05)	-0.070** (0.03)	-0.221** (0.11)	-0.279** (0.11)
Age category. Ref: 15-24				
25-34	0.269* (0.14)	0.234* (0.12)	0.477** (0.23)	0.562* (0.32)
35-44	0.152 (0.15)	0.270* (0.15)	0.469** (0.24)	0.477 (0.32)
45-54	0.159 (0.15)	0.232 (0.16)	0.459* (0.24)	0.507 (0.31)
55-64	0.274* (0.15)	0.237 (0.18)	0.691*** (0.26)	0.652* (0.33)
65 and over	0.250 (0.17)	0.137 (0.19)	0.634** (0.30)	0.530 (0.35)
Gender	0.047 (0.06)	0.000 (.)	0.013 (0.09)	-0.041 (0.10)
Objective health	0.426*** (0.06)	0.121** (0.05)	0.105 (0.12)	0.082 (0.12)
Marital status. Ref: Single				
Married without children	0.469*** (0.07)	-0.035 (0.11)	0.165 (0.27)	0.035 (0.26)
Married with children	0.010 (0.15)	0.016 (0.13)	0.272 (0.32)	0.091 (0.34)
Single with children	-0.687*** (0.18)	0.052 (0.17)	0.415 (0.42)	0.149 (0.43)
Other	-0.318** (0.15)	-0.277 (0.24)	-0.359 (0.30)	-0.462* (0.28)
Highest level of education. Ref: Primary school				
Intermediate secondary education	-0.012 (0.13)	-0.491 (0.34)	0.073 (0.39)	0.569 (0.50)
Higher secondary education	-0.148 (0.14)	-0.490 (0.35)	0.527 (0.51)	0.814 (0.64)
Intermediate vocational education	-0.093 (0.13)	-0.567 (0.35)	0.135 (0.39)	0.509 (0.47)
Higher vocational education	0.016 (0.13)	-0.322 (0.37)	0.558 (0.42)	0.522 (0.53)
University	0.022 (0.14)	-0.389 (0.40)	0.443 (0.42)	0.372 (0.51)
Others	-0.234 (0.21)	-0.593 (0.54)	-0.287 (0.76)	0.168 (0.67)
Not yet completed any education	-0.080 (0.18)	-0.376 (0.31)	0.843* (0.44)	1.198** (0.51)
Not yet started any education	-1.319*** (0.16)	-1.356*** (0.30)	3.781 (5.57)	3.390 (4.17)
Primary occupation. Ref: Employed or self-employed				
Unemployed	-0.422*** (0.13)	-0.276*** (0.09)	-0.512* (0.31)	-0.579* (0.33)
Out of the labor force	0.217*** (0.08)	0.203*** (0.05)	0.382** (0.15)	0.372** (0.16)
Children	0.129** (0.05)	-0.151*** (0.05)	0.060 (0.14)	0.008 (0.14)
Working hours	0.002 (0.00)	-0.002* (0.00)	0.001 (0.01)	-0.001 (0.01)
Log of standardized net household income	0.123*** (0.05)	0.019 (0.02)	0.039 (0.07)	0.034 (0.08)
Urban character of place of residence. Ref:Extremely urban				
Very urban	-0.147 (0.10)	-0.198 (0.28)	0.472 (0.48)	0.051 (0.50)
Moderately urban	-0.038 (0.10)	0.187 (0.28)	0.619 (0.51)	-0.049 (0.55)
Slightly urban	0.031 (0.10)	0.128 (0.27)	0.686 (0.56)	0.133 (0.51)
Not urban	0.044 (0.10)	-0.019 (0.26)	1.316*** (0.50)	0.045 (0.57)
Constant	5.364*** (0.44)	7.485*** (0.46)	4.683*** (0.98)	5.646*** (1.06)
Observations	9180	9180	9180	9180
No. of instruments			224	224
Time fixed-effects	Yes	Yes	Yes	Yes
AR1 (p-value)			0.000	0.000
AR2 (p-value)			0.040	0.135
Hansen-J (p-value)			0.422	0.334

Note: * p<0.10, ** p<0.05, *** p<0.010. Robust standard errors In the first column standard errors are clustered at the individual level. In models (3) and (4), all explanatory variables –except for time dummies, gender and age categories –are treated as endogenous.

Table D.2 – GMM regressions - Heterogeneity Analysis of Informal Care - Detailed Results-

Two-step system GMM estimates on life satisfaction						
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
L.Lifesat	0.06** (0.03)	0.06** (0.03)	0.05* (0.03)	0.06** (0.03)	0.06** (0.03)	0.06** (0.03)
Relationship with the care recipient. Ref: close relatives.						
Broader relatives	0.14 (0.22)					
Partner	-0.78*** (0.30)					
No care provided	0.19 (0.13)					
Residence of the care recipient. Ref: not living with the caregiver.						
Living at home		-1.35 (1.13)				
Partner		-0.73** (0.30)				
No care provided		0.12 (0.12)				
Frequency of the care provided. Ref: 2-4h						
< 2h			-0.49* (0.28)			
4-10h			-0.54* (0.31)			
11-20h			-0.69 (0.45)			
> 20h			-0.91** (0.42)			
No care provided			-0.20 (0.24)			
Type of care provided. Ref: at least housekeeping						
Other type of help				0.23 (0.23)		
No care provided				0.36** (0.15)		
Type of care provided. Ref: at least support						
Other type of help					-0.13 (0.24)	
No care provided					0.23* (0.13)	
Type of care provided. Ref: at least care						
Other type of help						0.18 (0.25)
No care provided						0.41 (0.25)
Gender	-0.05 (0.09)	-0.05 (0.09)	-0.05 (0.10)	-0.03 (0.09)	-0.05 (0.09)	-0.05 (0.09)
Age category. Ref: 15-24						
25-34	0.56* (0.31)	0.53* (0.30)	0.48* (0.29)	0.53* (0.31)	0.55* (0.31)	0.60* (0.32)
35-44	0.50 (0.32)	0.43 (0.31)	0.42 (0.30)	0.47 (0.32)	0.45 (0.31)	0.51 (0.33)
45-54	0.53* (0.31)	0.47 (0.30)	0.50* (0.29)	0.51* (0.31)	0.48 (0.31)	0.55* (0.32)
55-64	0.64* (0.33)	0.58* (0.33)	0.58* (0.32)	0.64* (0.33)	0.62* (0.33)	0.69** (0.34)
65 and over	0.53 (0.35)	0.45 (0.35)	0.42 (0.34)	0.54 (0.35)	0.50 (0.34)	0.57 (0.35)
Marital status. Ref: Single						
Married without children	0.06 (0.26)	0.07 (0.26)	-0.01 (0.28)	0.01 (0.26)	0.02 (0.26)	0.06 (0.26)
Married with children	0.13 (0.34)	-0.03 (0.34)	-0.05 (0.35)	-0.01 (0.34)	0.08 (0.34)	0.12 (0.32)
Single with children	0.17 (0.43)	-0.13 (0.44)	-0.03 (0.44)	0.08 (0.44)	0.13 (0.43)	0.18 (0.42)
Other	-0.49* (0.28)	-0.51* (0.27)	-0.53* (0.32)	-0.47 (0.29)	-0.47* (0.28)	-0.46 (0.29)
Highest level of education. Ref: Primary school						
Intermediate secondary education	0.57 (0.48)	0.68 (0.50)	0.78 (0.69)	0.59 (0.51)	0.68 (0.50)	0.55 (0.49)
Higher secondary education	0.84 (0.64)	0.88 (0.66)	0.94 (0.79)	0.98 (0.66)	0.81 (0.64)	0.86 (0.64)
Intermediate vocational education	0.55 (0.46)	0.64 (0.49)	0.61 (0.67)	0.60 (0.49)	0.56 (0.49)	0.51 (0.46)
Higher vocational education	0.64 (0.52)	0.69 (0.53)	0.71 (0.74)	0.69 (0.55)	0.58 (0.55)	0.49 (0.51)
University	0.51 (0.50)	0.57 (0.53)	0.66 (0.75)	0.53 (0.54)	0.41 (0.52)	0.36 (0.50)
Others	0.07 (0.64)	0.25 (0.65)	0.21 (0.82)	0.15 (0.68)	0.23 (0.67)	0.15 (0.66)
Not yet completed any education	1.26** (0.61)	1.38** (0.65)	1.24 (1.20)	1.15*** (0.43)	1.23** (0.53)	1.24** (0.60)
Not yet started any education	3.32 (3.34)	3.20 (3.60)	3.96 (5.81)	3.85 (4.41)	3.14 (4.23)	3.11 (3.95)

To be continued on next page

INFORMAL CAREGIVERS AND LIFE SATISFACTION

Two-step system GMM Estimates on Life Satisfaction						
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Primary occupation.						
Ref: Employed or self-employed						
Unemployed	-0.56 (0.36)	-0.56 (0.35)	-0.71** (0.34)	-0.50 (0.34)	-0.68** (0.33)	-0.65* (0.34)
Out of the labor force	0.44*** (0.16)	0.38** (0.16)	0.38** (0.15)	0.36** (0.16)	0.38** (0.16)	0.37** (0.16)
Children	-0.01 (0.14)	0.07 (0.14)	0.03 (0.14)	0.04 (0.15)	0.01 (0.14)	0.02 (0.14)
Working hours	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Log of standardized net household income	0.03 (0.09)	0.06 (0.08)	0.05 (0.09)	0.05 (0.07)	0.04 (0.08)	0.04 (0.07)
Urban character of place of residence.						
Ref: Extremely urban						
Very urban	-0.01 (0.46)	-0.13 (0.48)	-0.05 (0.52)	-0.03 (0.50)	0.05 (0.50)	0.03 (0.48)
Moderately urban	-0.00 (0.53)	-0.01 (0.55)	0.22 (0.58)	-0.06 (0.56)	-0.01 (0.54)	-0.06 (0.54)
Slightly urban	0.16 (0.48)	0.11 (0.50)	0.20 (0.55)	0.22 (0.52)	0.08 (0.50)	0.16 (0.49)
Not urban	0.03 (0.53)	-0.09 (0.55)	0.17 (0.63)	0.14 (0.59)	0.02 (0.57)	0.06 (0.56)
Objective health	0.07 (0.13)	0.09 (0.12)	-0.01 (0.12)	0.10 (0.12)	0.09 (0.12)	0.11 (0.12)
Constant	5.46*** (1.14)	5.38*** (1.14)	5.91*** (1.28)	5.10*** (1.11)	5.39*** (1.08)	5.08*** (1.07)
Observations	9180	9180	9180	9180	9180	9180
No. of instruments	242	242	260	233	233	233
Time fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
AR1 (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
AR2 (p-value)	0.12	0.16	0.20	0.18	0.15	0.14
Hansen-J (p-value)	0.42	0.56	0.37	0.18	0.40	0.38

Note: p<0.10, ** p<0.05, *** p<0.010. Robust standard errors are in parenthesis. All explanatory variables –except for time dummies, gender and age categories –are treated as endogenous.

Table D.3 – GMM regressions - Alternative Specifications - Detailed Results-

	Two-step system GMM estimates on life satisfaction/life happiness			
	Model (1)	Model (2)	Model (3)	Model (4)
L.Happy_feel	0.038 (0.02)			
Informal	-0.448*** (0.12)		-0.225* (0.12)	-0.348** (0.16)
L.Lifesat		0.060** (0.03)	0.075** (0.03)	-0.035 (0.06)
Intensive margin		-0.013** (0.01)		
Gender	-0.092 (0.09)	-0.086 (0.09)	-0.031 (0.10)	0.011 (0.12)
Age category. Ref: 15-24				
25-34	0.118 (0.26)	0.603* (0.33)	0.532* (0.31)	0.538 (0.35)
35-44	0.001 (0.27)	0.468 (0.33)	0.443 (0.31)	0.461 (0.36)
45-54	0.038 (0.27)	0.489 (0.32)	0.493 (0.30)	0.518 (0.34)
55-64	0.120 (0.30)	0.632* (0.34)	0.638** (0.32)	0.717* (0.37)
65 and over	-0.055 (0.34)	0.520 (0.36)	0.514 (0.33)	0.639* (0.38)
Objective health	0.015 (0.14)	0.061 (0.12)	0.112 (0.12)	0.006 (0.17)
Marital status. Ref: Single				
Married without children	0.028 (0.22)	-0.033 (0.27)	0.012 (0.27)	0.147 (0.28)
Married with children	-0.059 (0.26)	0.070 (0.34)	-0.010 (0.35)	-0.112 (0.42)
Single with children	0.019 (0.38)	0.066 (0.44)	0.043 (0.44)	-0.312 (0.54)
Other	0.045 (0.29)	-0.407 (0.29)	-0.485* (0.28)	-0.429 (0.33)
Highest level of education. Ref: Primary school				
Intermediate secondary education	-0.460 (0.47)	0.524 (0.49)	0.760 (0.60)	1.029* (0.54)
Higher secondary education	-0.431 (0.66)	0.765 (0.66)	1.018 (0.72)	1.583*** (0.61)
Intermediate vocational education	-0.513 (0.45)	0.429 (0.48)	0.736 (0.59)	1.254*** (0.40)
Higher vocational education	-0.422 (0.56)	0.438 (0.54)	0.762 (0.65)	1.495*** (0.48)
University	-0.562 (0.59)	0.352 (0.53)	0.611 (0.65)	1.165*** (0.41)
Others	0.205 (0.60)	-0.002 (0.70)	0.262 (0.73)	0.768 (0.65)
Not yet completed any education	-1.344* (0.74)	1.087*** (0.36)	1.105 (1.14)	1.610 (1.69)
Not yet started any education	-8.750 (6.51)	2.481 (3.71)	5.870 (6.55)	4.201 (4.60)
Primary occupation. Ref: Employed or self-employed				
Unemployed	-0.213 (0.35)	-0.663** (0.31)	-0.684** (0.32)	-0.642 (0.40)
Out of the labor force	0.226 (0.18)	0.379** (0.16)	0.387** (0.16)	0.164 (0.25)
Children	0.056 (0.14)	0.008 (0.14)	0.043 (0.15)	0.140 (0.18)
Working hours	-0.004 (0.01)	-0.001 (0.01)	0.000 (0.01)	-0.007 (0.01)
Log of standardized net household income	0.071 (0.10)	0.042 (0.07)	0.040 (0.08)	0.065 (0.11)
Urban character of place of residence. Ref:Extremely urban				
Very urban	-0.130 (0.42)	0.032 (0.49)	-0.104 (0.49)	0.143 (0.58)
Moderately urban	-0.142 (0.43)	0.070 (0.56)	-0.047 (0.56)	0.172 (0.66)
Slightly urban	-0.054 (0.52)	0.104 (0.51)	0.139 (0.50)	0.182 (0.61)
Not urban	-0.106 (0.42)	0.208 (0.58)	0.079 (0.58)	0.299 (0.66)
Constant	4.404*** (1.15)	5.778*** (1.05)	5.298*** (1.16)	5.517*** (1.22)
Observations	8120	9180	9180	9180
No. of instruments	222	224	219	201
Time fixed-effects	Yes	Yes	Yes	Yes
AR1 (p-value)	0.000	0.000	0.000	0.000
AR2 (p-value)	0.159	0.124	0.107	0.740
Hansen-J (p-value)	0.013	0.292	0.379	0.239

Note: p<0.10, ** p<0.05, *** p<0.010. Robust standard errors are in parenthesis. All explanatory variables –except for time dummies, gender and age categories –are treated as endogenous.

Chapter 3

Working hours mismatch and subjective well-being

Summary of the Chapter

This chapter studies the role of working time preferences and hours mismatch for workers' subjective well-being. The empirical evidence suggests that it is not the number of hours worked that matters for subjective well-being, but working time mismatch. In particular, underemployment is detrimental for workers' well-being. We further provide the first evidence for the moderating role of education level and job autonomy on the effect of overemployment on life satisfaction. For example, a low level of job autonomy or a high level of education accentuates the negative impact of overemployment on life satisfaction. Additionally, we estimate that involuntary part-time workers and underemployment of more than one day a week are detrimental to well-being.

Classification

JEL Classification: I31, J22, J81

Keywords: Life satisfaction, happiness, work hours mismatch, underemployment, overemployment, work-life balance

3.1 Introduction

In microeconomic theory, one fundamental assumption about the labor market is that labor supply - workers - will match themselves to jobs offered. Thus, workers will be able to allocate the time they want to their leisure activities and work activities (Golden and Gebreselassie, 2007). However, official barriers imposed by the employer, a high degree of workers' autonomy, workload (Van Echtelt et al., 2006) and lack of labor mobility make this equilibrium difficult to reach. These market imperfections create mismatches between a worker's actual and preferred amount of hours worked, resulting in time-related overemployment and underemployment.

To clarify the concepts, we will now give some definitional elements. According to the International Labor Organization (ILO), a person considered under-employed is (1) "willing to work additional hours," (2) "available to work additional hours," and (3) "worked less than a threshold relating to working time." As noticed by Wilkins (2007) the ILO definition of underemployment is not entirely consistent with the notion of underemployment as a form of excess supply in the labor market. First, this definition does not require an active search for additional work hours. Second, the ILO definition does not explicitly require that workers desire more hours at prevailing wage rates, which is likely to reflect practical difficulties imposing this requirement. Finally, the requirement, that a worker is working less than a chosen threshold, is not necessary for a situation of excess supply. For the purposes of this article, we define under- and overemployment as a situation in which workers would prefer to work and earn less or to work and earn more than his/her actual number of working hours. Under- and overemployment may also concern status or skills - such as under- and over-qualification- but this perspective does not enter into the scope of this research.

A large body of literature has focused on unemployment and life satisfaction (Gallie and Russell, 1998; Martella and Maass, 2000; Lucas et al., 2004; Georgellis et al., 2008; Kassenboehmer and Haisken-DeNew, 2009; Oesch and Lipps, 2013; Luhmann et al., 2014). Therefore, the comparison focuses on the difference in subjective well-being between people who do not work and people who work.

Besides the economic argument that underemployment reduces aggregate welfare because the workforce potential of the economy is underused, we argue that

it is interesting to study the relationship between mismatched working hours and subjective well-being for several reasons. We spend almost half of our day working. In this regard, it is essential to freely choose the amount of time we spend on paid work and the amount of time we dedicate to our personal life. Not being able to choose one's working time may generate conflict between one's personal life and working life. As a consequence, it is rather the difference between the actual and desired number of hours that matters for job and life satisfaction (Başlevent and Kirmanoğlu, 2014). Finally, according to the Person-Environment fit theory (P-E fit), if there is a perceived match between a person's values and the resources that the environment provides to fulfill those values, then the individual will experience greater well-being and higher levels of work-family facilitation (Edwards et al., 1998). In other words, if a person values work-life balance and prefers to work part-time to spend time with their family or on an activity that is important to them, the resource of work time is essential to their fulfillment. In that sense, a large body of literature highlights that it is rather the difference between the actual and desired number of hours rather than the total number of hours that matters for job and life satisfaction (Wooden et al., 2009; Angrave and Charlwood, 2015; Krekel et al., 2019). More specifically, underemployment and overemployment may be linked to a reduction in life satisfaction (Bartoll and Ramos, 2020; Miranti and Li, 2020; Krekel et al., 2019; De Moortel et al., 2018, 2017; Kugler et al., 2016; Angrave and Charlwood, 2015; Golden and Okulicz-Kozaryn, 2015; Başlevent and Kirmanoğlu, 2014; Wunder and Heineck, 2013; Wooden et al., 2009; Wilkins, 2007; Friedland and Price, 2003). This article adds to the current literature by replicating results from previous studies and examining the relationship between working hours mismatch and subjective well-being in the Netherlands.

The Netherlands is an interesting case for different reasons. First of all, The Netherlands is one of the OECD countries with the highest labor force participation rates¹. This was mainly possible due to the large share of part-time workers among the working population². Then, an interesting fact for our study is that the Netherlands has one of the lowest shares of underemployed part-time workers among European countries³. This low rate of involuntary part-time workers was made possible thanks to the 'Wet Flexibel Werken' (Flexible Working Hours Act)

¹According to OECD statistics, in 2020 about 85 percent of the working-age population (15-64 years old) was working.

²The Netherlands has the highest share of part-time workers among OECD countries. In 2020 around 37 percent of the employed population was working part-time. According to OECD, part-time work is defined as working less than 30 hours a week.

³According to Eurostat, in 2018, 9 percent of part-time workers were underemployed.

that came into force on the 1st January 2016 to improve the work-life balance of Dutch employees.

Based on this act the contractual number of working hours, the workplace, and the actual working hours can be adjusted upward or downward on the request of the employee⁴. This reform aimed to offer more autonomy to the employee and allow him/her to reconcile work and private life better. There was also criticism, however, concerning this reform. Notably, it has been argued that with the increase of autonomy and flexibility, the workload often increases and economic independence with a low amount of working hours is difficult to achieve. In line with this argument [Van Echtelt et al. \(2006\)](#) find that in Dutch organizations, "the employer does not forbid adjustment of the working time, but the circumstances mean that work itself comes in 'lumps' of tasks that distract attention away from the choice between income and leisure time that flexible arrangements allow." They highlight that the conditions of the post-Fordist workplace, with their greater emphasis on autonomy, increase the likelihood of decision-making based on the completion of tasks and projects and, therefore, being overemployed. They call this phenomena '*the autonomy paradox*'. This article answer the following questions: What is the effect of under- and overemployment on Dutch workers' life satisfaction? And what is the moderating role of socio-demographic characteristics and job features in the relationship between working hours mismatch and life satisfaction?

Given the evidence for the negative impact of work hours mismatch on mental health and well-being⁵, This study aims to provide new empirical evidence on the relationship between working hours and subjective well-being. To the extent of my knowledge, there is no empirical evidence for this relationship in the Netherlands. To carry out the study, we use panel data from the Netherlands Longitudinal Internet Study for Social Science (LISS) that was collected between 2008 and 2019, thus mapping a period of reforms in work hours flexibility⁶. Moreover, we investigate the moderating role of socio-demographic and job characteristics, such as job autonomy, in the relationship between hours mismatch and life satisfaction. Additionally, we

⁴Under this act, the employee may formulate a request for an increase or a reduction of his/her working hours. The act concerns only employees who have been under contract with the same employer for more than six months. The request should be made at least two months before the desired commencement date. The employer may only refuse the request if there are compelling business interests that oppose the adjustment.

⁵See the Appendix A, Table A.1

⁶These reforms include the Working Hours Act (*Arbeidstijdenwet*), 1995; Flexible Working Hours Act (*Wet Flexibel Werken*), 2016.

estimate the intensive margin effect of underemployment on life satisfaction.

3.2 Literature Review

On the one hand, overemployment comes with excessive working hours which may cause conflict between work and personal life. Underemployment, on the other hand, deprives individuals of monetary and non-monetary assets. The monetary deprivation may cause financial distress and the non-monetary job aspects include the opportunity cost of developing potential skills and the social interaction with colleagues or customers. Thus, underemployment and overemployment are both likely to have a significant negative effect on life satisfaction⁷.

Wooden *et al.* (2009), using one wave of the Australian Household, Income and Labour Dynamics (HILDA) data, find that both underemployment and overemployment have a negative impact on subjective well-being and job satisfaction. Additionally, Kugler *et al.* (2016) undertake a comparative study between Germany with data from the German Socio-Economic Panel (GSOEP) and Australia (HILDA). Using a semi-parametric regression approach they find that subjective well-being is highest in the absence of hours mismatch. In Australia, however, the marginal loss from underemployment appears to be larger than that from overemployment once the mismatch exceeds approximately ten hours. In contrast, in Germany, underemployment is clearly more detrimental for well-being than overemployment. German males with preferences for full-time hardly respond to overemployment. This result, is confirmed by Wunder and Heineck (2013). Using GSOEP they estimate that in Germany underemployment negatively affects one's life evaluation. They further demonstrate spillover effects from the partner's underemployment that are, however, no longer significant once they control for the partner's life satisfaction. They conclude that well-being is communicable, and that the spillover is due to caring preferences. De Moortel *et al.* (2018) explore data from GSEOP and investigate whether under- and overemployment are linked with two year changes in mental health and the moderating role of job rewards (i.e. high earnings, job security, promotion prospects and occupational prestige). Mental health was measured using the Mental Component Summary (MCS) score. Findings indicate that overemployment and low reward at work (for men and women) are linked to a reduction in mental health. Underemployment was not

⁷For more details on the literature on working hours mismatch and well-being, please look at Appendix A, Table A.1 "Overview of studies on working hours mismatch and well-being."

related to a reduction in mental health. Although associations between under- and overemployment and mental health slightly differed across levels of reward, interactions did not reach statistical significance. [Wilkins \(2007\)](#) exploits information from the year 2001 of HILDA, and examines the effects of underemployment on outcomes such as income, welfare dependence and subjective well-being. Results show that underemployment is significantly detrimental for welfare dependency, income and life satisfaction. The negative effect is particularly significant for part-time workers who would like to work full-time. For both males and females, the adverse effects of part-time underemployment on the measure of subjective well-being are not far short of those associated with unemployment. [Miranti and Li \(2020\)](#) focus on the specific subgroup of mature workers (45-64 years) in Australia and find a significant associations between a mismatch of working hours and poor mental health. Moreover, low level of job control and high demands have a significant negative impact on reported mental health scores. These findings apply to both men and women.

[Angrave and Charlwood \(2015\)](#) exploit UK data from the BHPS and find that both overemployment and underemployment are associated with lower subjective well-being. This situation, however, last for a short time. Three-quarters of mismatches were resolved within a year. Moreover, for those overemployed for less than two years, and all mismatches related to under-employment, SWB levels quickly returned to pre-mismatch levels. However, when mismatches related to overemployment went on for more than two years, adaption was only partial; life satisfaction and psychological well-being remained lower than they were prior to the mismatch. [Friedland and Price \(2003\)](#) utilize data from the Americans' Changing Lives Study to assess the relationship between employment status and both physical health and psychological well-being. They estimate that an hour's underemployment is related to lower levels of positive self-worth and find an insignificant impact from underemployment and overemployment on life satisfaction. Finally, [Golden and Okulicz-Kozaryn \(2015\)](#) explore data from the US General Social Survey (1972-2012) and find that the happiness of the underemployed is reduced by 0.2 points on average compared to the level of happiness of the employed. They estimate that overemployment has no significant impact on life satisfaction. Surprisingly, they measure that there is a positive association between working more than 50 hours and happiness. They partly explain this finding by income gains allowing the chasing of the "American dream", reflecting the belief that hard work pays off in success. They also mention that "While Americans may

prefer to work more than in other countries, perhaps as an expression of work ethic or individualism; it is also possible that they feel compelled to work more than in other developed countries, where there is more universal healthcare, subsidized education and other public goods."

The external validity of the negative relationship between work hours mismatch and life satisfaction is also validated by two studies from [Bartoll and Ramos \(2020\)](#) and [Başlevent and Kirmanoğlu \(2014\)](#). [Başlevent and Kirmanoğlu \(2014\)](#) drawn data from the European Social Survey (ESS) and find that deviations from desired hours of work reduce overall life satisfaction, but the effect is smaller in countries with higher unemployment rates. They suppose that in a context of high job insecurity, having a job brings about a certain level of life satisfaction regardless of the gap between the actual and preferred time spent in the labor market. They also find no significant difference between male and female attitudes. Furthermore, [Bartoll and Ramos \(2020\)](#) use cross-sectional data from the European Working conditions Survey of 2015 to investigate the moderating role of job quality in the relationship between working hour mismatches and well-being. First, they find that absolute amount of working hours may affect workers well-being mainly through work hours mismatch. Second, they highlight a negative association between underemployment and overemployment on life satisfaction. Third, they observe a consistent confounding role of job dimensions across most working hour schedules. More precisely, low job rewards and high job intensity increase the negative effect of underemployment and overemployment on subjective well-being. Fourth, a high unemployment rate reduces the adverse effect of work hours mismatch on life satisfaction.

The purpose of the current study is to provide further evidence for the relationship between work hours mismatch and subjective well-being in the Netherlands. Based on the existing literature, we hypothesize that both underemployment and overemployment cause lower life satisfaction. To test this hypothesis we use the Longitudinal Internet Study for Social Sciences (LISS) over the period from 2008 to 2019. The sample is restricted to the working population.

The novel aspect of this study is to estimate the effect of working hours mismatch on life satisfaction in the Netherlands. This case study is all the more interesting because since the *Flexible Working Hours Act*, the labor market in the Netherlands allows a high degree of work hours flexibility. According to the Person-Environment fit theory (P-E fit), if there is a perceived match between a person's values and the

resources that the environment provides to fulfill those values, then the individual will experience greater well-being and higher levels of work-family facilitation. Thus, working hours mismatch is likely to lower subjective well-being especially in a country that promotes flexible working time. Further, we highlight the moderating role of socio-demographic and job characteristics, such as job autonomy, in the relationship between work hours mismatch and life satisfaction. Moreover, we estimate the intensive margin effect of underemployment on life satisfaction.

The remainder of the paper is organized as follows: Sect. 3 introduces the data used in the empirical work. Sect. 4 presents the empirical strategy. Sect. 5 reports the empirical results and robustness test. Sect. 6 is devoted to a discussion of some key findings and concluding remarks.

3.3 Research Method

In this section we display the sample composition of our study. Additionally, we present the variables we used to study the effect of mismatched working hours on life satisfaction. Further, we provide descriptive statistics on working hours mismatch.

3.3.1 Data Description

We used data taken from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel administered by CentERdata⁸ (see for details: www.lissdata.nl). Panel members are paid to complete online questionnaires on a monthly basis. The panel is based on a true probability sample of households drawn from the Dutch population registered by Statistics Netherlands consisting of more than 4,500 households, over 7,000 individuals and done in 137 monthly waves from November 2007 to March 2019. In the LISS survey, individuals report several aspects of their life, including their satisfaction with life, their desired amount of working hours, their actual amount of weekly hours, their work conditions and background information⁹. We restricted our sample to individuals who work at least 12 hours a week - The Dutch standard uses a minimum of 12 hours a week to define

⁸ Tilburg University, The Netherlands.

⁹ The panel was extracted from the LISS database and uses information from five panels of the core study: "Personality Questionnaire, LISS Core Study", "Family and Household Questionnaire, LISS Core Study", "Health Questionnaire, LISS Core Study", "Work and Schooling Questionnaire, LISS Core Study", "Social Integration and Leisure, LISS Core Study". For more details on our combination, see Appendix B, Table B.1.

the labor force. This resulted in a sample with 5,165 observations and 735 individuals observed over the period 2008-2019. Among those observations, 50 percent concerned individuals who have been observed at least eight consecutive times.

Life Satisfaction

The measure of life satisfaction is based on the question "How satisfied are you with the life you lead at the moment?". The respondent has been asked to use an ordinal scale from zero, not at all satisfied, to ten, completely satisfied. This single-item scale life satisfaction question is a widely used measure of subjective well-being. It has the advantage of asking the respondent to focus on an overall evaluation of their life rather than on current feelings or specific psychosomatic symptoms. [Veenhoven \(2000\)](#) and [Frey and Stutzer \(2002\)](#) have shown that self and nonself-reports of well-being have a single unitary construct underlying the measures suggesting their validity. Further they indicate that reported subjective well-being is moderately stable and sensitive to changing life circumstances.

Working Hours Mismatch

The variable of interest was a categorical variable on work hours mismatch. Work hours mismatch is defined as the difference between actual self-reported working hours and desired working hours. The variable is divided into three categories; no mismatch, underemployment and overemployment. Further, in the analysis we also used the absolute amount of underemployment and overemployment hours.

Work Characteristics

The study explored the moderating role of work characteristics on the relationship between working hours mismatch and life satisfaction. we selected the following variables for the analysis: Job autonomy "There is very little for me to determine how to do my work"; Job recognition "I get the appreciation I deserve for my work"; Career prospects "My prospects of career advancement/promotion in my job are poor"; Job certainty " It is uncertain whether my job will continue to exist". For each affirmation respondents could answer on a four-point scale from one, disagree entirely, to four, agree entirely.

Explanatory variables include age, health, domestic situation, educational level, number of children, living environment, sector activity, profession, working hours, log of net individual income, current feeling and year dummies¹⁰.

¹⁰The definitions and descriptive statistics of the relevant variables are provided in Tables C.1 and C.2 in the Appendix C

Descriptive Statistics

An overview of respondents' socio-demographic characteristics by work hours mismatch is furnished in Table 3.1. 283 individuals were underemployed at least once, that is to say at least in one period across the 12-year period. 576 respondents were overemployed at least once across the time period under study and 562 individuals did not experience work hours mismatch. Comparing the raw percentages from the first and the second columns of Table 3.1, men are more likely to be underemployed and overemployed than women. Moreover, there is a higher representation of individuals being underemployed in specific subgroups, namely, individuals aged between 35 and 44 years, individuals being in co-habitation with children, working short part-time - between 12 and 21 hours a week - and having low income. Additionally, the underemployed have similar socio-demographic characteristics compared with individuals experiencing no working time mismatch concerning education level, sector activity, and the kind of profession worked. When we looked at the socio-demographic characteristics of individuals being overemployed, we observed an over-representation of individuals being overemployed among men, individuals in co-habitation, with a higher level of education, working more than 40 hours a week, having high income, and having an intermediate/high responsibility profession. Further, overemployed individuals did not differ from persons who did not experience working hours mismatch regarding age and sector activity. In the last column of Table 3.1 we provided the results of a Khi square test which brings information on the independence of the variables under study by subgroups.

Table 3.1 – Respondent Socio-demographic Characteristics

	No mismatch	Underemployed	Overemployed	
	%	%	%	<i>Chi2-test</i>
	(1)	(2)	(3)	
Gender				
Men	46	54	64	
Women	54	46	36	94***
Age				
15 - 24 years	2	5	1	
25 - 34 years	7	8	7	
35 - 44 years	19	26	18	
45 - 54 years	33	32	35	
55 - 64 years	35	23	36	
65 years and older	4	6	3	122***
Marital status				
Single	14	15	14	
(Un)married co-habitation without children	41	32	36	
(Un)married co-habitation with children	39	44	44	
Single with children	5	8	5	
Other	1	1	1	45***
Education level				
Primary school	2	1	1	
Intermediate secondary education	25	21	12	
Higher secondary education	7	11	10	
Intermediate vocational education	32	28	29	
Higher vocational education	24	29	35	
University	8	8	12	
Other	2	2	1	225***
Weekly Working hours				
12 - 21 Hours	19	41	5	
22 - 33 Hours	36	33	21	
34 - 39 Hours	19	18	19	
More than 40 Hours	26	8	54	115***
Net monthly income				
500€ - 1,000€	19	35	7	
1,001€ - 1,500€	24	22	15	
1,501€ - 2,000€	27	20	29	
2,001€ - 2,500€	16	14	24	
2,501€ - 4,000€	12	7	22	
4,001 and more	2	2	3	64***
Sector activity				
Agriculture	1	1	3	
Industrial production	10	6	11	
Utilities production	1	1	2	
Construction	4	3	6	
Retail trade	8	11	6	
Catering	1	2	1	
Transport, storage	5	7	5	
Financial	5	4	5	
Business services	6	6	8	
Government services	13	11	12	
Education	5	4	12	
Healthcare	25	24	17	
Environmental service	1	1	1	
Other	15	19	11	280***
Profession				
High responsibility profession	11	15	21	
Intermediate responsibility profession	46	38	49	
Semi-skilled worker force	39	40	28	
Unskilled manual worker	4	7	2	198***
Individuals	562	283	576	
Observations	1,929	683	2,553	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$. Descriptive statistics are based on our common sample from LISS panel data (2008-2019) including 5,165 observations and 735 individuals.

3.3.2 Empirical Strategy

Panel data allowed me to control for time-invariant unobserved personal characteristics using an ordinary least square fixed-effects model. In this model, the dependent variable, life satisfaction, was assumed to be cardinal; however when analyzing subjective well-being, the linear fixed-effects estimation performs as well as the fixed-effects ordered logit estimation Ferrer-i Carbonell and Frijters (2004)¹¹. Additionally, homoscedasticity or the constant variance of the error term has to be met (Wooldridge, 2015). To correct for heteroskedacity, which results in biased results of the standard error, robust standard errors are used. The following regression equation is used to explain the variation in subjective well-being (SWB), which is an indicator of current SWB of individual i at time t .

$$LS_{it} = \beta_0 + \beta_1 HoursMismatch_{it} + \beta_2 X_{it} + \mu_i + \lambda_t + \epsilon_{it} \quad (3.1)$$

Where i ($i = 1, 2, \dots, n$) refers to individuals, t ($t = 1, 2, \dots, T$) stands for year and LS_{it} is the self-reported life satisfaction of an individual on a scale from zero to ten. β_0 is the constant, $HoursMismatch_{it}$ is a categorical variable including three categories; no mismatch working hours, underemployment and overemployment - where no hours mismatch is the reference category. We assume that well-being arises from individual characteristics, represented by a vector X_{it} that includes *Work hours categories*, *Age categories*, *Objective health*, *Marital status*, *Education level*, *Number of children living at home*, *Urban character of the city*, *Work contract*, *Sector activity*, *Type of profession*, *Working in a side job*, *Equivalentized real disposable household income (specified in log form)* and *Moment feeling*. With the exception of the last characteristic mentioned, these are all variables routinely included as controls in regression models explaining interpersonal differences in subjective measures of overall well-being (Frey et al., 2018; Rojas, 2019; David et al., 2014; Graham et al., 2005). Additionally, we make use of the panel nature of the data to hold constant individual-specific characteristics that do not vary much over time. For that purpose μ_i represents individual specific time-invariant effects (e.g. *personality*). λ_t represents year fixed-effects and ϵ_{it} is the error term.

¹¹According to Ferrer-i Carbonell and Frijters (2004), assuming ordinality of life satisfaction scores makes qualitatively little difference, whilst allowing for fixed-effects may change results substantially.

3.4 Results

3.4.1 Working-time Mismatch and Subjective Well-being

The results of the regression analyses are presented in Table 3.2. Each model includes different sets of controls. Model (1) takes into account only work hours category and year dummies. Age categories, objective health, marital status, education level, number of children living at home and urban character of the city are added in model (2). Work characteristics join the equation in model (3), and model (4) incorporates subjective variables. In models (1), (2) and (3), the overall explanatory power of the main covariates was low. In model (4), however, it increased sharply. This finding may be explained by the fact that much of the variation in self-reported well-being is due to mood variation that is accounted for in model (4). Once individual fixed-effects and moment feeling were accounted for, the overall variance of the model was around 27 percent.¹²

Focusing on the variables of most interest to this study - the working hours variables - the ordinary least squares estimates accounting for fixed-effects was consistent across different model specifications. Overall, we observed that it is not the absolute amount of working time that matters when explaining subjective well-being but rather the mismatch between actual and preferred hours. Studies that do not control for hours mismatch, however, report a negative relationship between working hours and SWB (Booth and Van Ours, 2013; Bardasi and Francesconi, 2004; Gash et al., 2010b; Booth and Van Ours, 2009, 2008). We estimated that underemployment had a negative and significant impact on life satisfaction, while overemployment did not affect life satisfaction. In the section regarding heterogeneity analysis (Tables 3.3 and 3.4), however, we found that under some conditions overemployment may have a significant negative impact on life satisfaction. This is the case for workers with high job autonomy or who were highly educated. The size of the satisfaction penalty for underemployed workers was about 0.08 to 0.10 of a point. Further, in the sensitivity analysis we estimate that this negative relationship holds particularly for individuals who were underemployed one day or more a week and combining short part-time work and underemployment.

One may question the meaningfulness of this coefficient size. The largest

¹²Please note that full estimates are available in the Appendix D, Table D.1.

coefficient in the fixed-effects life satisfaction specification is only -0.10, which seems small given that the dependent variable has an 11-point range. The literature acknowledges, however, that individual life satisfaction scores are reasonably stable over time (Ehrhardt et al., 2000). Moreover, the distribution of life satisfaction is usually centered around seven with very few respondents answering under five. Further, looking for instance at the magnitude of the effects of suffering from a long-lasting disease on life satisfaction - around 0.15 of a point (see Table D.1). The size of this effect may seem small; it is, however, consistent with the effect of disability on life satisfaction (Angrave and Charlwood, 2015). Working less hours than one would like has an effect on subjective well-being that is around half the size of the impact of long-lasting disease. Seen from this perspective, underemployment was indeed associated with meaningful reductions in life satisfaction.

Table 3.2 – Summary Baseline Model - Parameter Estimates Effects of Working Hours Mismatch on Life Satisfaction

OLS with fixed-effects				
Variable	Life satisfaction Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)
Work hours mismatch. Ref: No mismatch				
Underemployment	-0.10* (0.05)	-0.09* (0.05)	-0.08* (0.05)	-0.09** (0.04)
Overemployment	-0.03 (0.25)	-0.03 (0.03)	-0.03 (0.03)	-0.01 (0.03)
Work hours categories. Ref: Full-time				
Short part-time	0.02 (0.09)	0.02 (0.09)	0.01 (0.09)	0.04 (0.08)
Part-time	0.03 (0.06)	0.04 (0.05)	0.05 (0.06)	0.04 (0.08)
Long hours	0.00 (0.05)	0.00 (0.05)	0.01 (0.05)	0.02 (0.04)
Post estimation test				
No mismatch = Underemployment	0.05*	0.07*	0.09*	0.04**
No mismatch = Overemployment	0.25	0.30	0.40	0.64
Overemployment = Underemployment	0.23	0.27	0.26	0.09*
Observations	5,165	5,165	5,165	5,165
R-Squared Overall	0.01	0.02	0.03	0.27
Time fixed-effects	Yes	Yes	Yes	Yes
Socio-demographic controls	No	Yes	Yes	Yes
Work characteristic controls	No	No	Yes	Yes
Moment feeling control	No	No	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Ordinary least square specifications; based on LISS panel data (2008-2019).

All Estimates include dummy variables for year of survey and constant term.

3.5 Robustness Test

In this section, we first present the results of the heterogeneity analysis. Namely, we explore the moderating effect of socio-demographic characteristics, such as gender, being in a couple, parental status and level of education, and job features, including job autonomy, job recognition, career prospects and job certainty on the main relationship. In the second part, the sensitivity of the baseline results to alternative specifications and definitions of the outcome and mismatched working hours is addressed.

3.5.1 Heterogeneity Analysis

Table 3.3 introduces results highlighting the moderating effect of socio-demographic characteristics on the main relationship of interest. First of all, the categorical variable working hours mismatch interacts with the "Women" dummy to analyze if the effect of working hours mismatch differs by gender. In model (2) no evidence for gender difference was found. This result is in line with findings of [Başlevent and Kirmanoğlu \(2014\)](#), [Miranti and Li \(2020\)](#), [Wooden et al. \(2009\)](#). According to [Başlevent and Kirmanoğlu \(2014\)](#) it may be explained by the fact that work hours mismatch serves as an accurate proxy of work-life imbalance, such that any gender differences that exist are captured by this variable. Additionally, model (4) of Table 3.3 revealed that there is no significant difference between parents and childless individuals.

Secondly, an interaction effect with the dummy "couple" was performed in model (3). Interestingly, we found that single individuals suffered more from overemployment than individuals in a couple. Indeed, being in a couple reduced the significant negative effect of overemployment on life satisfaction by around 0.14 points - for example, individuals who were single experienced a significant loss of life satisfaction of about 0.12 points when overemployed, while individuals in a couple were slightly positively affected by overemployment ($-0.12+0.18=0.06$). Regarding underemployment, we observed that single individuals are not significantly impacted by underemployment, while couples are. These results are interesting because they put forward the linked lives of household members. We suppose that overemployment is more manageable for individuals in a couple because they may have support from their partner to bear work-life conflict. In contrast, the financial stress induced by underemployment can give rise to direct conflict concerning the contribution to the household income.

Table 3.3 – Heterogeneity Analysis - Work Hours Mismatch and Socio-demographic Characteristics

OLS with fixed-effect					
	Life satisfaction Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)	Life satisfaction Model (5)
Work hours mismatch. Ref: No mismatch					
Underemployment	-0.09** (0.04)	-0.09 (0.06)	0.05 (0.10)	-0.13** (0.04)	-0.10 (0.09)
Overemployment	-0.01 (0.03)	-0.01 (0.04)	-0.12* (0.10)	-0.01 (0.03)	0.9* (0.05)
Interactions socio-demographic characteristics					
Gender					
Underemployed x Women	-	0.00 (0.09)	-	-	-
Overemployed x Women	-	-0.01 (0.05)	-	-	-
Couple					
Underemployed x Couple	-	-	-0.18* (0.11)	-	-
Overemployed x Couple	-	-	0.14* (0.07)	-	-
Parent					
Underemployed x Parent	-	-	-	0.08 (0.09)	-
Overemployed x Parent	-	-	-	0.07 (0.05)	-
Education level. Ref: Medium education level					
Underemployed x Low education level	-	-	-	-	-0.04 (0.12)
Underemployed x High education level	-	-	-	-	0.02 (0.11)
Overemployed x Low education level	-	-	-	-	-0.11 (0.07)
Overemployed x High education	-	-	-	-	-0.18*** (0.06)
Observations	5,165	5,165	5,165	5,165	5,165
R-squared Overall	0.3	0.3	0.3	0.3	0.3
Individual fixed-effects	Yes	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes	Yes
Socio-demographic controls	Yes	Yes	Yes	Yes	Yes
Work characteristics controls	Yes	Yes	Yes	Yes	Yes
Moment feeling control	Yes	Yes	Yes	Yes	Yes

Standard errors are in parenthesis. * p<0.10, ** p<0.05, *** p<0.010

Finally, model (5) of Table 3.3 estimated that there was no significant difference by education level regarding the effect of underemployment on life satisfaction. Looking at overemployment, however, we observed that high education level worsened its detrimental effect on life satisfaction. This result may have several explanations. Primarily, taking a look at the descriptive statistics in Table 3.1, we observed that overemployed individuals are more likely to be highly educated. According to the human capital theory, the better educated are more likely to participate in the labor market because of their higher wage potential, that is to say because their opportunity costs of not having a job are higher (Becker, 2009). A further argument why the better educated are more likely to be involved in the labor market is due to the fact that they have better access to jobs that provide greater intrinsic rewards (Gerson, 1986; Steiber et al., 2016). Thus, from the opportunity cost theory point of view, the better educated are expected to prefer employment to non-employment and to work more weekly hours than the less educated. As a consequence, the fact that the negative effect of overemployment on life satisfaction was more detrimental for better educated workers, might be due to an over-representation of them in overemployment. Secondly, highly educated workers are more likely to access a job in high skilled occupations. These jobs are often only accessible under the condition of working long hours (Clarkberg and Moen, 2001). Additionally, jobs in skilled occupations may encourage incumbents to autonomously work longer hours than they prefer (Van Echtelt et al., 2006). Such intrinsically rewarding jobs may increase the likelihood of decision making based on the completion of tasks and projects at the expense of a personal life. This "new lumpiness" of work thus might explain why the more highly educated individuals experienced more negative effects from overemployment on life satisfaction.

We found another result that corroborates the negative effect of the "new lumpiness" of work on life satisfaction. Indeed, the results of Table 3.4 highlighted that higher job autonomy increases the detrimental effect of overemployment on life satisfaction. As mentioned previously, in the Dutch organization the conditions of the post-Fordist workplace became predominant. They imply a high degree of autonomy and workload, thus leading to overemployment and conflict between work and personal life at the expense of life satisfaction. Further, Table 3.4 explored the moderating effect of work characteristics on the relationship between mismatched working hours and life satisfaction. Firstly, we estimated that job recognition has a positive effect on life satisfaction, while low career prospects and high job uncertainty decreases life satisfaction. Job autonomy has no significant

impact on life satisfaction. Secondly, we observed that a low level of job recognition accentuated the negative impact of underemployment on life satisfaction. As mentioned in the literature, status and skills underemployment go hand in hand with hours underemployment ([Friedland and Price, 2003](#)). As a consequence, not getting the appreciation one deserves for his/her work combined with underemployment had a negative impact on a worker's life satisfaction. Lastly, we did not find evidence for the interaction effect by job certainty level or by level of career prospect.

Table 3.4 – Heterogeneity Analysis - Work Hours Mismatch and Work Characteristics

OLS with fixed-effect				
	Life satisfaction Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)
Work hours mismatch. Ref: No mismatch				
Underemployment	-0.13 (0.09)	0.25 (0.21)	-0.20 (0.14)	-0.12 (0.11)
Overemployment	0.12 (0.07)	0.21 (0.15)	-0.04 (0.09)	-0.03 (0.07)
Interactions work characteristics				
Job autonomy	-0.00 (0.03)	-	-	-
Underemployed x Job autonomy	0.02 (0.04)	-	-	-
Overemployed x Job autonomy	-0.07* (0.04)	-	-	-
Low job recognition	-	0.13*** (0.04)	-	-
Underemployed x Low job recognition	-	-0.12* (0.04)	-	-
Overemployed x Low job recognition	-	-0.08 (0.05)	-	-
Low career prospect	-	-	-0.05* (0.03)	-
Underemployed x Low career prospect	-	-	0.03 (0.05)	-
Overemployed x Low career prospect	-	-	0.01 (0.03)	-
Low job certainty	-	-	-	-0.04* (0.03)
Underemployed x Low job certainty	-	-	-	0.01 (0.05)
Overemployed x Low job certainty	-	-	-	0.01 (0.03)
Observations	5,165	5,165	5,165	5,165
R-squared Overall	0.3	0.3	0.3	0.3
Individual fixed-effects	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Socio-demographic controls	Yes	Yes	Yes	Yes
Work characteristics controls	Yes	Yes	Yes	Yes
Moment feeling control	Yes	Yes	Yes	Yes

Standard errors are in parenthesis. * p<0.10, ** p<0.05, *** p<0.010

3.5.2 Sensitivity Analysis

In order to test the consistency of the results, we ran a series of robustness tests using alternative specifications of the outcome and the working hours mismatch hours variables. Primarily to further explore the relationship between ‘*underemployed*’ and subjective well-being we ran a series of models with an alternative specification of the variable . Additionally, we restricted the common sample to individuals who experienced no mismatch or who are ‘*underemployed*’. Secondly, we used different definitions of the dependent variable to see if it changes the main result. Then, we analyzed whether the results are sensitive with an alternative coding of working hours mismatch.

Focus on Underemployment and Subjective Well-being

Table 3.5 presented the effect of the intensive margin of underemployment on life satisfaction. In the specification that includes all controls - model (4) - we observed that only individuals underemployed at least four hours a week were negatively affected by underemployment. Moreover, the negative size of the effect is significantly higher for those underemployed more than one day a week. Similar results are found in the literature on working hours mismatch. Studies highlight that four hours of underemployment or more accentuate its negative effect on mental health (Otterbach et al., 2016; Miranti and Li, 2020; De Moortel et al., 2018).

Table 3.6 displayed the effects of underemployment per work hours categories. We estimated that those who are underemployed and work between 12 and 21 hours a week graded their life satisfaction on average 0.13 point less than individuals experiencing no work hours mismatch. No significant difference was found between underemployed by work hours categories. Angrave and Charlwood (2015) undertake a similar categorization and find that British men who become under-employed and work 35-40 hours a week or less experience lower job satisfaction, life satisfaction and psychological well-being. In contrast, they present no associations between becoming underemployed and lower subjective well-being for men who work more than 40 hours a week.

Table 3.5 – Intensive Margin of Underemployment - Parameter Estimates Effects of Underemployment Intensity on Life Satisfaction

Variable	OLS with fixed-effects			
	Life satisfaction Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)
Underemployment Ref: No mismatch				
Half day underemployment	-0.05 (0.05)	-0.05 (0.05)	-0.05 (0.05)	-0.06 (0.05)
One day underemployment	-0.16 (0.11)	-0.18* (0.10)	-0.19* (0.10)	-0.17** (0.08)
More than one day underemployment	-0.35** (0.13)	-0.37*** (0.12)	-0.40*** (0.12)	-0.39*** (0.11)
Work hours categories. Ref: Full-time				
Short part-time	0.10 (0.15)	0.20 (0.14)	0.15 (0.14)	0.22* (0.12)
Part-time	0.09 (0.12)	0.15 (0.11)	0.13 (0.11)	0.12 (0.09)
Long hours	0.08 (0.11)	0.06 (0.11)	0.07 (0.11)	0.04 (0.09)
Post estimation test				
Half day underemployment = One day underemployment	0.30	0.19	0.19	0.16
Half day underemployment = More than one day underemployment	0.02**	0.01***	0.00***	0.00***
One day underemployment = More than one day underemployment	0.16	0.16	0.12	0.07*
Observations	2,612	2,612	2,612	2,612
R-Squared Overall	0.03	0.04	0.05	0.17
Time fixed-effects	Yes	Yes	Yes	Yes
Socio-demographic controls	No	Yes	Yes	Yes
Work characteristic controls	No	No	Yes	Yes
Moment feeling control	No	No	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Ordinary least square specifications; based on LISS panel data (2008-2019).
All estimates include dummy variables for year of survey and constant term.

Table 3.6 – Working Hours and Underemployment - Parameter Estimates Effects of Underemployment per Work Hours Category on Life Satisfaction

Variable	OLS with fixed-effects			
	Life satisfaction Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)
Underemployment Ref: No mismatch				
Short part-time and Underemployed	-0.14* (0.08)	-0.14* (0.05)	-0.18** (0.05)	-0.13* (0.08)
Part-time and Underemployed	-0.07 (0.08)	-0.05 (0.08)	-0.07 (0.08)	-0.08 (0.07)
Full-time and Underemployed	-0.10 (0.13)	-0.12 (0.13)	-0.13 (0.13)	-0.13 (0.10)
More than 40 hours per week and Underemployed	-0.26 (0.22)	-0.28 (0.22)	-0.11 (0.13)	-0.29 (0.17)
Post estimation test				
Short part-time = Part-time	0.48	0.42	0.34	0.55
Part-time = Full-time	0.81	0.68	0.81	0.66
Full-time = More than 40 hours per week	0.60	0.59	0.61	0.45
Short part-time = Full-time	0.79	0.87	0.67	0.97
Short part-time = More than 40 hours per week	0.64	0.58	0.73	0.40
Part-time = More than 40 hours per week	0.42	0.36	0.43	0.25
Observations	2,612	2,612	2,612	2,612
R-Squared Overall	0.01	0.04	0.05	0.17
Time fixed-effects	Yes	Yes	Yes	Yes
Socio-demographic controls	No	Yes	Yes	Yes
Work characteristic controls	No	No	Yes	Yes
Moment feeling control	No	No	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Ordinary least square specifications; based on LISS panel data (2008-2019).

All estimates include dummy variables for year of survey and constant term.

Other Sensitivity Analyses

First of all, we tested whether the result was sensitive to another definition of subjective well-being. The main results of Table 3.2 highlighted a negative relationship between life satisfaction and underemployment and no significant relationship with overemployment. In Column (1) of Table 3.7, we used the happiness level of the worker as the dependent variable. More precisely, respondents answered the following question: "On the whole, how happy would you say you are?". The rating scale is from zero, totally unhappy, to ten, totally happy. We estimated that underemployment led to a reduction of happiness levels of about 0.07 points and we found no significant relationship between overemployment and life satisfaction. Although the overall effect had not changed, the coefficient magnitude of underemployment had slightly decreased from 0.09 points using the life satisfaction scale to 0.07 points using the happiness scale. This small difference may be explained by the fact that the question on life satisfaction involves cognitive appraisals, based on aspirations, expectations and values, while the question on happiness is more reliant on the sensory system (Veenhoven, 2000).

The literature on work hours mismatch and mental health sometimes defines work hours mismatch as a four-hour deviation between actual and desired hours occurred (Otterbach et al., 2016; Miranti and Li, 2020; De Moortel et al., 2018). To test the reliability of the result with an alternative categorization of working hours mismatch we defined underemployment and overemployment as a deviation of four hours or more between the actual and the preferred hours. Individuals experiencing less than four hours mismatch are then classified into the category "No work hours mismatch". The results are displayed in Column (2) of Table 3.7. Using this stricter definition of working hours mismatch substantially changed the group of under- and overemployed workers and the main results. Firstly, the group of under- and overemployed workers largely decreased: approximately 90 percent of the the workers now belonged to the correctly matched group. Secondly, the coefficient magnitude of underemployment sharply increased from 0.09 points using the former definition of working hours mismatch to 0.36 using the latter definition of working hours mismatch. This result was in line with results from Table 3.5., that is to say, only individuals who where underemployed at least four hours a week were negatively impacted by underemployment. Thirdly, the effect of overemployment on life satisfaction turned out to be large, significant and negative. For instance, on average overemployed workers tend to grade their life satisfaction 0.24 points less than those who experienced no working hours mismatch or strictly

less than four hours mismatch. This result is interesting, because it means that only four hours of overemployment negatively impacted workers' life satisfaction. We should be careful, however, with the interpretation of the result, because of the smaller sample size. Please note, that the difference in coefficient size between overemployment and underemployment was statistically significant.

Lastly, we ran a regression where under- and overemployment were defined as continuous variables with a quadratic term of mismatched working hours. Once again, Column (3) of Table 3.7 showed that underemployment hours were negatively associated with life satisfaction, although the quadratic term suggests that this occurs at a rather small, diminishing rate. Column (4) exhibited results for overemployment hours. We estimated that overemployment hours had a very small negative effect on life satisfaction.

Table 3.7 – Alternative Specifications

OLS with fixed-effects				
Variable	Happiness Model (1)	Life satisfaction Model (2)	Life satisfaction Model (3)	Life satisfaction Model (4)
		At least four hours mismatch		
Work hours mismatch. Ref: No mismatch				
Underemployment	-0.07* (0.04)	-0.36*** (0.10)	-	-
Overemployment	-0.03 (0.03)	-0.24*** (0.09)	-	-
Hours of underemployment	-	-	-0.03*** (0.01)	-
Hours of underemployment square	-	-	0.00*** (0.00)	-
Hours of overemployment	-	-	-	-0.01* (0.00)
Hours of Overemployment square	-	-	-	0.00*** (0.00)
Work hours categories. Ref: Full-time				
Short part-time	0.17 (0.09)	0.03 (0.07)	0.01 (0.09)	0.04 (0.08)
Part-time	0.09 (0.05)	0.04 (0.05)	0.05 (0.06)	0.02 (0.05)
Long hours	0.02 (0.05)	0.02 (0.04)	0.01 (0.05)	0.00 (0.04)
Post estimation test				
No mismatch = Underemployment	0.08*	0.00***	-	-
No mismatch = Overemployment	0.23	0.01***	-	-
Overemployment = Underemployment	0.36	0.02**	-	-
Observations	4,414	5,165	2,612	4,482
R-Squared Overall	0.30	0.30	0.19	0.25
Time fixed-effects	Yes	Yes	Yes	Yes
Socio-demographic controls	Yes	Yes	Yes	Yes
Work characteristic controls	Yes	Yes	Yes	Yes
Moment feeling control	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Ordinary least square specifications; based on LISS panel data (2008-2019).

All Estimates include dummy variables for year of survey and constant term.

3.6 Discussion

My primary question was to estimate the effect of working hours mismatch on life satisfaction in the Netherlands. As a contribution, we provide a comprehensive review of the literature on this topic and contribute to the empirical evidence base for the Dutch case.

Based on longitudinal data from the LISS study (2009-2019) we built an OLS with fixed-effects estimator and we found that it is not absolute amount of working time that matters when explaining subjective well-being but rather the mismatch between actual and preferred hours. More precisely, we estimated that in the Netherlands underemployment reduced life satisfaction by about 0.08 to 0.10 of a point. These findings held with different model specifications. Additionally, we highlighted that four hours of underemployment or more and short part-time jobs and underemployment are more conducive to lower life satisfaction. Overemployment, however, did not affect workers life satisfaction, with the exception of workers with a lot of autonomy in their job or with a high level of education.

On the one hand, it appears that no gains in utility will arise from eliminating or reducing overemployment. One explanation may be that the internal labor market is a more important vehicle for career advancement in the Netherlands. If we suppose that high level jobs are allocated through internal labor markets, then overemployed workers would accept long hours of work although job offers do not match their working time preferences. Thus, the potential work-life imbalances caused by overemployment might be compensated by the promise of an intrinsically rewarding job and a succesful career. On the other hand, despite the low rate of involuntary part-time workers in the Netherlands, underemployment remains detrimental for the subjective well-being of Dutch workers. We suppose that financial distress and under-utilization of skills may both explain the negative effect of underemployment on Dutch workers. Further, the contextually low rate of underemployment among the Dutch population may accentuate the individual perception of underemployment penalties by the underemployed.

A secondary question was to identify the moderators of the relationship between working hours mismatch and life satisfaction. We explore the moderating role of socio-demographics and job features in this relationship in the robustness section. No evidence for parental status - or gender - difference was found. This

finding showed that it is not always relevant to run separate gender analysis when studying life satisfaction. The marital status, however, played a role. Indeed, being in a couple helped workers to cope with overemployment, while underemployment was more bearable for single workers. In line with this result, [Lepinteur \(2019\)](#) estimates that the negative effect of overemployment on health is lower for those who live with an overemployed partner. In a linked live perspective, one may argue that overemployment is more bearable for individuals in a couple because they may benefit from partner support. On the contrary, financial stress induced by underemployment can lead to conflicts between partners. Finally, we observed that overemployment was detrimental for highly educated workers and workers high job autonomy. We supposed that the "new lumpiness" of work, e.g. the predominance of post-Fordist working conditions among Dutch companies - high degrees of job autonomy and increasing workload - contributed to an increase in work-life conflict and so to a reduction of workers' life satisfaction. Further, We estimated that a low level of job recognition accentuated the negative impact of underemployment on life satisfaction.

These results are similar to some estimates in the existing literature on the relationship between mismatched working hours and life satisfaction. For instance, a similar pattern was found in Germany ([Kugler et al., 2016](#); [Wunder and Heineck, 2013](#)), the United Kingdom ([Angrave and Charlwood, 2015](#)) and the United-States ([Golden and Okulicz-Kozaryn, 2015](#)). Using German SOEP data [Wunder and Heineck \(2013\)](#) find that losses from underemployment are larger than losses from overemployment. Further, they estimate that men and women experience lower well-being when their partner is underemployed. In a more recent study [Kugler et al. \(2016\)](#) compare the effects of work hours mismatch in Germany and Australia. In line with the results of the previous study, they estimate that overemployed German males do not experience substantially lower life satisfaction than matched ones, while underemployment lowers German workers' life satisfaction. In contrast, among Australian women short hours of overemployment appear to be more negative for well-being than short hours of underemployment. In line with my results from the heterogeneity section, however, they indicate that this pattern is reversed for longer mismatch hours, as the decline in life satisfaction is stronger for underemployment than for overemployment once a threshold of approximately ten mismatched hours is crossed. [Wooden et al. \(2009\)](#) and [Wilkins \(2007\)](#) report comparable results for Australia. [Wooden et al. \(2009\)](#) highlight a negative association between every type of working-hours mismatch and life satisfaction.

Additionally, [Wilkins \(2007\)](#) reported that the negative effect of underemployment on life satisfaction is particularly large for part-time workers who would like to work full-time. This result is in line with findings from the robustness part. [Golden and Okulicz-Kozaryn \(2015\)](#) estimate that overemployment has no significant impact on life satisfaction, while underemployment has a slightly negative and significant impact upon it. A Slightly different path is found in the United Kingdom by [Angrave and Charlwood \(2015\)](#). Using BHPS they find that both overemployment and underemployment are associated with lower subjective well-being. They mentioned, however, that three-quarter of mismatches were resolved within a year and find evidence for the adaptation effect except when mismatches related to overemployment went on for more than two years. In this case adaptation was only partial; life satisfaction and psychological well-being remained lower than they were prior to the mismatch.

All in all, these results are in favour of public policy reducing work hours mismatch. From an employee perspective it is beneficial because it raises the possibility of choosing the ideal amount of time devoted to work and personal life and so it enhances their subjective well-being. From an employer perspective, reducing mismatch between actual and preferred working hours is a way to support employee well-being and thus to reduce turn-over, sick leave and increase workers performance. In that respect, the ‘Wet Flexibel Werken’ (Flexible Working Hours Act) that provides employees with the right to request flexible work arrangements subject to business needs is a first step towards enabling employees to adjust their hours of work according to their preferences. But it should be accompanied by an upward revaluation of the hourly wage rate in order to allow short hours workers to achieve economic independence.

This study faced some limitations. Firstly, it did not deal with external validity. Indeed, the analysis was undertaken with longitudinal data from the Netherlands. Secondly, my empirical strategy did not allow me to control for different sources of endogeneity. Notably, we cannot establish the causal direction of the relationship under study. As a consequence, the presence of reverse causation - i.e. individuals with lower levels of subjective well-being could be more likely to experience working hours mismatch - cannot be excluded. Another potential source of results bias may arise from time-varying unobserved heterogeneity, such as partner characteristics.

Even though this study is subject to methodological shortcomings, my analysis is innovative in several ways. First of all, the research questions are investigated using 12 waves of the LISS panel data. To the best of my knowledge, this is the first study to provide evidence on working hours mismatch and subjective well-being in the Netherlands. Secondly, most of the research on work hours mismatch and life satisfaction are correlation findings. The panel structure of the data allowed me to control for time constant unobserved heterogeneity. Thirdly, it is among the first to describe the moderating role of socio-demographic and job characteristics, such as job autonomy, in the relationship between hours mismatch and life satisfaction.

This study encourages future research on the exploration of the link between mismatched working hours and subjective well-being to further explore the mechanism that might explain the negative impacts of working hours mismatch on subjective well-being. Another path of research, under the recommendation of [Kugler et al. \(2016\)](#), can be to elaborate a more detailed analysis of the reference state of the respondent (e.g. to compare individuals with the same amount of desired working hours). One other research area may be to clarify the causal link between working hours mismatch and life satisfaction.

3.7 Appendix

3.7.1 Appendix A: Overview of Studies on Working Hours Mismatch and Well-being

Table A.1 – Overview of Studies on Working Hours Mismatch and Well-being

Study	Data	Outcome(s)	Model and estimation	Results
Bartoll and Ramos (2020)	Europe, EWCS 2015, 28 countries, employees, 27-58 years, no side job	WHO-5 Health Organization Well-being Index (WHO-5) (101- point scale) work hours categories	three categorical variables (1) underemployed per four work hours categories (2) unconstrained per four (3) overemployed per four work hours categories Multilevel model Interaction with job quality	<ul style="list-style-type: none"> • long hours overemployed: -7 to -4 (men) • Overemployment: -6 to -3 (women) • Underemployment: -17 to -5 (women) • cofounding role of job quality
Miranti and Li (2020)	Australia, HILDA, 2001-2016 population aged 45-65 years	SF-36 measure of health and well-being (101-point scale)	Number of hours overemployed Number of hours underemployed Job demand, job control OLS fixed-effects	<ul style="list-style-type: none"> • overemployment: -0.04 (women) • overemployment: -0.07 (men) • underemployment: -0.16 (women) • overemployment: -0.07 (men)
Krekel et al. (2019)	International Social Survey Program 2015	job satisfaction (6-point scale)	hours of underemployment hours of underemployment OLS country fixed-effects	<ul style="list-style-type: none"> • Overemployment: insign. • Underemployment: -0.03
De Moortel et al. (2018)	Germany, GSOEP, 2006, 2008, employees	Mental component summary score (101-point scale)	categorical variable: matched (ref.), underemployed, overemployed Job rewards, conditional change model, pooled OLS	<ul style="list-style-type: none"> • Overemployed: -2.7 to -0.1 • Underemployed: insignificant • higher job rewards did not protect the mental health of under and overemployed workers
De Moortel et al. (2017)	Europe, European Social Survey 2004-2005, 2010, 21 European countries, employees, 15-65 years	three items from WHO-5	five categories variable for hours mismatch: voluntary and involuntary Short hours and long hours, Multilevel model	<ul style="list-style-type: none"> • Involuntary long hours: -0.11 (Men),-0.15 (Women) • Involuntary and voluntary short hours: -0.14 and -0.19 (Women only)

Study	Data	Outcome(s)	Model and estimation	Results
Kugler et al. (2016)	German and Australian, GSOEP and HILDA (2001-2012) employees, 20-60 years	Life satisfaction (11-point scale)	number of desired hours number of mismatch hours linear additive mixed model	<ul style="list-style-type: none"> life satisfaction is highest in the absence of hours mismatch In Australia workers tolerate some hours of underemployment in Australia the marginal loss from underemployment is larger if the mismatch exceeds ten hours. In germany, underemployment is more detrimental for well-being than overemployment.
Angrave and Charlwood (2015)	UK, BHPS, 1991-2008 18-65 years, active population	job- life satisfaction (7-point scale), and psychological well-being (3-point scale)	categorical variable: full-time match (ref), eight categories per working time and under- over employed, match status	<ul style="list-style-type: none"> overemployment: -0.24 to -0.27 (job satisfaction); -0.10 to -0.11 (psychological well-being); -0.10 to -0.12 (life satisfaction) for men 35-40 hours underemployment: -0.18 (job satisfaction); -0.11 (psychological well-being); -0.12 (life satisfaction) for men Overemployed:-0.25 to -0.33 (job satisfaction); -0.15 to -0.20 (psychological well-being); , -0.11 to -0.17 (life satisfaction) for women part-time underemployed: -0.12 to -0.08 (psychological well-being); -0.16 to -0.13 (life satisfaction)
Golden and Okulicz-Kozaryn (2015)	Pooled data US, US general social survey (1972-2012)	Happiness (3-point scale)	dummy for underemployed dummy for overemployed pooled OLS	<ul style="list-style-type: none"> underemployed : -0.2 overemployed : insignificant
Başlevent and Kirmanoğlu (2014)	Europe, European Social Survey (ESS) 2010, 27 countries, employees, excluded person with permanent disability	Life satisfaction (11-point scale)	continuous variable underemployed continuous variable overemployed ordinal logistic model	<ul style="list-style-type: none"> Underemployment: -0.02 Overemployment: -0.01 smaller effects if high unemployment rate No gender difference
Wunder and Heineck (2013)	Germany, SOEP 1985-2011, couples (both employed, 30-60 years)	Life satisfaction (11-point scale)	hours of underemployment and hours of overemployment, linear fixed effects regression IV regression	<ul style="list-style-type: none"> underemployment : -0.02 to -0.01 (women and men) females and overemployment: -0.01 males and overemployment: insign., partner's underemployment: -0.01, partner's overemployment: insign.
Wooden et al. (2009)	Australia, HILDA 2001	job an life satisfaction (11-point scale)	dummy for underemployment, panel data analysis	<ul style="list-style-type: none"> Underemployment: -0.01 Life satisfaction for men and women Underemployment and overemployment : -0.2 (men) and -0.03 (women) Job satisfaction Overemployment : -0.1 life satisfaction for men and women
Wilkins (2007)	Australia, HILDA 2001	job and life satisfaction (11-point scale)	categorical variable: match (ref), underemployment, overemployment, linear fixed-effect	<ul style="list-style-type: none"> part-time and underemployment: -0.4 full-time and underemployment : insign. except for men
Friedland and Price (2003)	US, Americans' Changing Lives (ACL) study 1986, 1989, 25 years and older, persons in the labor force	health measures, psychological well-being, and life satisfaction	dummy for underemployment, dummy for overemployment, hierarchical regressions	<ul style="list-style-type: none"> underemployment: -0.043 (positive self-worth), 0.075 (job satisfaction), insignificant (life satisfaction) overemployment:-0.06 (job satisfaction), insignificant (life satisfaction)

3.7.2 Appendix B: Merge Procedure

To run our analysis we combined different module from the LISS panel data. The personality questionnaire from LISS Core study contains informations on subjective well-being, the questionnaire background incorporates socio-demographic informations, the questionnaire social integration and leisure includes information on informal care provisions, the questionnaire work and schooling information on working time, and the questionnaire on health contains questions on objective health. In order to ensure consistency in our merge we made sure that for each year the selected questionnaire was the closest and before the month on which the questionnaire about personality was administered. We made this choice because life satisfaction was our main dependent variable.

Table B.1 – Merge procedure

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Personality	05-08/2008	05-06/2009	05-06/2010	05-06/2011	05-06/2012	05-06/2013	11-12/2014	11-12/2015	-	05-06/2017	05-06/2018	05/2019
Background	07/2008	05/2009	05/2010	05/2011	05/2012	05/2013	12/2014	12/2015	-	05/2017	05/2018	05/2019
Social Integration and Leisure	02-05/2008	02-03/2009	02-03/2010	02-03/2011	02-03/2012	02-03/2013	02-03/2014	10-11/2015	-	10-11/2016	10-11/2017	10-11/2019
Work and schooling	04-05/2008	04-05/2009	04-05/2010	04-05/2011	04-05/2012	04-05/2013	04-05/2014	04-05/2015	-	05-06/2017	05-06/2018	04-05/2019
Health	11/2007	11-12/2008 and 02/2008	11-12/2009	11-12/2010	11-12/2011	11-12/2012	11-12/2013	07-08/2015	-	11-12/2016	11-12/2017	11-12/2019

3.7.3 Appendix C: Definition of Variables

Table C.1 – Definitions of Variables

Variable	Definition
Life satisfaction	Score on question 'How satisfied are you with the life you lead at the moment?' (zero to ten)
Job satisfaction	Score on question 'Everything considered, I am satisfied with my job.', disagree entirely to agree entirely, (one to four).
Happiness	Score on question 'On the whole how happy would you say you are?' (zero to ten)
Working hours mismatch	0 'No mismatch' 1 'Underemployed' 2 'Overemployed'
Desired working hours	'How many hours per week in total would you like to work?'
Underemployed	Dummy variable if actually working less hours than desired.
Overemployed	Dummy variable if actually working more hours than desired.
Working hours category	0 'Short part-time' : 12h-21h 1 'Part-time' : 22h-33h 2 'Full-time' : 34h-39h 3 'Long full-time' : More than 40 hours
Age category	0 '15-24 years' 1 '25-34 years' 2 '35-44 years' 3 '45-54 years' 4 '55-64 years' 5 '65 years and older'.
Health	Dummy variable if suffer from any kind of long-standing disease.
Marital status	0 'Single' 1 '(Un)married co-habitation, without child' 2 '(Un)married co-habitation, with child(ren)' 3 'Single, with child(ren)'.
Education level	Highest level of education with diploma.
Child(ren)	Number of living-at-home children in the household.
Work hours	The addition of weekly actual working hours and weekly working hours in a side job.
Log of standardized income	Log of the net household income divided by the square root of household members.
Living environment	Urban character of place of residence (one to five)
Feel	'How do you feel at the moment?' (one to seven)
Work contract	0 'Employee in permanent employment' 1 'Employee in temporary employment' 3 'on-call employee' 4 'Temp-staffer' 5 'Self-employed/freelancer' 6 'Independent professional' 7 'Director of a limited liability or private limited company' 8 'Majority shareholder director'
Sector	1 'agriculture, forestry, fishery, hunting' 2 'mining' 3 'Industrial production' 4 'Utilities production, distribution and/or trade' 5 'Construction' 6 'retail trade' 7 'Catering' 8 'Transport, storage and communication' 9 'Financial' 10 'Business services' 11 'Government services, public administration and mandatory social insurances' 12 'Education' 13 'Healthcare and welfare' 14 'Environmental services, culture, recreation and other services' 15 'Other'

Table C.2 – Definitions of Variables

Variable	Definition
Profession	1 "Higher academic or independent profession" 2 "Higher supervisory profession" 3 "Intermediate academic" 4 "Intermediate supervisory or commercial" 5 "Other mental work" 6 "Skilled and supervisory manual work" 7 "Semi-skilled manual work" 8 "Unskilled and trained manual work" 9 "agrarian profession"
Self-employed	Dummy variable if the respondent is self-employed.
Physical Job	"Your work is physically demanding." (Often, Sometimes, Never)
Job Autonomy	"There is little freedom for me to determine how to do my work." (completely agree to completely disagree)
Work support	"I get sufficient support in difficult situation." (one to four)
Job Recognition	"I get the appreciation I deserve for my work." (one to four)
Career prospect	"My prospect of career advancement/promotion in my job are poor." (one to four)
Job Certainty	"It is uncertain whether my job will continue to exist." (one to four)
Year	Year dummies (2008-2019), reference year is 2008

3.7.4 Appendix D: Detailed Results

Table D.1 – The impact of Mismatch Hours on Life Satisfaction (detailed)

OLS with fixed-effects				
	model (1)	model (2)	model (3)	model (4)
Work hours mismatch. Ref: No mismatch				
Underemployment	-0.10*	-0.08*	-0.08*	-0.09**
	(0.05)	(0.05)	(0.05)	(0.04)
Overemployment	-0.03	-0.03	-0.03	-0.01
	(0.25)	(0.03)	(0.03)	(0.03)
Work hours category. Ref: Full-time				
Short-part-time	0.02	0.03	-0.01	0.03
	(0.09)	(0.08)	(0.09)	(0.07)
Part-time	0.03	0.05	0.04	0.03
	(0.06)	(0.05)	(0.06)	(0.05)
Long hours	0.00	0.00	0.01	0.02
	(0.05)	(0.05)	(0.05)	(0.04)
Age categories. Ref: 15-24 years				
25-34 years		0.10	0.10	0.13
		(0.13)	(0.14)	(0.12)
35-44 years		0.24	0.25	0.27*
		(0.16)	(0.16)	(0.14)
45-54 years		0.23	0.23	0.22
		(0.18)	(0.18)	(0.16)
55-64 years		0.30	0.31	0.26
		(0.20)	(0.20)	(0.17)
65 and more		0.47**	0.47**	0.38*
		(0.22)	(0.23)	(0.20)
Objective health		0.15**	0.16**	0.13**
		(0.07)	(0.07)	(0.06)
Marital status. Ref: Single				
Cohabitation without children		0.16***	0.13***	0.12***
		(0.15)	(0.15)	(0.12)
Cohabitation with children		0.27**	0.23**	0.15*
		(0.16)	(0.15)	(0.13)
Single with children		0.16	0.11	0.18
		(0.19)	(0.19)	(0.15)
Other		-0.05	-0.07	-0.04
		(0.29)	(0.29)	(0.23)
Educational status. Ref: Primary school				
Intermediate secondary education		-0.14	-0.17	-0.05
		(0.39)	(0.39)	(0.48)
Higher secondary education		-0.35	-0.42	-0.20
		(0.41)	(0.40)	(0.46)
Intermediate vocational education		0.27	0.20	0.30
		(0.38)	(0.38)	(0.47)
Higher vocational education		0.23	0.17	0.23
		(0.38)	(0.38)	(0.46)
University		-0.02	0.09	0.24
		(0.42)	(0.42)	(0.47)
Others		-0.02	-0.08	-0.01
		(0.39)	(0.39)	(0.48)
Not yet completed any education		0.72**	0.81**	0.54*
		(0.34)	(0.33)	(0.45)
Not yet started any education		-0.35	-0.37	-0.31
		(0.43)	(0.42)	(0.53)

	model (1)	model (2)	model (3)	model (4)
Number of children living at home		-0.13**	-0.13**	-0.09*
		(0.05)	(0.05)	(0.05)
Living environment. Ref: Extremely urban				
Very urban		0.04	0.04	0.12
		(0.14)	(0.14)	(0.11)
Moderately urban		0.03	0.02	0.09
		(0.15)	(0.14)	(0.12)
Slightly urban		-0.10	-0.09	0.04
		(0.16)	(0.16)	(0.14)
Not urban		0.03	0.03	0.11
		(0.16)	(0.16)	(0.13)
Work contract. Ref: employee in permanent employment				
Employee in temporary employment			0.03	-0.02
			(0.08)	(0.06)
On-call employee			0.35	0.28
			(0.41)	(0.31)
Temp-staffer			0.33*	0.25*
			(0.17)	(0.14)
Self-employed/freelancer			0.19	0.18
			(0.17)	(0.13)
Independent professional			0.14	0.15
			(0.29)	(0.30)
Director of a limited liability or private company			-0.58	-0.59*
			(0.43)	(0.30)
Majority shareholder director			-0.50**	-0.42*
			(0.24)	(0.25)
Sector activity. Ref: Agriculture, forestry, fishery, hunting				
Industrial production			0.19	0.35*
			(0.21)	(0.21)
Utilities production distribution			-0.01	-0.01
			(0.56)	(0.31)
Construction			0.54**	0.60***
			(0.26)	(0.22)
Retail trade			0.08	0.31*
			(0.19)	(0.18)
Catering			-0.06	0.00
			(0.31)	(0.26)
Transport, storage and communication			0.03	0.09
			(0.27)	(0.24)
Financial			0.15	0.23
			(0.25)	(0.25)
Buisness services			0.25	0.40**
			(0.20)	(0.18)
Government services, public administration			0.07	0.33*
			(0.22)	(0.20)
Education			0.18	0.36
			(0.23)	(0.23)
healthcare and welfare			0.55**	0.66***
			(0.22)	(0.20)
Environmental services, culture			0.12	0.12
			(0.22)	(0.18)
Other			0.05	0.25
			(0.16)	(0.16)
Profession. Ref: Higher academic or independent profession				
Higher supervisory profession			0.24	0.22
			(0.25)	(0.21)
Intermediate academic or independent profession			0.34	0.34
			(0.26)	(0.22)

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	model (1)	model (2)	model (3)	model (4)
Intermediate supervisory or commercial profession			0.45 (0.28)	0.41* (0.24)
Other mental work			0.36 (0.27)	0.34 (0.23)
Skilled and supervisory manual work			0.40 (0.29)	0.29 (0.25)
semi-skilled manual work			0.45 (0.30)	0.48* (0.26)
Unskilled and trained manual work			0.45 (0.28)	0.47* (0.27)
Agrarian profession			0.48 (0.39)	0.50 (0.37)
Side job			-0.07 (0.08)	-0.01 (0.06)
Log of adjusted household income			0.03* (0.09)	0.06* (0.08)
Moment Feeling				0.46*** (0.03)
2009	-0.07 (0.05)	-0.07 (0.05)	-0.06 (0.05)	0.00 (0.04)
2010	-0.08 (0.05)	-0.08 (0.05)	-0.08 (0.05)	-0.05 (0.04)
2011	-0.11** (0.05)	-0.11** (0.05)	-0.11** (0.05)	-0.04 (0.04)
2012	-0.18*** (0.05)	-0.19*** (0.06)	-0.19*** (0.06)	-0.10** (0.05)
2013	-0.10* (0.06)	-0.12** (0.06)	-0.12** (0.06)	-0.04 (0.05)
2014	-0.21*** (0.06)	-0.24*** (0.06)	-0.24*** (0.06)	-0.10* (0.05)
2015	-0.14** (0.06)	-0.18*** (0.06)	-0.18*** (0.06)	-0.11** (0.05)
2017	-0.13** (0.06)	-0.18*** (0.06)	-0.19*** (0.07)	-0.09 (0.06)
2018	-0.13** (0.06)	-0.19*** (0.07)	-0.20*** (0.07)	-0.14** (0.06)
2019	-0.26*** (0.06)	-0.33*** (0.07)	-0.35*** (0.08)	-0.22*** (0.07)
Constante	7.74*** (0.06)	7.09*** (0.44)	6.30*** (0.97)	3.16*** (0.89)
Observations	5,165	5,165	5,165	5,165

* p<0.10, ** p<0.05, *** p<0.010

General Conclusions

Conclusions

The overall aim of this thesis has been to provide insight into how work-life balance arrangements - more specifically, parental leave and flexible work hours arrangement - affect life satisfaction in the Netherlands; further, to highlight the relationship between informal care provision and subjective well-being. All in all, this thesis contribute to the emerging literature on the link between work-life balance and subjective well-being.

This dissertation proposes an empirical investigation of this relationship in the case of the Netherlands in the 21st century using LISS panel data administered by CentER data, Tilburg University, the Netherlands. The empirical analysis, conducted using different econometric models responding to the different research questions, enables me to study causal linkage (chapter 1, 2, and 3). This thesis has approached human well-being from a subjective angle and has included the factor affecting life satisfaction that seemed relevant by social scientists. I conducted three quantitative studies on the Dutch population and established three distinct literature reviews in discussing relevant aspects for each study. The overall research question has been as follows: *How do work-life balance arrangements affect life satisfaction in the Netherlands?*

The thesis adds empirical evidence to the social science literature on the link between subjective well-being and work-life balance. The specific contribution to the debate on this link is to study the effects of parental leave scheme, informal care provision and working hours mismatch on life satisfaction. The results of this research provide insights relevant not only for academia, but also for company management organization, policymakers and individuals.

In this final section, I summarize the goal, and the results presented in this thesis, namely the main findings of this research and its contributions to the research field of Economics of Happiness. Then, I highlight some limitations of my research and point out possible future improvements and open avenues for future research on work-life balance and subjective well-being.

Main Findings

This thesis presents an empirical analysis of the relationship between *work-life balance arrangements* and subjective well-being. Each of the chapters encompassed uses life satisfaction to measure subjective well-being and explores the moderating roles of individual characteristics and working conditions on the relationship studied. chapter 1 investigates the impact of taking parental leave on parent's life satisfaction across different socio-economic groups of individuals. Then, chapter 2 enquires the causal effect of informal care provision on caregivers' life satisfaction. Special attention is given to the moderating effect of the specificity of care and socio-demographic characteristics of the respondent on the relationship. Finally, chapter 3 explores the moderating role of socio-demographic and job characteristics on the relationship between hours' mismatch and life satisfaction.

The summaries displayed below present the main ideas of three chapters, how they contribute to the overall research interest of the thesis, and the empirical and theoretical motivation. Finally, they outline the findings and implications.

Chapter 1:

Parental Leave and Life Satisfaction: Evidence from the Netherlands

The first chapter contributes to the overall subject of the thesis, Work-life balance and subjective well-being - by studying the effect of parental leave schemes on the subjective well-being of parents with young children. The research questions are as follows: Does parental leave moderate the effect of having children on life satisfaction? How does the length, intensity, and payment scheme of the parental leave program moderate the relationship between parental leave and life satisfaction? Finally, for whom is parental leave more conducive to parental well-being?

This chapter starts from the theoretical assumption that parenting implies family obligations and time constraints leading to an increase in work-family conflict [Tausig and Fenwick \(2001\)](#), and that those conflicts are in turn negatively impacting parent's life satisfaction ([Greenhaus et al., 2003](#); [Amstad et al., 2011](#)). Moreover, the literature highlights that family involvement is associated with higher levels of well-being ([Adams et al., 1996](#)). Thus, I supposed that Dutch parents of a child younger than eight that take a part-time parental leave arrangement may be able to reconcile their family and work life better, and thus enhance their life satisfaction. Additionally, I stated that a parental leave scheme can increase the life satisfaction of parents with a young child in two complementary ways: first by ensuring a job-protected leave, and second by offering financial support during the leave ([Ray et al., 2010](#)). This chapter contributes to the debate on the right to paid parental leave and gender equality in parental leave take-up ([Hamplová, 2018](#); [Commission, 2017](#); [D'Addio et al., 2014](#); [Berger, 2009](#); [Pezzini, 2005](#)). The chapter contribute to this debate by providing empirical evidence in the Netherlands and by exploring how the legal framework of parental leave enhances parental well-being. Moreover, I studied gender differences in the way parental leave is experienced.

The results indicate that although having a child younger than eight has no significant effect on parental life satisfaction, the life satisfaction level is significantly higher among parents with a young child who are on parental leave. This finding confirms the hypothesis that a family leave scheme reduces the perceived '*time bind*' of parents and increases their subjective well-being. However, A reduction of working time to take care of children outside the Dutch parental leave scheme

does not affect life satisfaction. This result indicates that the legal framework of parental leave offering job-protected, the legal obligation for an employer to accept rescheduling a parents' work arrangement, the possibility to use the LCSS, access to fiscal benefits, and in some case financial support are crucial to enhance parents life satisfaction. The findings hold using different estimation strategies and alternative definitions of the dependent variable. Further, results from the heterogeneity analysis show that men, individuals earning more than 1,600€ net per month, and those working in the private sector are more satisfied with their life when taking parental leave. None of these differences, however, are significant between subgroups. Additionally, the heterogeneity analysis revealed that short parental leave schemes (i.e., between one month and eighteen months of leave) are significantly more conducive to life satisfaction than long parental leave schemes.

The findings indicate that the use of paid parental leave should be promoted and encouraged by the state and by companies. The recent European directive on work-life balance for parents careers will, in this regard, help to promote paid parental leave supported by national laws ([Commission, 2017](#)).

Chapter 2:

Informal Caregivers and Life Satisfaction: Evidence from the Netherlands

The second chapter studies the causal effect of informal care on caregivers' life satisfaction, and how the frequency of care, the relationship with the care recipient and the kind of care provided differently affect caregivers' life satisfaction. This chapter is part of the literature on the relationship between informal care and life satisfaction.

The main hypothesis developed in this chapter is that informal harms life satisfaction because caregiving implies perceived overload due to the difficulty of combining leisure time, family duties, work demands, and care tasks, and because the decline in the health status of the care recipient negatively affects one's emotions negatively ([Chen et al., 2019](#); [MacDonald, 2019](#); [Bom et al., 2018](#); [Weatherly et al., 2014](#); [Leigh, 2010](#); [Bookwala, 2009](#); [Van Den Berg and Ferrer-i Carbonell, 2007](#); [Borg and Hallberg, 2006](#); [Schulz et al., 1990](#)). I analyze the effect of informal care provision on life satisfaction using LISS panel data from 2009 to 2018. Our first

concern was to estimate the causal effect of providing care Dutch caregivers' life satisfaction. The majority of studies focusing on the effects of providing informal care on subjective well-being is subject to methodological shortcomings, such as the use of the cross-sectional databases (Van Den Berg and Ferrer-i Carbonell, 2007; Borg and Hallberg, 2006) and not dealing with endogeneity biases such as unobserved heterogeneity and reverse causality. I identify two potential sources of endogeneity; namely reverse causality and omitted variable bias. On one side, informal care estimates may be downward biased due to reverse causality, i.e., individuals providing informal care are more satisfied with their life. However, on the other side, the care effect might be overestimated if some potential explanatory variables are missing. In order to control for these sources of endogeneity, I used a dynamic Arellano-Bond system GMM model. Further, a matching method is used to deal with selection bias that might occur when analyzing the decision to care. No evidence supporting a selection issue is found.

The findings show that using a simple OLS regression with fixed-effects would lead to underestimating of the care effect by approximately 300 percent. This large coefficient size, however, might be partly explained by the heterogeneous nature of the informal care provision. All in all, I find evidence for the harmful effect of caregiving on life satisfaction. This result is consistent with Chen et al. (2019), Bom et al. (2019), Do et al. (2015) and Coe and Van Houtven (2009) findings. Moreover, heterogeneity analysis indicates that spousal caregivers experience more adverse effects on the reported life satisfaction. The reason for this effect could be that spousal caregivers are more likely to provide regular and intensive support. This result may also stem from the difficulty of estimating the actual time dedicated to care when caregivers and care recipients live together. Further, I found that those who faced the double burden of care and full-time employment experienced the most severe negative life satisfaction effect. Overall, these results are robust to various identification and methodological issues and not sensitive to the use of alternative definitions and instruments.

This chapter contributes to the literature in several ways. First, it identifies the causal impact of informal care provision on caregivers' life satisfaction leading to a better understanding of the relationship between informal care and life satisfaction. The second contribution of this chapter is the case study of the Netherlands. The political context is all the more interesting given that between 2007 and 2015 the Dutch government undertook a normative reorientation towards greater individual

responsibility in long-term care. These reforms have been implemented to shift the responsibility of care towards the family and/or the local community. Consequently, the new arrangement may make informal care an obligation, even while caregivers are offered limited opportunities to arrange their working hours accordingly.

Chapter 3:

Working Hours Mismatch and Subjective Well-being:

Evidence from the Netherlands

The third chapter explores the role of working time preferences and hours mismatch in workers' subjective well-being. My main hypothesis is that not choosing one's working time may generate conflict between one's personal life and working life. To test this hypothesis, I implicitly use working hours mismatch as a proxy of work-life conflict. According to the Person-Environment for theory (P-E fit), if there is a perceived match between a person's values and the environment's resources to fulfill those values, the individual will experience greater well-being and higher levels of work-family facilitation (Edwards et al., 1998). Thus, a large body of literature highlights that it is instead the difference between the actual and the desired number of work hours rather than the total number of hours that matters for life satisfaction (Krekel et al., 2019; Angrave and Charlwood, 2015; Wooden et al., 2009). This chapter attempts to answer the following questions. First, what are the effects of under- and overemployment on Dutch workers' life satisfaction? Second, what is the moderating role of socio-demographic characteristics and job features on the relationship between working hours mismatch and life satisfaction?

Based on the longitudinal data from the LISS study (2009-2019), I use an OLS regression with fixed-effects estimator and I show that it is not the absolute amount of working time that explains subjective well-being but rather the mismatch between the actual and the preferred amount. More precisely, I estimated that in the Netherlands underemployment reduced life satisfaction from 0.08 to 0.10 of a point. This finding remained robust to different model specifications. Additionally, I have shown that four hours of underemployment or more, and a short part-time job and underemployment are more conducive to lower life satisfaction. Overemployment did not affect workers' life satisfaction, except for those with a lot of autonomy

in their work or those with a high level of education. For the robustness check, I have explored the moderating role of socio-demographics and job features. No evidence for the effect of parental status or gender difference was found. This finding suggests that it is not always relevant to run separate gender analysis when studying life satisfaction. The marital status, however, played a role. Indeed, being in a couple helped workers cope with overemployment, while underemployment was more bearable for single workers. In line with this result, [Lepinteur \(2019\)](#) shows that the negative effect of overemployment on health is lower for those who live with an overemployed partner. In a linked live perspective, one may argue that overemployment is more bearable for individuals in a couple because they may benefit from their partner's support. On the contrary, financial stress induced by underemployment can lead to conflicts between partners. Finally, I have observed that overemployment was detrimental for highly educated workers and workers with high job autonomy. A possible explanation is that the *new lumpiness* of work, e.g. the predominance of post-fordist working conditions among Dutch companies - a high degree of job autonomy and increasing workload - has contributed to an increase in work-life conflict and therefore to a decrease in workers' life satisfaction. Further, I have estimated that a low level of job recognition accentuated the negative impact of underemployment on life satisfaction.

This study contributes to the literature on working hours mismatch and life satisfaction in several ways. First, to the extent of my knowledge, it is the only one to estimate the effect of under- and overemployment in the Netherlands. This case study is all the more interesting because, since the Flexible Working Hours Act, the labor market in the Netherlands allows a high degree of work hours flexibility. Thus, a mismatch in working hours is likely to lower subjective well-being, especially in a country that promotes flexible working time. Further, I highlight the moderating role of socio-demographic and job characteristics, such as job autonomy, on the relationship between work hours mismatch and life satisfaction. Thus, I estimate the intensive margin effect of underemployment on life satisfaction.

Contributions of This Research

This thesis mainly contributes to the research field of *Economics of Happiness*. In particular, the main contributions are methodological and empirical.

Methodological Implications

The main outcome of interest in this thesis is life satisfaction. This variable is measured on an ordinal scale from zero to ten. Consequently, economists tend to interpret subjective well-being as ordinally comparable (Ferrer-i Carbonell and Frijters, 2004). Thus, in theory, one should use ordered response models (i.e., ordered probit or ordered logit model) to analyze the effect of various variables on life satisfaction. However, Ferrer-i Carbonell and Frijters (2004) note that assuming cardinality or ordinality of life satisfaction scores make qualitatively little difference, while allowing for fixed-effects may change results substantially. Thus, I have used a linear fixed-effects model to estimate the impact of various variables on life satisfaction (chapter 1, 2, and 3). The longitudinal nature of our data set allows me to control for time-invariant unobserved personal characteristics. Further, homoscedasticity, defined as a constant variance of the error term) has to be met (Wooldridge, 2015). To correct for the heteroscedasticity, robust which leads to biased results of the standard error, robust standard errors are used across all our specifications. Further, all our results are not sensitive to alternative definitions of the outcomes, which are the level of happiness; and the main variables of interest.

In chapter 1, the main model was estimated using an ordered logit with a fixed-effects model to test the robustness of the results. This model provided substantively the same results as those presented in our baseline estimate. Further, the aim of chapter 2 was to overcome the methodological limitations of the OLS fixed-effects model. Indeed, Nickell (1981) proves that the fixed-effect estimator leads to inconsistent and downward biased estimates in the presence of endogeneity. As I have shown previously, there are theoretical reasons to assume the endogeneity of the decision to care (reverse causality and omitted-variable bias). Indeed, the Durbin-Wu-Hausman tests have confirmed that varying information contained in the residuals was correlated with individual regressors. Consequently, I used panel-based GMM methodology to estimate a dynamic model of life satisfaction and to deal with reverse causality, while still controlling for unobserved heterogeneity issues Powdthavee (2009). Following the suggestion given Blundell et al. (2001), I have applied the second rule-of-thumb to compare difference GMM (Arellano

and Bond, 1991b) with system GMM (Arellano and Bover, 1995b; Blundell and Bond, 1998). This test shows that a two-step system GMM model should be used. Additionally, I have applied the Windmeijer's method to correct the reported standard errors that otherwise would have been downward biased in the two-step estimation when using a finite sample.

This thesis has methodological implications for well-being research, and in particular for the determinants of subjective well-being. The methodological strategy used in chapter 1, chapter 2 and chapter 3 overcomes the main problems involved in using cross-sectional data, and consolidates a robust approach for dealing with well-being-related issues. First, the model used in chapter 1 and chapter 2 allows me to take into account individual-specific time-invariant effect. The linear fixed-effects model, however, does not consider possible reverse causality. Nevertheless, in chapter 1 I have analyzed the changes in life satisfaction over time and whether they might influence the decision to take parental leave, to examine whether reverse causality was an issue. This additional analysis allowed me to conclude that reverse causality from life satisfaction to future choice to take parental leave was not an issue. Second, using an internal instrument in chapter 3 allowed me to deal with the main sources of endogeneity, namely reverse causality, unobserved heterogeneity and dynamic endogeneity. That is to say, every first difference of the variables that were suspected to be endogenous was instrumented with suitable lagged first-difference. This methodology allowed me to go beyond most empirical applications to date. The consistency and the strength of GMM results rely on two hypotheses. First, the set of instruments has to be exogenous, i.e., not correlated with the error term. This hypothesis was validated with the Hansen test for over-identification restrictions. Secondly, there might be serial autocorrelation, meaning that error terms are correlated. To overcome this issue, I have performed first and second order serial correlation tests and have rejected this hypothesis. Further, the nearest-neighbour matching estimator (Becker and Ichino, 2002) was applied, to deal with selection bias that might occur with the decision to care. No evidence supporting a selection issue was found. This robust methodology allowed me to conclude that providing informal care has a negative causal effect on life satisfaction.

This thesis also brings particular attention to the use of moderating variables which affect the strength or nature of the relationship between two other variables (Sharma et al., 1981) - in the models of subjective well-being. Thanks to the use of moderating variables I was able to capture the influence of relevant variables

that at first glance do not appear to impact directly the well-being. In Chapter 3, the autonomy of workers in their job, which was defined as a room for workers to determine how to do their work, was not a variable that seemed to influence workers' life satisfaction directly. Nevertheless, it acted as moderating factor, affecting the relationship between overemployment and life satisfaction. Indeed, overemployment negatively impact life satisfaction for workers with a high degree of job autonomy.

Empirical Implications

This thesis provides new empirical findings on the relationship between work-life arrangement and life satisfaction in the Netherlands. In chapter 1, I have estimated that although having a child younger than eight has no significant effect on parental life satisfaction, the latter is significantly higher among those parents with a young child who are on parental leave. At the same time, I showed that a reduction of working time to take care of children outside the Dutch parental leave scheme does not affect life satisfaction. This finding is of interest for public policymakers because it indicates that the legal framework of parental leave offering job-protected leave, the legal obligation for an employer to accept rescheduling a parents' work arrangement, the possibility to use the LCSS, access to the fiscal benefit, and in some cases, financial support are crucial to enhance parents' life satisfaction. This result is also informative for the company management organization, since the implementation of work-life balance policies are likely to enhance employees' well-being. Indeed, numerous research studies have shown that positive affect are strongly correlated with various work outcomes, such as productivity, self and rated supervisory performance, customer perception, decreasing turnover and lower absenteeism (Oswald et al., 2015; Xanthopoulou et al., 2012; Wright and Staw, 1999).

The Findings presented in chapter 2 also question the major reforms of the Dutch long-term care system undertaken in 2007 and 2015. One implication of those reforms is to shift the responsibility of care towards the family or local community, thereby increasing the probability that Dutch citizens will need to provide informal care for relatives and others. First, from the care recipient point of view, it supposes that informal caregivers can provide care as effective as professional services would have provide it. These reforms also assume that informal provision leads to similar, or even better health outcomes for care recipients than formal care. However, this issue suffers from a lack of empirical evidence and more work

is needed to conclude. Secondly, my results suggest that the negative impact of care provision on the caregivers' subjective well-being stemming from these reforms might have been underestimated. Indeed, I provided evidence that caregiving has a causal negative impact on life satisfaction. Overall, public policies of long-term care should consider the spillover effect faced by informal caregivers and help them deal with their responsibilities by extending psychological support and providing social support, cash or kind. Furthermore, my results show that special attention should be paid to spousal caregivers and to those who face the double burden of care and full-time employment. The Dutch government took the first step in this direction in 2015, by implementing short-term care leave to look after close family members, extended family members, for example, siblings or grandparents, as well as acquaintances, for example, housemate, neighbors or friends.

Finally, chapter 3 provides unique evidence on the relationship between working hours mismatch and life satisfaction. More precisely, I estimated that in the Netherlands, underemployment reduced life satisfaction by approximately 0.08 to 0.10 of a point. Overemployment, however, did not affect workers' life satisfaction, except for the workers with a lot of autonomy in their work, and those with a high level of education. Additionally, I found that being in a couple helped workers cope with overemployment, while underemployment was more bearable for single workers. Further, I estimated that a low level of job recognition accentuated the negative impact of underemployment on life satisfaction. All in all, these results go in favor of a public policy that would reduce work hours mismatch. From an employee perspective, it is beneficial because it gives the possibility to choose the ideal amount of time devoted to work and personal life, therefore enhancing the employee's subjective well-being. From an employer's perspective, reducing the mismatch between actual and preferred working hours is a way to support employees' well-being and consequently to reduce turnover, sick leave and increase workers' performance. Given that, the '*Wet Flexibel Werken*' (Flexible Working Hours Act) provides employees with the right to request flexible work arrangements subject to business needs, and it is a first step in enabling employees to adjust their work hours according to their preferences. Nevertheless, I would suggest that it should be accompanied by an upward revaluation of the hourly wage rate, in order to allow short hours workers to achieve economic independence.

Limitations of the study

This thesis has explored the relationship between work-life balance policies and life satisfaction in the Netherlands. This analysis brings out new empirical findings. This thesis has some limitations. The first concerns the external validity issue. This limitation is present in chapter 1, chapter 2, and chapter 3. All the empirical studies presented in this thesis focus on the case study of the Netherlands. In this regard, the results do not necessarily extend to other countries. Furthermore, various elements such as cultural specificities, the structure of the labor market, legislation on birth-related leave, childcare systems, informal care and formal care legislation, and legislation on working time in the Netherlands may moderate the effect of parental leave, informal care provision and working hours mismatch on life satisfaction.

The second limitation concerns endogeneity issues related to reverse causality and time-variant unobserved heterogeneity. In chapter 1, I dealt with reverse causality by estimating the impact of parental leave on past life satisfaction. Nevertheless, this did not resolve the issue completely, in the absence of a good instrumental variable or natural experiment. Further, although I included multiple time-varying covariates and applied a fixed model to account for time-invariant unobservables, I cannot entirely settle the concern of the possible time-varying unobservables, such as access to childcare for example. The same issue is present in Chapter 3, where it is difficult to establish the causal direction of the relationship under study. Consequently, I cannot exclude a possible presence of reverse causation implying that individuals with lower levels of subjective well-being could be more likely to experience working hours mismatch. Moreover, it was impossible to control for time-varying unobserved heterogeneity, such as partner characteristics.

Third, although I explored the prevalence of different relationships, a more detailed heterogeneity analysis is needed. For instance, in Chapter 1, it could be interesting to look at how different lifestyles shape the relationship between parental leave and life satisfaction. For instance, family-oriented and career-oriented individuals may experience parental leave in different ways. Such a study would require a larger set of individuals taking parental leave.

Fourth, based on the existing literature I have assumed in Chapter 1 that parental leave reduces work-life imbalances, thereby inducing higher life satisfaction. Nevertheless, it was impossible to perform a mediation analysis due

to the lack of information. Further, chapter 2 does not deal directly with the working population. Indeed, I observed the effect of informal care provision on all populations including unemployed and out of the labor force individuals. Thus, I cannot verify the hypothesis that work-life conflict mediates the relationship. However, in the heterogeneity analysis, I reduced the sample to employed or self-employed individuals, and I estimated that working long hours worsened the negative effect of informal care on life satisfaction. Although this result is not at the heart of my analysis, it highlights the conflicts between working life and out-of-work life that can emerge for individuals combining full-time work and informal help.

Fifth, my analysis could have benefited from a theoretical model to analyze the relationship between overall life satisfaction and life domains, for example Job satisfaction, family life satisfaction, social life satisfaction). Additionally, since my thesis focuses on work-life balance, it would have been interesting to study the potential spillovers effect of work satisfaction on family life satisfaction or social life satisfaction. All these limitations need to be addressed in future research.

Avenue for future research

To overcome the conceptual and methodological limitations of this study, further research is necessary. It has been argued that Generation X, born in 1965-1979, and Generation Y, born in 1980-1999, (Coupland, 2007) place a high value on their work-life balance (Klun, 2008), embrace flexibility and freedom in determining their working hours, and want to have a meaningful jobs (Otken and Erben, 2013). I argue that progress towards better work-life balance for all individuals will remain limited, if we rely only on individuals and families to negotiate this. Therefore, we need further analysis of work-life arrangements that enhance subjective well-being, mainly at the company and public policy levels, to meet the growing needs of workers.

In order to extend the results of this thesis, future research could replicate studies presented in Chapter 1, Chapter 2, and Chapter 3 by extending the analysis to other countries than the Netherlands. Another possibility would be to conduct a comparative analysis between countries with different work-life balance policies. Further, one could explore the moderating role of job demands, for example work overload, emotional demands, time pressure, as well as job resources, such as social support, performance feedback, and others (Bakker and Demerouti, 2007) in the

relationship between work-life conflict and life satisfaction.

The coronavirus disease COVID-19 has brought the issue of work-life balance to the forefront. During the COVID-19 pandemic, profound changes have taken place in the organization of work. From one day to the next, millions of workers have found themselves working at home: a phenomenon [De Fraja et al. \(2020\)](#) call the ‘*zoomshock*’. On one side, teleworking can be an opportunity to arrange paid work and private life in a flexible way for all working household members across space and time. But, on the other side, teleworking is likely to have costs for individual well-being since it blurs the boundaries between work and non-work activities. Indeed, there is evidence that teleworking can be associated with long working hours and more frequent work in the evening and during weekends ([Messenger, 2019](#)). [Schifano et al. \(2021\)](#) estimate that across five European countries, well-being among workers is lower for those who work from home. The well-being penalty from working at home is larger for the older individuals, the better-educated individuals, and those with young children.

The COVID-19 has brought significant changes to the labor market, notably by standardizing the practice of teleworking. Thus, firms should think about accommodation strategies to help workers cope with working from home; encouraging boundary-setting and routines to prevent overwork; ensuring that managers have the skills and tools needed to coordinate tasks and communicate effectively. Firms should pay special attention to creativity, brainstorming, problem-solving tasks, and informal learning; facilitating networking, inter-team relationships, and cohesion regardless of work location; and mitigating potential side effects ([OECD, 2020](#)). Overall, there is an urgent need for further studies on organizational initiatives to facilitate work-life balance and evaluate their impact on various outcomes including well-being and domain satisfaction. Particular attention must be paid to flexible scheduling, freedom-form company, compressed workweek, sabbatical year, holidays, on-site childcare, birth-related leave, carer’s leave, telecommuting, part-time schedule, normative support from companies to the use of work-life balance arrangements and job sharing.

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Laetitia DILLENSEGER

ÉQUILIBRE ENTRE VIE PROFESSIONNELLE ET PRIVÉE ET BIEN-ÊTRE SUBJECTIF

Résumé

Cette thèse explore la relation entre les politiques de conciliation travail et vie privée et le bien-être subjectif aux Pays-Bas. J'analyse plus précisément, l'effet du congé parental (Chapitre 1), de l'offre de soins informels (Chapitre 2) et du sur et sous-emploi (Chapitre 3) sur le bien-être subjectif des Néerlandais. La problématique générale de cette thèse est formulée comme suit : Comment les dispositifs d'équilibre entre vie professionnelle et vie privée affectent-ils la satisfaction de vie des Néerlandais ? Cette thèse apporte une contribution méthodologique et empirique à la littérature sur l'équilibre entre vie professionnelle et vie privée et le bien-être subjectif. Mes études se concentrent sur les travailleurs Néerlandais au début du 21ème siècle. Mes analyses empiriques exploitent les données de panel du Longitudinal Internet Study for social sciences (LISS). Mon objectif est d'identifier des relations corrélationnelles (Chapitres 1 et 3) et des liens de causalité (chapitre 2) afin de répondre à ma question de recherche. Le bien-être humain est évalué d'un point de vue subjectif. La validité de cette approche est aujourd'hui reconnue par la communauté scientifique.

Keywords: Satisfaction dans la vie, Bonheur, Congé parental, Aide informelle, Sur-emploi, Sous-emploi, Les Pays-Bas, Équilibre travail-vie privée, Analyse économétrique de données de panel.

Résumé en anglais

This thesis explores the relationship between work-life balance policies and subjective well-being in the Netherlands – more specifically, the effect of parental leaves schemes (Chapter 1), informal care provision (Chapter 2), and work hours' mismatches (Chapter 3) on workers' subjective well-being. The general problematic of this thesis is formulated as follows; how do work-life balance arrangements affect life satisfaction in the Netherlands? The thesis has for purpose to contribute to the literature on work-life balance and subjective well-being. My studies focuses on the Dutch workers in the early 21st century. I am using the data from the Longitudinal Internet Study for social sciences (LISS). My empirical analysis aims to identify correlational relationships (Chapters I and III) and causal linkage (Chapter II) in order to answer the research question. Human well-being is evaluated from a subjective perspective. The validity of this approach is recognized by the scientific community nowadays.

Keywords: Life satisfaction, Happiness, Parental leave schemes, Informal care, Mismatch working hours, The Netherlands, Work-life balance, Panel Data Econometric Analysis.