



Closing the achievement gap : learning from working-class students' acculturation and success in higher education

Fabian Müller

► To cite this version:

Fabian Müller. Closing the achievement gap : learning from working-class students' acculturation and success in higher education. Psychology. Université Paris Cité, 2023. English. NNT : 2023UNIP7003 . tel-04163355

HAL Id: tel-04163355

<https://theses.hal.science/tel-04163355>

Submitted on 17 Jul 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Université Paris Cité

École doctorale 3CH (261)

Laboratoire de Psychologie Sociale

Closing the Achievement Gap

Learning from Working-Class Students' Acculturation and Success in Higher Education

Par Fabian Müller

Thèse de doctorat de Psychologie

Dirigée par Rasyid Bo Sanitioso
et Sébastien Goudeau

Présentée et soutenue publiquement le 25 mai 2023

Devant un jury composé de :

Rasyid Bo Sanitioso	Professeur - Université Paris Cité	Directeur
Sébastien Goudeau	Maître de conférences - Université de Poitiers	Co-directeur
Batja Gomes de Mesquita	Professeure - Katholieke Universiteit Leuven	Rapporteuse
Maja Becker	Professeure - Université Toulouse Jean Jaurès	Rapporteuse
Céline Darnon	Professeure - Université Clermont Auvergne	Examinatrice
Jean-Claude Croizet	Professeur - Université Clermont Auvergne	Examineur



Except where otherwise noted, this work is licensed under
<http://creativecommons.org/licenses/by/4.0/>

Fabian Müller

Closing the Achievement Gap

Learning from Working-Class Students'

Acculturation and Success in Higher Education

To those who enable change, use the knowledge within these pages for good. Social reproduction is just too violent.

Chaque jour était une déchirure ; on ne change pas si facilement. Je n'étais pas le dur que je voulais être. J'avais compris néanmoins que le mensonge était la seule possibilité de faire advenir une vérité nouvelle. Devenir quelqu'un d'autre signifiait me prendre pour quelqu'un d'autre, croire être ce que je n'étais pas pour progressivement, pas à pas, le devenir (les rappels à l'ordre qui viendront plus tard *Pour qui il se prend ?*).

Édouard Louis, En finir avec Eddy Belleguele

Harry besteht nicht aus zwei Wesen, sondern aus hundert, aus tausenden. Sein Leben schwingt (wie jedes Menschen Leben) nicht bloß zwischen zwei Polen, etwa dem Trieb und dem Geist, oder dem Heiligen und dem Wüstling, sondern es schwingt zwischen tausenden, zwischen unzählbaren Polpaaren.

Hermann Hesse, Steppenwolf

J'étais devenu un autre.

Édouard Louis, Changer : méthode

Acknowledgements

In this thesis, dear reader, you will discover that first-generation students often face numerous obstacles in their academic journey. As someone who has faced these challenges firsthand, success can be elusive without the necessary support. I am fortunate to have been backed by many individuals who have helped me achieve my goals.

I would like to express my deepest gratitude to my supervisors, Bo Sanitioso and Sébastien Goudeau.

Bo, I will always remember our first meeting nearly four years ago. Despite my nervousness, your enthusiasm to collaborate and recommendation to apply for the *contrat doctoral* allowed me to find my footing in this field. Your wisdom, guidance, and encouragement have been invaluable, and I am deeply grateful. I wouldn't be the researcher I am today without your support.

Sébastien, thank you for your constant support, inspiration, numerous ideas, and constructive criticism. Your guidance has led me to present at international conferences, publish a peer-reviewed article, establish global connections, and ultimately, complete this thesis. Your mentorship has allowed me to learn and grow immensely.

Je tiens également à remercier mes collègues de laboratoire et les étudiant·e·s pour leurs retours indispensables, leur aide concernant le système français et la langue, ainsi que pour leur soutien dans la réalisation de mes recherches. Une mention spéciale est adressée à mes collègues de bureau, Céline Robert et Jacques Peuvret, ainsi qu'à ma collaboratrice, Cristina Aelenei. Cristina, merci de m'avoir patiemment enseigné les statistiques et de m'avoir aidé à comprendre des concepts complexes.

My appreciation extends to other collaborators, Anja Schiepe-Tiska, Christine Sälzer, and Nicole Stephens. Our collaborations have enriched my scientific understanding, and I eagerly anticipate future projects.

Ich bin meinen Freunden und meiner Familie – vor allem meiner langjährigen Freundin Malwina, meiner Mutter Christa und meinem Bruder Martin – zutiefst dankbar für ihre beständige Unterstützung. Malwina, danke dir für all die Ermutigungen und das wertvolle Feedback. Und Martin, ich schätze die unzähligen Stunden sehr, die du damit verbracht hast, mir bei der Erstellung von Grafiken und Designs für meine Dissertation und Präsentationen zu helfen.

Lastly, thank you, Stratis, for being by my side throughout these past years. You have constantly encouraged me, patiently endured my varying emotions, and always believed in and supported me. I also appreciate you for kicking my ass and ensuring we both embarked on our amazing adventure to Paris. Ήταν ένα υπέροχο ταξίδι και ανυπομονώ για ακόμα περισσότερες κοινές περιπέτειες μαζί σου. Thank you!

Abstract

Upward educational mobility is a persistent challenge in many countries. One contributing factor may be the cultural mismatch experienced by working-class students in higher education. These students often hold interdependent norms that clash with the independent cultural norms prevalent in universities, potentially leading to lower academic success. Through a combination of longitudinal studies, experimental studies, and correlational research, the present work sheds light on the complex dynamics of working-class students' cultural mismatch and acculturation, throughout the students' university experiences. The research aims to enhance our understanding of the experiences and challenges faced by working-class students and ultimately to inform policy and practice in higher education to support their success. Chapter 1 presents longitudinal studies ($N = 1357$) which reveal that despite prolonged exposure to the university environment, social-class differences persist as working-class students often struggle to navigate and acculturate to the middle/upper-class norms that dominate higher education institutions. However, by analyzing the experiences of successful working-class students in studies presented in Chapter 2 ($N = 1217$), and the impact of the COVID-19 pandemic in another study in Chapter 3 ($N = 2275$), as well as factors that affect working-class students' acculturation, the research identifies strategies and resources that some working-class students used to overcome barriers and achieve academic success. These include integrating independent norms into their identity, flexibly acculturating to the demands of university life, and reducing cultural mismatch. The present findings highlight the unique challenges faced by working-class students and underscore the responsibility of universities to take action in reducing social-class achievement gaps. To support their success, institutions must provide a supportive environment and tailored interventions, and value interdependence more than they do now. These actions can interrupt the pattern of cultural mismatch and potentially enable genuine upward social mobility.

Keywords: higher education, social-class, cultural mismatch, acculturation, upward educational mobility

Résumé

La mobilité éducative ascendante est un défi persistant dans de nombreux pays. Un facteur contributif peut être l'expérience du décalage culturel vécu par les étudiant·e·s de classe populaire dans l'enseignement supérieur. Ces étudiant·e·s ont souvent des normes interdépendantes qui s'avèrent en conflit avec les normes culturelles plutôt indépendantes des universités, ce qui nuit à leur réussite académique. À travers des études longitudinales, expérimentales et corrélationnelles, ce travail révèle les dynamiques complexes du décalage culturel et de l'acculturation chez les étudiant·e·s de classe populaire dans leur expérience universitaire. La recherche vise à comprendre les expériences des étudiant·e·s de classe populaire et à soutenir leur réussite, tout en éclairant la politique et les pratiques de l'enseignement supérieur. Le chapitre 1 présente des études longitudinales ($N = 1357$) qui révèlent que malgré une exposition prolongée à l'environnement universitaire, les différences de classe sociale persistent, car les étudiant·e·s de classe populaire ont souvent du mal à naviguer et à s'acculturer aux normes des milieux favorisés qui dominent dans les universités. Cependant, en analysant les expériences des étudiant·e·s de classe populaire ayant réussi dans les études présentées au chapitre 2 ($N = 1217$), en explorant l'impact de la pandémie de COVID-19 dans une autre étude au chapitre 3 ($N = 2275$), ce travail met en évidence des stratégies et des ressources que certains étudiant·e·s utilisent pour réussir académiquement. Ces stratégies incluent l'intégration de normes indépendantes dans leur identité, une acculturation flexible à l'université et la réduction du décalage culturel. Ces résultats soulignent les défis uniques des étudiant·e·s de classe populaire et la responsabilité des universités de réduire les écarts de réussite de classe sociale. Pour soutenir leur réussite, les institutions doivent fournir un environnement de soutien et des interventions adaptées, et mettre davantage en avant les valeurs d'interdépendance. Ces actions peuvent rompre la dynamique du décalage culturel et permettre une véritable mobilité sociale ascendante.

Mots-clés : enseignement supérieur, classe sociale, décalage culturel, acculturation, mobilité éducative ascendante.

Included and Associated Publications

Included Publications

Chapter 1:

Müller, F., Goudeau, S., & Sanitioso, R. B. (2023). *Academic Achievement of Working-Class Students: Acculturation and the Continuing Impact of Cultural Mismatch*. Manuscript in preparation. Université Paris Cité, France.

Chapter 2:

Müller, F., Goudeau, S., Aelenei, C., & Sanitioso, R. B. (2023). *Acculturation in higher education institutions: How high-performing working-class students reduce cultural mismatch at university*. Manuscript in preparation. Université Paris Cité, France.

Chapter 3:

Müller, F., Goudeau, S., Stephens, N. M., Aelenei, C., & Sanitioso, R. B. (in press). Social-class inequalities in distance learning during the COVID-19 pandemic: Digital divide, cultural mismatch, and psychological barriers. *International Review of Social Psychology*.

Associated Presentations

Müller, F., Goudeau, S., Aelenei, C., & Sanitioso, R. B. (2023, June). *Acculturation in higher education institutions: How high-performing working-class students reduce cultural mismatch at university* [Accepted oral presentation]. 19th General Meeting of the European Association of Social Psychology (EASP), Kraków, Poland.

Müller, F., Goudeau, S., Sanitioso, R. B. (2022, July). *Working-class students and distance learning during the COVID-19 pandemic: Digital divide, cultural mismatch, and psychological barriers* [Oral presentation]. European Association of Social Psychology – Society for the Psychological Study of Social Issues (EASP-SPSSI) Meeting: Society in the Classroom: Integrating Perspectives on how Socioeconomic Disparities Unfold in Educational Settings, London, UK.

Müller, F., Goudeau, S., Sanitioso, R. B. (2022, July). *Working-class students and distance learning during the COVID-19 pandemic: Digital divide, cultural mismatch, and psychological barriers* [Oral presentation]. 14ème Congrès International de Psychologie Sociale, Bordeaux, France.

List of Figures and Tables

Chapter 1:

Figure 1 <i>Conceptual model of Hypothesis 3</i>	50
Figure 2 <i>Time course of the RF-SC-IAT</i>	57
Figure 3 <i>Structural equation model for GPA (Time 3)</i>	83
Figure 4 <i>Structural equation model for SSS (Time 3)</i>	83

Chapter 2:

Figure 1 <i>Three-way interaction of Experiment 1 between social-class, GPA, and primed self-construal on independence</i>	109
Figure 2 <i>Three-way interaction of Experiment 2 between social-class, GPA, and context on independence</i>	115

Chapter 3:

Figure 1 <i>Conceptual model of Hypothesis 2</i>	136
Figure 2 <i>Structural equation model</i>	154

Chapter 1:

Table 1 <i>Demographics of Study 1</i>	53
Table 2 <i>Variables for each time point of Study 1 French $N_{Education}$ sample ($N_{T1} = 312$, $N_{T2} = 143$, $N_{T3} = 78$), Study 2 French $N_{Education}$ sample ($N_{T1} = 557$, $N_{T2} = 266$, $N_{T3} = 173$), and Study 2 German $N_{Education}$ sample ($N_{T1} = 488$, $N_{T2} = 244$, $N_{T3} = 193$)</i>	64
Table 3 <i>Demographics of Study 2</i>	68

Chapter 2:

Table 1 <i>Demographics for $N_{Education}$</i>	103
Table 2 <i>Variables for $N_{Education}$</i>	122

Chapter 3:

Table 1 <i>Demographics</i>	138
Table 2 <i>Variables depending on social-class_{Education} ($N = 2170$), social-class_{Occupation} ($N = 1802$)</i>	147
Table 3 <i>Correlations with confidence intervals for social-class_{Education} ($N = 2170$) and social-class_{Occupation} ($N = 1802$)</i>	150

List of Main Abbreviations

GPA = Grade Point Average

IOS = Inclusion of Other in the Self

RF-SC-IAT = Recoding Free – Single Category – Implicit Association Test

SES = Socioeconomic Status

SSS = Subjective Social Status (SSS).

Contents

Acknowledgements.....	IX
Abstract.....	XI
Résumé	XIII
Included and Associated Publications.....	XV
List of Figures and Tables.....	XVII
List of Main Abbreviations	XVIII
GENERAL INTRODUCTION	1
1. Setting the Stage	2
2. Social-Class Gaps in Higher Education.....	5
2.1 Cultural Mismatch Theory	8
2.1.1. Theoretical Basis	8
2.1.2. Empirical Evidence	12
2.2 Self-Construal.....	15
2.2.1. Theoretical Basis	15
2.2.2. Multidimensionality of Self-Construal	17
2.2.3. The Role of Different Dimensions of Self-Construal in Cultural Mismatch Theory	18
2.3 Acculturation.....	21
2.3.1. Theoretical Basis	21
2.3.2. Directionality of Social-Class Mobility	22
2.3.3. The Role of Sense of Belonging in Acculturation.....	24
2.3.4. Acculturation of Self-Construal	25
2.3.5. Influence of Intersectional Identities on the Acculturation Process	26
3. The Present Research	29
3.1 Literature Gaps.....	29
3.2 Research Questions	31
3.3 Methodology	32
3.3.1. Participants	32
3.3.2. Operationalizing Social-Class	33
3.3.3. Apparatus, Stimuli, and Instruments	35
3.3.4. Research Design: Combining Slow and Fast Approaches	36
CHAPTER 1 Ongoing Cultural Mismatch Impedes Academic Success	39
CHAPTER 2 Acculturation of Some Working-Class Students	93

CHAPTER 3 Cultural Mismatch, Distance Learning, and COVID-19.....	127
GENERAL DISCUSSION	161
1. Summary of Key Findings.....	162
1.1 Key Findings in Chapter 1	162
1.2 Key Findings in Chapter 2	163
1.3 Key Findings in Chapter 3	165
2. Theoretical Contributions	167
2.1 Confirmation of Prior Research	167
2.2 Extension of Prior Research.....	168
3. Limitations of the Current Work and Suggestions for Future Research....	172
4. Implications for Policy and Practice	175
5. Conclusion	178
RÉSUMÉ SUBSTANTIEL.....	181
1. Introduction.....	182
1.1 Théorie du Décalage Culturel.....	183
1.2 Construction de Soi	185
1.3 Acculturation.....	186
2. Lacunes et Questions de Recherche	188
3. Méthodologie	191
4. Résumé des Principales Conclusions	193
5. Discussion.....	197
5.1 Contributions Théoriques	197
5.2 Implications pour les Politiques et les Pratiques	198
5.3 Conclusion.....	199
BIBLIOGRAPHY	201
LINKS TO ONLINE APPENDICES.....	229

GENERAL INTRODUCTION

1. Setting the Stage

Alex, the first in their working-class family to attend university, always dreamed of going there to pursue a brighter future. However, upon arriving, Alex encountered difficulty navigating the unfamiliar academic and social environment. They struggled to fit in among their more affluent peers, who seemed to have a better grasp of university culture and its unspoken rules. Alex also faced financial difficulties, with tuition, textbooks, and other expenses presenting a significant burden that required long hours of work outside of their studies. Despite these obstacles, Alex remained determined to succeed and worked tirelessly to improve their grades. But how did they manage to overcome these challenges and achieve academic success?

Working-class students often face unique challenges when it comes to accessing and succeeding in higher education compared to their more affluent peers. This issue has gained increased attention due to its negative impacts on social mobility, economic inequality, and overall societal well-being. For instance, across OECD countries, 63% of those with a parent who has higher education (i.e., tertiary education) are more likely to obtain the same level of education themselves, while this chance drops to 13% for those whose parents have not had upper secondary education (OECD, 2018). This disparity carries over to the occupational field, where upward mobility rates for working-class individuals across Europe range from 25% to 50%, with differences in downward mobility rates being essentially the same, indicating low social mobility (Bukodi et al., 2019). As a result, children of working-class parents are more likely to become working-class adults (Dabla-Norris et al., 2015; Kraus et al., 2019; Rivera & Tilcsik, 2016; Song et al., 2020).

Addressing social-class disparities in higher education is an urgent task for educators, policymakers, and researchers. Factors like family income, high school grades, and preparation don't fully explain these gaps (Atherton, 2014; Bailey & Dynarski, 2011; Ishitani, 2003). Cultural mismatch, defined as the disconnect between the independent cultural norms of universities and the interdependent cultural norms of working-class students, may also contribute

to these gaps by hindering working-class students' ability to acculturate and succeed in university life (Stephens, Fryberg, et al., 2012). The question of whether working-class students acculturate to higher education institutions, and if so, how they do it, is a crucial one that has not been fully explored in the literature. This thesis aims to address this gap by examining the experiences of working-class students in higher education and investigating the ways in which some working-class students acculturate.

Chapter 1 explores cultural mismatch in higher education through longitudinal studies, identifying key factors that affect the acculturation of working-class students to middle/upper-class norms. These factors, among others, include the initial experience of cultural mismatch, arising from working-class students' more interdependent norms and universities' promotion of more independent norms, a reduced sense of belonging, and a lack of integration of interdependent norms in university culture. Specifically, this chapter investigates the extent to which working-class students acculturate to the university environment in two European contexts: France and Germany.

Chapter 2 explores the experiences of successful working-class students, providing insights into the strategies and resources that helped them overcome challenges in higher education. These include integrating independent norms into their identity, flexibly acculturating to the demands of university life, and reducing cultural mismatch. By using experimental manipulations, this chapter focuses on the specific acculturation process of high-performing working-class students, particularly related to changes in their self-construal (i.e., how they perceive themselves) at university.

Chapter 3 explores the relationship between the COVID-19 pandemic and two key barriers faced by working-class students: the digital divide and cultural mismatch. Using correlational research, this chapter investigates the continued relevance of these barriers in French university settings during the pandemic. Specifically, it examines the extent to which the digital divide and cultural mismatch predict psychological barriers, such as reduced sense of belonging, that contribute to academic inequalities and hinder essential learning behaviors for academic success, such as asking questions and participating in group discussions.

Overall, this thesis utilizes a combination of longitudinal studies, experimental manipulations, and correlational research to shed light on the complex dynamics of cultural mismatch and acculturation in higher education. These factors may explain the achievement gap between working-class students and their more affluent peers, as well as factors that facilitate success for working-class students despite these challenges. By contributing to a better understanding of the experiences and challenges faced by working-class students in higher education, this research aims to inform policy and practice to support their success.

2. Social-Class Gaps in Higher Education

Higher education is essential for accessing valuable life opportunities and achieving upward social mobility (Ridgeway & Fisk, 2012). For example, across OECD countries, individuals who have attained a bachelor's or equivalent degree experience a 44% increase in earning advantages, and those with a master's or doctoral degree have an even greater 88% increase compared to those with upper secondary attainment (OECD, 2022). For this reason, given the clear benefits of higher education, the importance of social-class in academia cannot be understated. Social-class can be defined as a person's relative position in society or a community based on a variety of factors, including income, education level, occupation, and social connections. This position is also shaped by the cultural attitudes, behaviors, and expectations associated with various social and economic standings (Goudeau et al., 2017). Social-class is a complex and multifaceted construct that can be measured through objective measures of socioeconomic status (SES) and subjective measures of social status (SSS). Objective measures typically focus on income, education, and occupational status, while subjective measures focus on an individual's perceived social standing relative to others (Adler et al., 2000; Antonoplis, 2022; Oakes & Rossi, 2003). In the context of higher education, social-class can significantly affect a student's access to resources, opportunities, and support, as well as their ability to navigate the academic and social environment of a university (APA Task Force on Socioeconomic Status, 2007; Diemer et al., 2013).

Working-class students, as defined in this thesis, are those who have a first-generation status, meaning that neither parent has a tertiary educational level, or come from blue-collar origins. In contrast, middle/upper-class students are defined in this thesis as those with at least one parent who has a tertiary education (continuing-generation status) or holds a professional occupation that requires advanced education or managerial roles. Research consistently shows that individuals from working-class backgrounds are less likely to attend and to succeed in higher education compared to their more affluent peers (Jerrim et al., 2015; OECD, 2018;

Sirin, 2005), resulting in what has become known as social-class gaps in education. For instance, despite an increase in university enrollments from working-class students in France, the gap in university attendance between children from affluent and working-class families has only reduced from 1.9 to 1.5 times, and the graduation rates among children of affluent families are still twice as high as those of children from working-class families. Additionally, working-class students are more likely to drop out of higher education without obtaining a degree, with a dropout rate of 19% compared to only 9% of children from affluent backgrounds (MESRI, 2022). The situation in France serves as an example of the social-class disparities that persist in higher education, but this is a challenge faced by working-class students in many countries worldwide (UNESCO & UNESCO IESALC, 2020).

These disparities between working-class and middle/upper-class students in higher education can be attributed to a combination of interconnected individual and structural factors. Individual factors include personal characteristics, such as motivation, abilities, and learning styles, which shape a person's behavior. Structural factors encompass broader social, economic, and institutional systems that influence an individual's opportunities and actions, like financial resources or access to support networks (Stephens et al., 2015; Stephens, Markus, et al., 2012).

For instance, working-class students often face limited academic preparation, an individual factor, due to structural factors such as attending under-resourced schools that lack resources to adequately prepare them for university (Crozier & Reay, 2011; OECD, 2012). Another structural factor, the lack of access to important mentors, such as parents, teachers, or counselors, who could offer advice and assistance, can impact their ability to navigate the university environment (Towers et al., 2020). Limited financial resources, a further structural factor, can restrict their participation in social and extracurricular opportunities integral to the university experience (Rubin & Wright, 2017).

It is crucial to understand the interconnectedness of individual and structural factors. Academic preparation is influenced by school quality, resource access, and the prevalence of symbolic violence. Symbolic violence refers to the subtle ways that social inequalities are

perpetuated through educational contexts (Croizet et al., 2017). According to Croizet and colleagues (2017), educational settings contribute to maintaining social inequality by reinforcing beliefs that justify existing class hierarchies and emphasizing individual merit as the sole determinant of a student's success. This masks the structural barriers contributing to social inequality.

Further, addressing individual and structural factors alone is insufficient in reducing achievement gaps in higher education (Bailey & Dynarski, 2011; Stephens et al., 2015). Persisting achievement gaps, even when students possess the necessary skills and resources, are partly due to the unique influence of culture within the realm of higher education. Culture is distinct from other structural factors as it includes the shared beliefs, values, and norms that shape social behaviors and expectations within a specific environment. The culture of higher education plays a significant role in perpetuating social-class inequalities through a process known as "social reproduction". Higher education institutions reinforce these social-class inequalities among students by being structured and organized around middle/upper-class cultural norms and implicit codes (Bernstein, 1974; Bourdieu & Passeron, 1990; Bourdieu & Wacquant, 1992). These norms include language use, academic attitudes, knowledge, bodily posture, and models of agency that are closer to middle/upper-class cultural dispositions (Bourdieu, 1979; Lareau & Weininger, 2003; Stephens, Markus, et al., 2014).

Familiarity with these norms constitutes cultural capital (i.e., knowledge, skills, and cultural experiences; Bourdieu & Passeron, 1990; Lamont & Lareau, 1988) that provide advantages to middle/upper-class students. For instance, middle/upper-class students have more exposure to cultural experiences, such as music or art classes, that can foster an appreciation for higher education, and access to social capital, such as connections to alumni networks or professional organizations, that provide additional support and opportunities for advancement. On the other hand, working-class students may face barriers in accessing cultural experiences and social capital. These barriers can shape their interpretation of, and response to, the norms and expectations within the higher education environment, ultimately contributing to achievement gaps (Mishra, 2020; Stephens, Markus, et al., 2014; Thiele et al., 2018). This

highlights the need to take into account the subjective experiences and perspectives of students from different social-class backgrounds, including working-class students whose behavior is shaped by their definition and construal of their self, i.e., how they perceive and understand themselves (Markus & Kitayama, 2010; Markus & Nurius, 1986; Oyserman & Markus, 1993). Therefore, when examining social-class gaps in higher education, it is crucial to consider the extent to which universities are connected to the experiences and selves of their students. Research suggests that students are more motivated and productive when the behaviors expected of them in higher education align with their selves. By tailoring higher education to match students' experiences and selves, it can boost their psychological well-being, academic engagement, motivation, and performance (Gutierrez & Rogoff, 2003; Oyserman, 2008; Oyserman & Destin, 2010; Taylor et al., 2003).

In short, to address social-class gaps in higher education, it is important to understand how sociocultural factors shape students' experiences. One useful perspective for shedding light on this issue is cultural mismatch theory (Stephens, Fryberg, et al., 2012). This theory offers a broad view of how sociocultural factors shape students' developing identities and selves. The next section will discuss this theory, which proposes that a mismatch between the cultural norms and practices of higher education institutions and the cultural experiences and expectations of working-class students can partially explain social-class gaps. By examining this theory in detail, we can better comprehend social-class gaps in higher education from a systemic standpoint rather than solely focusing on individual and structural factors, and ultimately, how to address them.

2.1 Cultural Mismatch Theory

2.1.1. Theoretical Basis

Working-class students encounter social and cultural challenges that their more affluent peers do not, such as attending under-resourced schools and having limited exposure to middle/upper-class cultural capital that is typically taken for granted at universities (Bourdieu

& Passeron, 1990; Lahire, 2019; Pascarella et al., 2004; Stephens, Fryberg, et al., 2012). These barriers can create uncertainty and self-doubt in their ability to succeed and navigate the academic environment (Johnson et al., 2011; Ostrove & Long, 2007).

Research highlights the critical role of students' self and culture in shaping their experiences, motivation, and performance. Within educational contexts, one factor affecting students' experiences is negative stereotypes, such as the pervasive belief that working-class students are less competent, which can lead to underperformance on academic tasks (Croizet & Millet, 2012; Inzlicht & Schmader, 2012; Steele, 2011). Stereotypes are cognitive generalizations about the qualities and characteristics of the members of a group or social category. For working-class students, the stereotype often portrays them as unintelligent and lazy (Croizet & Millet, 2012; Fiske et al., 2002). In certain situations, these stereotypes can significantly impact performance. For example, Croizet and Claire (1998) conducted a study in which undergraduates took a verbal reasoning test. When working-class students were told that the test measured cognitive ability, they underperformed compared to affluent peers. However, when the test was framed as a simple laboratory exercise, i.e., not as a measure of their ability, working-class students performed equally well as others. Stereotype threat has been proposed as an explanation for these findings. It occurs when a person is concerned that their performance might confirm negative stereotypes about their social group and consequently reflect poorly on the entire group. This apprehension can, in turn, undermine their actual ability to perform well (Steele & Aronson, 1995)

Another factor affecting students' experiences within educational contexts is the influence of competitive motivation. The achievement of working-class students can be impacted by their interpretation of the assessment function at universities. Researchers distinguish between two functions of assessment practices: educational and selection. Educational assessments aim to improve students' skills and knowledge, directing students' attention towards mastery goals – improving skills and learning. In contrast, selection assessments serve to compare individuals, leading to performance goals – outperforming others (Ames, 1992; Brookhart, 1997). Studies have shown that focusing on performance goals during

assessments contributes to the social-class achievement gap, whereas emphasizing mastery-oriented goals in the assessment process helps reduce this gap (Bruno et al., 2020; Crouzevialle & Darnon, 2019; Jury et al., 2019). For example, in a study by Smeding et al. (2013), participants completed a statistics exam presented either as a learning tool (evoking mastery goals) or as a means of selecting the best students (evoking performance goals). Working-class students performed better when the assessment was framed as a learning tool rather than a selection tool. This can be explained by a motivation regulation process, where working-class students facing mastery-oriented assessments feel less afraid of failure, allowing them to focus on learning and skill improvement, thus reducing the social-class achievement gap (Jury et al., 2015; Smeding et al., 2013).

Building on the research about the role of stereotypes and competition in perpetuating educational inequalities, it is important to consider the fit between university's culture and individual's self in higher education settings. Cultural mismatch, which refers to the disconnect between the independent cultural norms of universities and the interdependent cultural norms of working-class students, plays a significant role in this context (Stephens, Fryberg, et al., 2012). Identity-based motivation research demonstrates that when a student's self is aligned with the university's culture, they are more likely to experience greater psychological well-being, academic identification, engagement, and performance (Markus, 2008; Oyserman, 2008; Oyserman et al., 2007; Oyserman & Destin, 2010). This suggests that creating a university culture that matches the self of their students can enhance their motivation and performance.

Higher education environments often emphasize and value independent norms, with academic administrators expecting students to take ownership of their educational experience and act as proactive learners. Students are encouraged to express their personal opinions, challenge established norms and rules, and work independently, often receiving recognition and rewards for doing so. However, these environments often place less emphasis on respecting group rules, appreciating alternative perspectives, and showing deference to authority figures (Calarco, 2011; Kim, 2002; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014; Tibbetts et al., 2018). These independent norms are consistent with those developed in

middle/upper-class contexts, but may not match with the interdependent norms prevalent among underrepresented social groups, such as working-class students in universities (Stephens, Fryberg, et al., 2012; Stephens, Townsend, et al., 2012). Indeed, previous research has shown that an individual's understanding of oneself is shaped by their local contexts, such as families and communities, which in turn influences the norms they adhere to (Markus & Kitayama, 2010; Tsai & Chentsova-Dutton, 2002).

As Stephens, Markus, et al. (2014) note, middle/upper-class contexts are usually more materially stable and predictable, which allows parents to see their children's selves as something "that need to be cultivated to grow and reach their potential" (p. 617; see also Kusserow, 2004). These contexts can foster a higher focus on the individual self (Lareau, 2003). This is reflected in how parents emphasize promoting their children's interests, encouraging them to challenge rules, and explore their own thoughts (Kusserow, 1999; Stephens, Markus, et al., 2014; Wiley et al., 1998). For instance, middle/upper-class parents encourage their children to communicate their thoughts, feelings, and what they have learned, using complex grammatical constructions (Bernstein, 1974; Lareau & Calarco, 2012; Phillips, 2011). Through storytelling (i.e., sharing narratives), which is an important medium for modeling behavior and values (Stephens, Markus, et al., 2014), middle/upper-class parents focus on the positive aspects of the story and encourage their children to ask questions and consider alternative perspectives to promote critical thinking and intellectual curiosity. They also facilitate personal growth and exploration through enrichment activities, such as playdates and creative classes (Vincent & Ball, 2007), prioritizing their children's interests and encouraging them to pursue their passions. Additionally, they provide structured and individualized activities that support their children's development (Stephens, Markus, et al., 2014). Such repeated life experiences nurture the development of an independent self as normative in middle/upper-class contexts. The independent self encouraged and fostered in middle/upper-class families matches the independent culture that is predominant in university (Fryberg & Markus, 2007; Stephens, Fryberg, et al., 2012).

In working-class contexts, parents face greater economic uncertainty and instability, which can lead them to prioritize fostering their children's selves to be “self-protective, tough, strong and resilient [...] in the face of adversity” (Stephens, Markus, et al., 2014, p. 617) over individual self-development. Working-class parents tend to provide little space for self-focus and instead teach their children to consider and respect the needs of others and socially accepted rules (Kusserow, 1999; Miller et al., 2005). Moreover, working-class parents often rely on giving direct commands and placing less emphasis on questioning rules, which may encourage their children to comply with authority figures. This is reflected in the speech patterns of working-class parents, which typically involve simple grammatical constructions with a focus on concrete language and fewer hypothetical or conditional statements (Bernstein, 1974). Their storytelling involves emphasizing the importance of adhering to socially accepted norms, while also considering facts and potential costs of breaking rules (Miller et al., 2005; Miller & Sperry, 2012, 1987). Individually tailored activities are less feasible for working-class parents, resulting in decreased development of independence and self-interest. Instead, they more often trust that their children will develop naturally through frequent social interactions with others and limited parental intervention (Stephens, Markus, et al., 2014; see also Lareau, 2003; Miller & Sperry, 2012). Children in working-class contexts learn the value of relying on others within their social networks to navigate challenging situations, such as paying attention to and adjusting to others' needs (Lamont, 2000; Markus et al., 2004). This emphasis on relying on and connecting with others facilitate the development of psychological tendencies of interdependence (Stephens et al., 2007), resulting in an interdependent self that represents a mismatch with the independent culture often prevalent in universities.

2.1.2. Empirical Evidence

Cultural mismatch theory was initially proposed by Stephens, Fryberg, et al. (2012). They surveyed administrators from first- and second-tier American universities and students with different social-class backgrounds to examine institutional expectations for undergraduates and their motives for attending college. The findings revealed that middle/upper-class

students and administrators prioritize independent cultural norms like self-expression and autonomy, while working-class individuals emphasize interdependent norms such as community orientation and responsiveness to others' needs. Based on these findings, the authors made three main claims: First, U.S. universities typically promote independent cultural norms. Second, students' experiences of match or mismatch between their norms and those of the institution can lead to advantages or disadvantages. Third, institutions primarily promoting independent norms can create barriers for working-class students who experience cultural mismatch. This mismatch affects students' perception of the university environment and tasks, ultimately impacting academic performance (Stephens, Fryberg, et al., 2012; Stephens & Townsend, 2015). While the university systems in Europe may be heterogeneous in their cultures, practices, and identities, there is an overall emphasis on independence, particularly in more competitive institutions such as those in France (Sommet et al., 2015). This emphasis on independence is apparent in the challenges faced by international students from more collectivistic backgrounds, whose values may differ from those emphasized in the European university setting (Rienties & Tempelaar, 2013).

Research on cultural mismatch has demonstrated various negative consequences for working-class students in terms of academic outcomes and psychological experiences. One study by Stephens, Fryberg, et al. (2012) found that students who endorsed more interdependence than independence, and thus experienced a cultural mismatch, performed worse academically early in university. The authors also experimentally created a cultural mismatch by exposing early-stage students to a message framing the university experience in terms of independence, leading to poorer performance and increased perceived difficulty on various academic tasks for working-class students compared to their middle/upper-class peers.

In another study, Stephens, Townsend, et al. (2012) discovered that when the university culture was framed in terms of independence, working-class students experienced increased biological stress activity, such as elevated cortisol levels, during challenging academic tasks compared to their middle/upper-class peers. Cultural mismatch has also been associated with higher dropout rates, lower retention, mental and physical health distress, and academic

problems (Matschke et al., 2022; Vasquez-Salgado et al., 2015, 2021). Longitudinal studies further indicate that cultural mismatch can negatively impact grades, sense of belonging, and well-being (Phillips, Stephens, et al., 2020; Veldman et al., 2022).

Studies have also demonstrated that cultural mismatch can affect students' willingness to seek help or utilize college resources, as well as contribute to negative emotions, such as guilt related to educational achievement, during academic tasks (Chang et al., 2020; Covarrubias et al., 2019; Covarrubias & Fryberg, 2015). Organizational research on social-class suggests that cultural mismatch can impact working-class students' early career prospects as well (Sharps & Anderson, 2021). During mock job interviews, working-class students displayed less independent agency than their middle/upper-class peers, leading others to perceive them as less intelligent, socio-emotionally skilled, and less deserving of hire by professional hiring managers. Despite being equally talented, they were still inaccurately viewed as less competent. Overall, cultural mismatch has been found to have detrimental effects on working-class students' academic success, mental health, and career prospects.

However, previous research suggests that the negative effects of cultural mismatch in higher education can be mitigated. Self-affirmation, difference-education, and goal reframing interventions have been found to be particularly effective in reducing these negative effects (Jury et al., 2017). For instance, self-affirmation interventions that involve reflecting on core personal values such as relationships with friends and family have been shown to significantly improve academic performance among working-class students (Harackiewicz et al., 2014, 2016). Difference-education interventions have been shown to enhance psychological adjustment and academic performance among working-class students by helping them understand how their backgrounds influence their university experiences and how they can utilize available resources (Hernandez et al., 2021; Stephens et al., 2015; Stephens, Hamedani, et al., 2014). Recent research suggests that the effectiveness of these interventions may be further enhanced by the adoption of strength-based approaches, such as educators' beliefs that working-class students' backgrounds can be sources of unique and valuable strengths (Silverman et al., 2023). Finally, reframing the purpose of an exam to emphasize its learning-oriented

function instead of its selecting-oriented function, which compares people and orients them towards different positions in society, has been found to reduce the social-class achievement gap (Autin et al., 2015; Mena & Stevenson, 2022; Smeding et al., 2013).

In sum, cultural mismatch theory has provided compelling evidence for the negative consequences of the mismatches between working-class students' cultural norms and those promoted by universities. However, research has also shown that interventions such as self-affirmation, difference-education, and goal reframing can effectively reduce these negative effects, empowering working-class students and enhancing their academic performance and psychological well-being. These interventions aim to foster a sense of fit and empowerment among working-class students by connecting their self to the university environment, helping them feel valued, included, and focused on learning rather than competition (Stephens et al., 2015). Cultural mismatch is partly rooted in students' self-construal, which is shaped by their social-class background and influences their endorsement of different norms. Self-construal can be either independent or interdependent (Markus & Kitayama, 2010). Understanding self-construal is crucial to comprehending the cultural mismatch phenomenon, and the next section will delve into this concept in further detail.

2.2 Self-Construal

2.2.1. Theoretical Basis

Markus and colleagues (Markus, 1977; Markus & Kitayama, 1991; Markus & Kunda, 1986) introduced the concept of self-construal, which refers to the way individuals define themselves in relation to others based on their cultural context, encompassing independent and interdependent self-construals. People with an independent self-construal emphasize their individuality and tend to see themselves as unique and different from others. They prioritize personal goals and values, and base their actions on their own thoughts and feelings. On the other hand, an interdependent self-construal is characterized by a sense of connection and interdependence with others. People with an interdependent self-construal tend to see

themselves as connected to others, and emphasize characteristics they share with others. They base their actions on maintaining harmony and fitting in with others' expectations. This can involve subordinating personal desires or goals in order to accommodate the needs of the group or community.

Individuals with an interdependent self-construal tend to have richer cognitive representations of others and express more other-focused emotions, such as shame or guilt, as opposed to ego-focused emotions like anger and pride (Markus & Kitayama, 1991). They are also motivated by socially oriented or collective goals. Agency, or a sense of personal control and efficacy, is experienced differently based on self-construal: those with an interdependent self-construal prioritize others' needs and adjust accordingly, while those with an independent self-construal focus on expressing their own needs and resisting social pressure (for a more detailed overview, see Cross et al., 2011).

Self-construal thus links culture and individuals (Matsumoto, 1999). However, this relationship has led to confusion at times. Researchers oversimplified cultural differences by comparing independence and interdependence in “Western” vs. “non-Western” cultures, without considering the diversity within each culture (Vignoles et al., 2016). Researchers assumed that tendencies toward independence or interdependence would group into one or more individual dimensions, but Kitayama and colleagues (Kitayama et al., 2009; Kitayama & Uskul, 2011; Markus & Kitayama, 2010) clarified that these are properties of cultural contexts, not just individuals. This means that cultural systems may encourage independence or interdependence, but individuals within the same system may express these tendencies in different ways. Importantly, recent studies have shown that all individuals have both independent and interdependent self-construal, regardless of their culture. However, the culture that one lives in primes one or the other self-construal in a more or less chronic fashion (Oyserman et al., 2002; Oyserman & Lee, 2008).

As detailed in the section before, social-class can shape individuals' self-construal, with working-class individuals more likely to hold an interdependent self-construal and middle/upper-class individuals more likely to hold an independent self-construal. The differences in self-

construal between working-class and middle/upper-class individuals reflect the distinct socialization practices and material realities that are associated with their respective social-class backgrounds. These differences can have implications for how individuals navigate diverse social contexts, including educational settings (Markus & Kitayama, 2010; Stephens et al., 2007; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014). However, to fully capture the complexity of self-construal, recent research has pointed to the need for a multidimensional approach that recognizes the potential coexistence of independent and interdependent self-construals within individuals, and acknowledges the cultural and situational factors that can influence their expression (Guo et al., 2008; Markus & Kitayama, 2003; Smith et al., 2013; Vignoles et al., 2016).

2.2.2. Multidimensionality of Self-Construal

As we have seen, self-construal encompasses both independent and interdependent aspects, and these construals can coexist within individuals regardless of their cultural background (Harb & Smith, 2008; Hardin, 2006; Levine et al., 2003). However, the traditional two-dimensional self-construal structure, which posits that individuals can either be independent or interdependent, has been criticized (Christopher et al., 2012), highlighting the need for a more nuanced understanding of self-construal and its multidimensionality.

Recent studies have demonstrated that self-construal can be multifaceted, and that “individuals can be independent or interdependent in many different ways, and these different ways of being do not necessarily co-occur” (Vignoles et al., 2016, p. 991; see also Guo et al., 2008; Markus & Kitayama, 2003; Smith et al., 2013). Vignoles and colleagues (2016) developed a seven-dimensional model of independent and interdependent self-construal from two large multi-national surveys spanning 33 countries. The model has now been extended to include eight dimensions: difference versus similarity, self-containment versus connectedness to others, self-direction versus reception to influence, self-reliance versus dependence on others, self-expression versus harmony, self-interest versus commitment to others, consistency versus variability, and de-contextualized versus contextualized self (Vignoles et al., 2016;

Yang, 2017). Each dimension comprises bipolar sides of independence and interdependence, allowing individuals to vary in their independence and interdependence on each dimension. This could lead to numerous variations in patterns of self-construal across and within cultures.

For example, an individual might exhibit independence in some dimensions, such as self-expression (valuing the expression of their thoughts and feelings) and self-reliance (preferring to handle problems on their own), while simultaneously displaying interdependence in other dimensions, such as commitment to others (prioritizing the well-being of others and group goals). Another person might be more interdependent in terms of dependence on others (seeking support from their social network) but also more independent when it comes to self-direction (valuing personal autonomy and self-guidance). These examples illustrate how individuals can vary in their independence and interdependence along different dimensions, resulting in a wide array of self-construal patterns both within and across cultures.

In short, Vignoles et al. (2016) concluded that individuals can think about themselves in relation to others in many different ways, and cultural contexts cannot be accurately characterized as simply "independent" or "interdependent". To gain a more nuanced understanding, researchers should strive to identify the distinct types of independence and interdependence that are prevalent across diverse cultural contexts. These findings suggest that cultural mismatch theory could benefit from a more nuanced understanding of the various forms of independence and interdependence that individuals from different cultural contexts, such as social-class, may exhibit.

2.2.3. The Role of Different Dimensions of Self-Construal in Cultural Mismatch Theory

The experience of cultural mismatch refers to the disconnect between the highly independent cultural norms of universities and the less independent and more interdependent cultural norms of working-class students. Recent research has shown that working-class students do not necessarily endorse less independence overall than their middle/upper-class peers, but instead, they endorse different dimensions or forms of independent self-construal (Chang et al., 2020; Covarrubias et al., 2019; Kusserow, 2012).

There are three common concepts of independence and interdependence that emerge from the cultural mismatch theory literature: expressive independence, hard independence, and hard interdependence (Chang et al., 2020; Covarrubias et al., 2019; Kusserow, 2012; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014).

1. Expressive independence: This form of independence is more prevalent in middle/upper-class contexts and promoted by universities. It is emotion-focused and emphasizes self-expression, self-interest, and the differentiation of the self from others. It aims to strengthen the self to influence given situations, assumes equality with others, and seeks to gain a sense of freedom.
2. Hard independence: More common in working-class contexts, hard independence focuses on survival by emphasizing self-reliance, emotional control, and toughness in relation to social hierarchy. The underlying motive can be summarized as "life is hard, and you have to be self-reliant while respecting authorities." The main distinction from hard interdependence is the importance placed on individual self-sufficiency.
3. Hard interdependence: Prevalent in working-class American contexts, hard interdependence centers on social responsiveness and cooperation with others while maintaining toughness, strength, and resilience. Children raised in these environments are taught to adapt to situations and view the self as connected and similar to others, with a constant awareness of social hierarchy. The underlying motive is "life is hard, but we have to stay together to face challenges." This concept differs from hard independence by prioritizing collective effort and mutual support over individual self-reliance.

Using semi-structured interviews with working-class students, Chang et al. (2020) found that working-class students expressed both hard independence and general interdependence, including respect for family and the need to provide support. This suggests that the experience of cultural mismatch among working-class students may stem from the conflicting

demands of different forms of independence and interdependence, leading to negative consequences. Specifically, the mismatch between the expressive forms of independence supported by the university and the hard forms of independence favored by family, as well as the general interdependence that emphasizes fitting in and community orientation, can result in reduced coping strategies and help-seeking behavior necessary for success at university. This, in turn, can ultimately impede students' academic progress.

Recent empirical findings have challenged some of the assumptions of cultural mismatch theory. One major assumption of the theory is that working-class students endorse less independent and more interdependent self-construals than middle/upper-class students (Stephens, Fryberg, et al., 2012). However, Tibbetts et al. (2018) tested a self-affirmation intervention for working-class students in 2-year colleges and found that students endorsed both independent and interdependent self-construals. This challenges the cultural mismatch theory's prediction regarding the endorsement of independent self-construal among working-class students. Similarly, Phillips, Stephens, et al. (2020) conducted a longitudinal study and discovered social-class differences in the endorsement of interdependent self-construal for students throughout college. However, there were no differences in the endorsement of independent self-construal. In other words, working-class students endorsed independent self-construal to the same degree as middle/upper-class students, which contradicts the expectations of cultural mismatch theory.

These findings do not necessarily disprove cultural mismatch theory, but they do highlight the need for a more nuanced understanding of the different forms of independence and interdependence endorsed by individuals from different social-class backgrounds. The multidimensionality of self-construal is a crucial factor in the experience of cultural mismatch. Understanding the impact of different dimensions of self-construal on cultural mismatch is essential to address the associated issues. In this thesis, the expressive and hard forms of self-construal are considered to account for its multidimensionality. Moreover, the dimension of the self as being consistent or variable between contexts is also used to account for possible acculturation processes of working-class students. Acculturation is a process by which working-

class students may overcome initial cultural mismatches in the university by adapting their norms and values over time and becoming more independent (Berry, 1997; Sam & Berry, 2010). A multidimensional perspective allows for a nuanced understanding of the complexities involved in acculturation processes by taking into account the various aspects of self-construal that can impact one's cultural adaptation. This approach recognizes that individuals may face conflicts and challenges in different aspects of their identity, which may not be resolved linearly or straightforwardly. The following section will present a more detailed account of acculturation.

2.3 Acculturation

2.3.1. Theoretical Basis

Social-class transition, such as the transition to higher education, can be an especially challenging process for working-class students compared to their middle/upper-class peers, as it requires adaptation and learning new cultures and practices. This is evidenced by the social-class achievement gap, which demonstrates lower academic success rates, including higher dropout rates and lower academic performance (Jury et al., 2017; Stephens et al., 2015). To succeed in the higher education environment, working-class students must actively utilize acculturation processes to adapt their norms and values to the university's culture. Berry (1997) identified four strategies of acculturation: the integrative strategy, the assimilative strategy, the separation strategy, and the marginalization strategy. While this work primarily focused on nation-state immigration, it can be adapted to social-class immigration (Phillips, Martin, et al., 2020).

The integrative strategy is often seen as the most beneficial, as it reflects an individual's identification with both the new and the original group. In the context of class transition, this would mean identifying as a member of both the current and past social-class. In contrast, the assimilative strategy involves exclusively identifying with the new social group, and in doing so, class transitioners may attempt to shed the norms and values of their past social-class and fully adopt those of their new one. The separation strategy results in rejecting the new group

and holding onto the norms and values of the original group. For class transitioners, this would mean not adopting the norms and values of the new social-class, but rather sticking to those of their old social-class. Finally, the marginalization strategy involves rejecting both groups, i.e., the new as well as the original social-class.

2.3.2. Directionality of Social-Class Mobility

Social-class is considered unique due to its relative malleability, as individuals can actively work to change it over the course of their lives, such as through pursuing higher education (Phillips, Martin, et al., 2020). However, people tend to overestimate the mobility of social-class (Kraus & Tan, 2015), which can result in increased tolerance for economic inequality. This is because they believe that they can actively change their social-class, leading them to underestimate the role of systemic barriers such as poverty, discrimination, and lack of access to resources that impede upward mobility. Consequently, individuals may accept the existence of harsher conditions, such as limited access to healthcare, education, or higher rates of poverty (Davidai, 2018; Shariff et al., 2016). Such strong meritocratic beliefs have led to the perception that anyone can succeed at university regardless of their social-class background (Kuppens et al., 2018; Veldman et al., 2022). Despite this, social-class transitions are often constrained by social structures (Chetty et al., 2014; Stephens, Markus, et al., 2014). For example, under-resourced school environments in working-class neighborhoods may provide fewer upward opportunities compared to better-resourced neighborhoods in middle/upper-class areas (Collins, 2019; Stephens, Markus, et al., 2014). These systemic barriers limit upward mobility and perpetuate economic inequality, diverting attention from the need to address the root causes of poverty and social inequality.

Consequently, previous research on social-class change in psychology has primarily focused on directionality, particularly on upward social mobility experiences (Destin et al., 2017; Martin & Côté, 2019; Phillips, Martin, et al., 2020). However, there is still debate regarding the degree to which upward mobility is actually achieved. Although obtaining a university degree may result in social advancement, such as increased occupational prestige and

financial and cultural capital (Bourdieu, 1979; Collins, 2019), individuals may still perceive a subjective class experience that is not consistent with their objective social-class status. For instance, in a longitudinal study by Phillips, Stephens, et al. (2020), working-class students reported lower status, less sense of belonging to university, and different values and norms than their middle/upper-class peers, despite their objective change in social-class after attending an elite university in the U.S. These findings may indicate an initial separation acculturation strategy, in which individuals undergoing social-class transition maintain identification with their original social-class and only gradually, if at all, identify with their new social-class.

However, other research suggests that social support can facilitate an integrative acculturation experience, enabling working-class students to identify with both their original and new social-class (Herrmann & Varnum, 2018a, 2018b). Herrmann et al. (2021) explored the integrative acculturation strategies adopted by working-class students using a combination of neighborhood data, self-reported measures, and academic records. One study revealed that pre-university exposure to university graduates in students' home neighborhoods was positively associated with higher integrative acculturation strategies. Furthermore, they showed that the integration of the new social-class identity predicted academic self-efficacy, which subsequently led to improved academic performance. Finally, they found a positive impact of integrating the new social-class identity into students' existing identity on life satisfaction, acculturative stress, and general health among working-class students across various types of universities, including large public universities and selective private institutions. These findings suggest that working-class students can successfully integrate a new identity from the new social-class, which enhances their academic performance and well-being.

When taken together, the aforementioned research underscores the importance of social support, as working-class students may otherwise experience marginalization and miss out on opportunities for integrative or assimilative acculturation processes that involve incorporating the norms and values of the new social-class (Phillips, Martin, et al., 2020).

Chapter 1 examines whether recent findings on social-class change, as observed by Phillips, Stephens, et al. (2020), are generalizable to a more diverse university setting in

Europe. The longitudinal study found that working-class students consistently endorsed more interdependence until graduation, which was associated with a reduced sense of belonging and a widening social-class gap in academic outcomes over time. These findings suggest that initial social-class differences persist, leading to disparities in students' university experiences and outcomes up to graduation. Building on these findings, Chapter 1 further explores the subjective experience of social-class over time and examines the role of students' sense of belonging to the university as a potential driver of class transitioning (Brannon et al., 2017; Croizet & Claire, 1998; Croizet & Millet, 2012; Tibbetts et al., 2016, 2018).

2.3.3. The Role of Sense of Belonging in Acculturation

Sense of belonging refers to subjective feelings of comfort, inclusion, and compatibility with a particular institutional environment (Edwards, 2008; Edwards et al., 2006; Schmader & Sedikides, 2018). This concept is distinct from social belonging, which refers to positive interpersonal relationships rather than the fit with the institutional environment (Walton & Cohen, 2011). Sense of belonging may play a crucial role in fueling the acculturation process for working-class students. At the outset of their studies, working-class students frequently report feeling like they do not fit into the university environment (Stephens, Fryberg, et al., 2012). This feeling persists even through graduation and beyond, as working-class students report not feeling like they belong in professional settings (Gray & Kish-Gephart, 2013; Jack, 2016; Phillips, Stephens, et al., 2020; Rivera & Tilcsik, 2016).

Sense of belonging may play a mediating role in the link between cultural mismatch and negative outcomes in university and beyond. According to Phillips, Stephens, et al. (2020), working-class students who endorse interdependence and experience a mismatch have a weaker sense of belonging to the university over time, resulting in lower academic outcomes. This could be due to their more interdependent self-construal, which may impede their ability to adopt the university's promoted norms of independence, leading to a lower sense of belonging. The authors emphasize the importance of social support and recognition of cultural norms in developing a sense of belonging to the university (Sam & Berry, 2010; Ward & Kennedy,

2001). However, since universities prioritize independence over interdependence, they may not provide adequate social support for working-class students. Classroom discussions, for instance, may not effectively socialize interdependent students, as they may not engage in the independent, self-expressive behaviors expected of them (Fryberg et al., 2013). This lack of support could hinder working-class students' development of a sense of belonging over time. Additionally, research has shown that a lower sense of belonging is associated with negative outcomes such as social stress and academic difficulty for students (Brannon et al., 2017; Cheryan et al., 2009; Croizet & Claire, 1998; Croizet & Millet, 2012; Johnson et al., 2011; Ostrove & Long, 2007; Stephens, Townsend, et al., 2012).

Chapters 1 and 3 of this thesis will take a detailed look at the role of sense of belonging as a mediating factor in the experience of cultural mismatch and academic outcomes, such as students' grades, subjective experience of social-class, and their learning behaviors (e.g., asking questions, participating in group discussions) necessary for academic success.

2.3.4. Acculturation of Self-Construal

Universities reflect and promote independence over interdependence as a standard, which necessitates that students have or develop an appropriate identity that is integrated into themselves (Haslam et al., 2021; Stephens, Markus, et al., 2014; Veldman et al., 2022). Therefore, working-class students must acculturate and adapt their self-construal towards independence to successfully transition to higher education.

In this thesis, two possible means of acculturation involving the adaptation of students' self-construal are considered. The first, referred to as exclusive acculturation, entails a process where working-class students gradually develop a more independent self-construal, eventually replacing their interdependent self-construal. This approach is comparable to Berry's (1997) assimilative strategy, in which individuals fully adopt the norms and values of the new social group or social-class. The second process, called flexible acculturation, involves students developing independent self-construals that coexist with their interdependent self-construals. The immediate context determines the activation of the appropriate self-construal – for example,

being more interdependent with family and independent in the classroom (Herrmann & Varnum, 2018a, 2018b). This flexible acculturation process aligns with Berry's (1997) integrative strategy, considered the most beneficial form of acculturation. In this strategy, individuals identify with both the new and original social groups. In the context of higher education, students adopt the norms and values of both the new and original social-classes.

Chapter 2 examines this acculturation process in more detail by taking a closer look at a particular group of working-class students: those who succeed at university against all odds. This chapter aims to bridge the gap in understanding the acculturation of these working-class students, specifically the evolution of their self-construal at university, and whether this process is exclusive or flexible. To achieve this, the chapter employs experimental manipulations of self-construal primings and contextual variations, where students complete questionnaires about their self-construal in both home and university environments.

2.3.5. Influence of Intersectional Identities on the Acculturation Process

In studying how working-class students acculturate to university, it is important to consider the intersection of social-class with other social groups to which the individuals belong, as the development of one's self and identity is influenced by the interaction of multiple social identities (APA Task Force on Socioeconomic Status, 2007). Intersectionality refers to the concept of having multiple relevant identities, such as gender, social-class, sexual orientation, and religion, which can impact one's experiences in a given context. Individuals who possess multiple underrepresented or stigmatized identities may encounter more difficulties due to stereotypes and discrimination, making the acculturation process particularly challenging (Cole, 2009; Collins, 2019; Stirratt et al., 2008; Warner, 2008).

The intersectionality of social-class with other marginalized identities can compound the challenges faced by working-class students during the acculturation process. Herrmann et al. (2021) found that working-class students who belonged to multiple underrepresented groups at university experienced worse academic and health outcomes. For instance, the effect of integrating the new social-class identity into students' existing identity, which has been

previously discussed as an integrative acculturation strategy, had a stronger impact on acculturative stress for underrepresented minority students (e.g., students who belonged to working-class and underrepresented ethnic minority) compared to majority students (e.g., students who belonged solely to working-class).

Recognizing these challenges, research has explored interventions to support students from multiple marginalized groups. Harackiewicz et al. (2016) discovered that self-affirmation interventions were particularly effective for the most disadvantaged students. Additionally, Nguyen & Nguyen (2020) and Tibbetts et al. (2018) found that students who belonged to many marginalized groups tended to endorse both independent and interdependent self-construals more strongly than those who were solely working-class.

In sum, belonging to multiple marginalized groups can moderate the cultural match or mismatch between a student's self-construal and the norms at university, as well as their acculturation process. Therefore, an intersectional approach in research on social-class and cultural mismatch is crucial to gain a better understanding of the diverse situations of marginalized groups and to be able to develop tailored interventions for individuals' unique needs. In the studies presented in the following chapters, students' multiple identities, including gender and other marginalized groups, are controlled for. Cole (2009) suggested focusing on similarities in experiences across social categories rather than differences between and within them. Chapter 2 presents studies that measure and control for similarities in discrimination experiences across groups. This includes the intersectionality of social-class with other identities beyond gender, such as those who experience marginalization due to factors such as racism, ableism, or discrimination against LGBTQI+ individuals. These experiences are considered in their influence on self-construal and the experience of cultural match or mismatch. The study presented in Chapter 3 builds upon those presented in the first two chapters by testing interactions between students' social-class and relevant identities, such as students' gender.

The theoretical framework presented in this chapter illuminates the complex challenges faced by working-class students when transitioning to higher education. The social-class

achievement gap underscores the need to examine factors such as cultural mismatch, self-construal, and acculturation to better understand and support these students' experiences.

The next chapter outlines the research questions and methodology of this thesis, which seeks to deepen our understanding of acculturation and social-class change in diverse European university settings. The thesis will delve into both students' objective and subjective social-class experiences, focusing on their sense of belonging and how it affects academic outcomes and behavior. Additionally, this research will control for and examine interactive effects of students' various identities during the acculturation process in higher education.

Overall, this thesis provides a nuanced perspective on the acculturation experiences of working-class students, and its findings should be useful and contribute to the development and implementation of policies and practices in higher education, with the goal of promoting a more inclusive and equitable learning environment for all students.

3. The Present Research

3.1 Literature Gaps

Most research on cultural mismatch theory is based on studies conducted in elite American universities. Stephens, Fryberg, et al. (2012) initially proposed cultural mismatch theory based on data collected from first- and second-tier universities in the U.S., with a focus on students from prestigious institutions like Stanford University. However, the highly competitive nature of U.S. elite universities and their structural challenges, such as exorbitant tuition fees (e.g., \$57,693 average undergraduate tuition fee for Stanford University in the current academic year 2022 – 23; Stanford University, 2022), compared to many European countries (e.g., France with a tuition fee of 170 € for undergraduates; Campus France, 2022), may amplify the effects of social-class and the cultural norm of independence. Although university systems in Europe may have diverse cultures, practices, and identities, there is generally an emphasis on independence, especially in more competitive institutions such as those in France and other European countries (Rienties & Tempelaar, 2013; Sommet et al., 2015). While Phillips, Stephens, et al. (2020) focused their longitudinal studies on acculturation and cultural mismatch effects on samples in U.S. colleges, they suggested that universities outside the U.S. may operate similarly. Thus, institutions outside the U.S. may also promote the norms and values highly valued by the middle/upper class, which can result in negative effects of cultural mismatch as well. The studies presented in Chapter 1 of this thesis explore cultural mismatch and its consequences through several longitudinal studies, following a similar approach as Phillips, Stephens, et al.'s study (2020) on samples that include diverse student populations from universities in France and Germany. In line with the theoretical framework of this thesis, this chapter places additional emphasis on the multidimensionality of self-construal and its impact on acculturation processes.

As outlined in the theoretical framework, the transition to university can pose greater challenges for working-class students, leading to lower academic achievement (Jury et al., 2017; Stephens et al., 2015). Yet, against the odds, some working-class students perform as well as their middle/upper-class peers (Agasisti & Longobardi, 2014; OECD, 2011). This could indicate that they may be able to acculturate their self-construal to that valued in the university context. This, in turn, may be a possible explanation that these high-performing working-class students possess resources and skills that enable them to navigate the challenges of university life, such as resilience in the face of adversity (O'Shea, 2020; Wong & Chiu, 2019). Despite this, the specific acculturation process of high-performing working-class students remains largely unexplored (Phillips, Martin, et al., 2020). It is unclear whether this process is exclusive, meaning that working-class students develop a more independent self-construal that replaces their interdependent self-construal over time. Alternatively, this process could be flexible, where working-class students develop independent self-construals that coexist with their interdependent self-construals, and the immediate context determines the activation of the appropriate self-construal. Chapter 2 thus aims to fill in this gap by examining working-class students' acculturation, in particular related to changes in their self-construal at university, in three studies.

The COVID-19 pandemic and the resulting closures of schools and universities had a significant impact on over 1.3 billion learners globally (UNESCO, 2020). The shift towards distance learning resulted in less on-campus teaching and contributed to the widening of the social-class achievement gap (Betthäuser et al., 2023; Engzell et al., 2021; Goudeau et al., 2021). The experience of the digital divide and cultural mismatch are two previously documented barriers that have contributed to social-class disparities in universities and may have further fueled the social-class achievement gap during the pandemic. However, it remains unclear whether these barriers continued to be relevant in the French university context. Additionally, it is uncertain to what extent the digital divide and cultural mismatch influence the psychological experiences of working-class students, such as their sense of belonging to the university. These barriers may be associated with academic inequalities, hindering the

development of learning behaviors (e.g., asking questions, participating in group discussions) that are essential for academic success. The study in Chapter 3 aims to address these questions and provides pandemic-specific data that can serve as a comparison point for future research.

3.2 Research Questions

Chapter 1 explores the concept of cultural mismatch and its consequences in the European context over time. While most research on cultural mismatch theory has been conducted in elite American universities, this chapter focuses on diverse student populations from universities in France and Germany. It also places additional emphasis on the multidimensionality of self-construal and its impact on acculturation processes. The first research question for this thesis is:

1. To what extent does prolonged exposure to the university environment lead working-class students to acculturate to middle/upper-class norms in two European university contexts (France and Germany), and how can a multidimensional analysis of students' self-construal provide a deeper understanding of the relationship between social-class and university outcomes?

Chapter 2 aims to fill the gap in the literature on the specific acculturation process of high-performing working-class students. It investigates whether this process is exclusive or flexible and examines changes in self-construal at university. The second research question addressed in this thesis is:

2. Do high-performing working-class students acculturate their self-construal in response to the demands of university in a flexible way, which resembles the integrative strategy that involves identifying with both new and original social-class, as the most beneficial form of acculturation?

Chapter 3 explores the relationship between the digital divide and cultural mismatch and the psychological experiences of working-class students during the specific situation of online learning caused by the COVID-19 pandemic in the context of French universities. This chapter provides pandemic-specific data that can serve as a comparison point for future research. The third research question of this thesis is:

3. How are the experiences of the digital divide and cultural mismatch related to the psychological experiences of working-class students and their essential learning behaviors during the specific situation of online learning caused by the COVID-19 pandemic in the context of French universities?

3.3 Methodology

3.3.1. Participants

Participants in all studies of this thesis were adult undergraduate students within their first three years of studies. This specific population was targeted because they were on the verge of receiving their first higher education diploma (Licence in France or Bachelor's degree in Germany), which objectively marks their social-class transition towards the middle/upper class. Furthermore, targeting this group allowed the exclusion of previous acculturation processes in higher education. In the first study of Chapter 1, data was collected from psychology students at a large psychology department in France. However, the generalizability of the results is limited due to the study being conducted at a single university in France, with a predominantly psychology undergraduate student population. To address this limitation, the second study of Chapter 1 expanded the research scope by collecting data from a diverse sample of students across multiple universities in France and Germany. The sample included students from various fields of study, such as social sciences, STEM (science, technology, engineering, and mathematics), as well as other fields, including business, administration, law, agriculture, forestry, fisheries, veterinary, health, and welfare services. The total sample size for Chapter 1 was $N = 1357$ students.

Chapter 2 included three studies conducted across different universities in France, with the population consisting of undergraduate students within their first three years of studies in various fields of study, including social sciences, STEM, and other fields like business and administration. The final sample size for Chapter 2 was $N = 1217$ students.

In Chapter 3, data was collected from undergraduate students across several universities in France in the broad field of social sciences. The final sample size for this study was $N = 2275$ students. Although efforts were made to collect a diverse sample, the samples used in these studies were biased in several ways, such as being predominantly composed of students in social sciences and having a higher percentage of participants who self-identified as female. These biases may limit the generalizability of the findings to other academic disciplines and populations.

3.3.2. Operationalizing Social-Class

Research on social-class in the social sciences, especially in psychology, has examined various indicators to assess social-class, including income, education, and occupation (Sirin, 2005). In previous studies on cultural mismatch, the educational level of students' parents has been used as a proxy for social-class (Covarrubias et al., 2019; Covarrubias & Fryberg, 2015; Harackiewicz et al., 2014, 2016; Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Townsend, et al., 2012). Working-class students were defined as those with first-generation status, meaning that neither parent has a tertiary educational level, while continuing-generation students were defined as those with at least one parent with a tertiary education. Social-class is a complex and multi-faceted construct, and indicators related to parents' occupation have also been shown to be a good proxy for students' social-class (Goudeau & Croizet, 2017; Oakes & Rossi, 2003). Therefore, in this thesis, participants' social-class was categorized using two separate proxies: parents' level of education and parents' occupations, following recent recommendations (Rodríguez-Hernández et al., 2020). Consequently, working-class students were defined as those with a first-generation status or those whose parents come from blue-collar occupations. In contrast, middle/upper-class

students were defined in this thesis with a continuing-generation status or parents holding professional occupations that require advanced education or managerial roles. These proxies were used throughout all three chapters as separate indicators for social-class.

Past research has demonstrated that subjective measures of social-class are distinct from, but strongly correlated with objective proxies of social-class (Herrmann & Varnum, 2018a; Kraus et al., 2009, 2010, 2013; Laurin et al., 2011; Singh-Manoux et al., 2003; Tan et al., 2020). Subjective measures of social-class are defined as the perception of where one stands in the social hierarchy relative to others (Adler et al., 2000; Kraus & Stephens, 2012). Therefore, subjective self-definitions should be considered along with objective measures (Rubin et al., 2014). As previous research has shown that working-class students may lag behind in their subjective social-class experience compared to their objective one (Herrmann et al., 2021; Phillips, Martin, et al., 2020; Phillips, Stephens, et al., 2020), this thesis regards the subjective experience of social-class as an additional proxy. This difference in perception could be particularly important when considering the acculturation strategies of working-class students. As they integrate or assimilate into the new middle/upper class, they may experience conflicting emotions about leaving their original social-class and compromising their values to adapt (Herrmann & Varnum, 2018a). Therefore, this thesis also regards the subjective experience of social-class as a proxy, which is included as an outcome in Chapter 1 and as a measure of social-class in Chapter 2.

The expanded operationalization of social-class in this thesis enabled a comprehensive examination of its impact on various outcomes in higher education. The proxies used to measure social-class include both education and occupation, along with students' subjective experience. This allowed for an evaluation of the relative importance of these indicators in predicting academic outcomes, revealing the complexity of social-class and its influence on higher education.

3.3.3. Apparatus, Stimuli, and Instruments

All studies were conducted online, with the exception of one data collection in the first study of Chapter 1, which had to be moved online due to the COVID-19 pandemic and the challenges associated with conducting on-campus studies. As a result, it was not possible to control the conditions under which students participated in the studies. They could have been at home with family, in a quiet area, at the university, or in other public spaces. Despite efforts to request that participants carry out the studies in quiet places if possible, this online data collection may have been detrimental because students were not necessarily exposed to the immediate context of the university. However, it also reflects the immediate reality of the students, which was particularly important in Chapter 3 where the impact of online learning due to the COVID-19 pandemic was examined.

To ensure consistency and comparability across the studies, internationally recognized instruments were used to measure social-class, which were included in all studies. The International Standard Classification of Education (ISCED; UNESCO Institute for Statistics, 2015), the International Standard Classification of Occupations (ISCO-08; International Labour Organization, 2012), and the MacArthur Scale were utilized to assess participants' social-class, including their subjective experience of social-class (Adler et al., 2000). Similarly, consistent measures were employed throughout the studies to measure self-construal and its multidimensionality, such as the Motives for Attending College scale (Stephens, Fryberg, et al., 2012) and subscales of the Culture and Identity Research Network Self Construal Scale Version 3, CIRN-SCS-3 (Vignoles et al., 2016). Additionally, the same measure was used to assess students' sense of belonging, adapted from items in Tibbetts et al. (2018) and Trawalter et al. (2020). In Chapter 1, we expanded the measurement of self-construal to include an implicit measure using an implicit association task (IAT). The IAT measures implicit biases, unconscious norms, and values that may influence students' behavior and reveal biases that self-reported questionnaires or behavioral tasks may not capture (Amodio & Devine, 2006; Greenwald et al., 1998; see Chapter 1 for more detailed information).

To measure gender, the studies asked participants to select which gender best describes them from response options including female, male, and an opportunity for self-description. These response options were based on internationally recognized recommendations for capturing sensitive data while being as inclusive as possible (National Academies of Sciences, Engineering, and Medicine, 2022; Pasterny, 2016). As outlined in the theoretical framework of this thesis, belonging to multiple marginalized groups was measured to control for shared experiences across these groups (Cole, 2009). Participants were able to indicate if they identify as a member of a group that experiences discrimination in their country and could further indicate the basis for this discrimination. The questionnaire for this measure was developed through a collaborative effort involving international researchers in the field of education across multiple countries, including my participation, prior to the current thesis project (Hand in Hand, 2020).

The associated Open Science Framework webpages for each chapter include codebooks with all scales, measures, and manipulation set-ups, including translations provided for French and German.

3.3.4. Research Design: Combining Slow and Fast Approaches

This thesis employs a variety of research procedures to meet different scientific standards. To meet the demand for higher quality research, Frith (2020) recommends using a more thorough and comprehensive approach to research that considers longer time periods and broader perspectives, rather than rushing to obtain quick results. This approach is reflected in Chapter 1, where three longitudinal studies were conducted over a period of three years to measure the extent to which working-class students acculturate to the university environment. In addition, this thesis employs fast science approaches. Chapter 2 utilizes experimental manipulations to explore the specific acculturation processes of some working-class students who perform highly against the odds. The experimental manipulations involved primings of self-construal as well as contextual variations where students completed questionnaires regarding their self-construal in both a home and university environment. In Chapter 3, a correlational

design is used to investigate the associations between the COVID-19 pandemic and the digital divide, as well as the experience of cultural mismatch. This chapter also examines the extent to which the digital divide and cultural mismatch are related to psychological barriers that may be linked to academic inequalities and potentially hinder learning behaviors essential for academic success.

This thesis delves into the intricate dynamics of cultural mismatch and acculturation processes among working-class students in higher education. To meet the demand for both quality and efficiency in research, a combination of slow and fast science approaches was employed. It examines the social-class transition experiences of these students over time, comparing both their subjective and objective experiences of social-class. The thesis also focuses on the specific group of working-class students who succeed despite facing numerous obstacles. Furthermore, it integrates the multidimensionality of self-construal and expands the scope of research on cultural mismatch by combining it with other barriers such as the digital divide, especially in the context of the COVID-19 pandemic. The ultimate goal is to enhance our understanding of the experiences and challenges encountered by working-class students in higher education, particularly regarding their acculturation processes. It aims to inform policy and practice and can contribute to the development of tailored programs and interventions that can support the academic success of working-class students in various contexts, including those facing barriers such as the digital divide and cultural mismatch.

CHAPTER 1

Ongoing Cultural Mismatch Impedes Academic Success

Based on:

Müller, F., Goudeau, S., & Sanitioso, R. B. (2023). *Academic Achievement of Working-Class Students: Acculturation and the Continuing Impact of Cultural Mismatch*. Manuscript in preparation. Université Paris Cité, France.

As outlined in the theoretical framework, previous research has demonstrated the effects of acculturation and cultural mismatch primarily among working-class students in elite American institutions (Phillips, Stephens, et al., 2020). While these effects were assumed to be universal and transferable to different educational contexts and countries, it was important to investigate whether these findings could be replicated in a European context, such as France and Germany. The studies in this chapter aim to explore the concept of cultural mismatch and its consequences in the European context over time, and to replicate prior findings in this new educational context.

Furthermore, this research expands upon previous studies in several ways. Firstly, it includes diverse samples from multiple universities, an approach that was not utilized in prior research on cultural mismatch. Secondly, it extends the definition of self-construal to include its multidimensionality, particularly with regard to expressive and hard forms of independence. Lastly, implicit measures of self-construal are included.

Through three longitudinal studies conducted in two countries, this research aims to answer the first research question of this thesis: whether prolonged exposure to the university environment prompts acculturation to middle/upper-class norms among working-class students in European contexts, and whether multidimensional analysis of students' self-construal provides a deeper understanding of the relationship between social-class and university outcomes.

Manuscript in preparation:

**Academic Achievement of Working-Class Students: Acculturation and the Continuing
Impact of Cultural Mismatch**

Fabian Müller¹, Sébastien Goudeau², Rasyid Bo Sanitioso¹

¹ Université Paris Cité, Laboratoire de Psychologie Sociale, Boulogne-Billancourt, France

² Centre de Recherches sur la Cognition et l'Apprentissage, CNRS, Université de Poitiers,
Poitiers, France

Author Note

Fabian Müller  <https://orcid.org/0000-0002-8363-9285>

Sébastien Goudeau  <https://orcid.org/0000-0001-7293-0977>

Rasyid-Bo Sanitioso  <https://orcid.org/0000-0001-7949-408X>

Preregistration, data, analysis code, and additional online materials are openly available at the project's Open Science Framework page. We have no conflicts of interest to disclose.

Abstract

Upward educational mobility remains a challenge in many countries, including France and Germany. One contributing factor is the initial cultural mismatch experienced by working-class students, who often hold interdependent norms that clash with the highly independent cultural norms prevalent in universities. This leads to worse experiences and academic outcomes relative to their middle/upper-class peers, with lasting effects until graduation. We examined whether prolonged exposure to the university environment prompts acculturation to middle/upper-class norms among working-class students in European universities. Furthermore, we investigated different dimensions of students' self-construal and resulting mismatches with the university over time. Using three longitudinal studies across multiple universities in France and Germany ($N = 1357$), we found that working-class students do not acculturate to the university environment. Instead, they experience an initial cultural mismatch by endorsing more interdependence that shapes and predicts their academic outcomes throughout their time at university, leading to lower grade point averages and subjective experiences of their social-class. Cultural mismatch and resulting social-class achievement gaps is widespread and transcends national borders and educational contexts. As universities are a pathway for upward social mobility, it is essential for higher education institutions to implement actions that facilitate the acculturation of working-class students. These actions should be tailored to both independent and interdependent norms in the specific educational contexts to interrupt the pattern of cultural mismatch and enable genuine upward social mobility.

Keywords: upward mobility, higher education, social-class, cultural mismatch, acculturation, longitudinal studies

Is higher education really the great equalizer in our society? Despite rising tertiary education (i.e., higher education) rates worldwide (OECD, 2022), the reality is that social mobility remains a challenge in many countries, including France and Germany. For instance, children of parents with tertiary education are more likely to obtain the same level of education themselves (68% and 53%, respectively). Yet, those whose parents have not attained upper secondary education face lower chances of obtaining tertiary education with rates dropping to 17% in France and 11% in Germany (OECD, 2018).

Students' social-class plays a vital role in their upward educational mobility. Working-class students, whose parents do not have a three-year university degree or work in blue-collar jobs, have fewer opportunities to earn a university degree than their middle/upper-class peers. The latter group's parents typically have at least a three-year university degree or one professional occupation that requires advanced education or managerial roles. Despite gaining admission to university, working-class students face significant challenges in succeeding in higher education (Jury et al., 2017; Stephens et al., 2015). While factors such as lower family income, high school GPA, or poorer preparation are often considered, they do not fully explain the persistent achievement gap between working-class students and their middle/upper-class peers (Atherton, 2014; Bailey & Dynarski, 2011; Ishitani, 2003). One potential contributing factor to this gap is cultural mismatch, where working-class students tend to have a more interdependent/less independent self-construal that does not match the more independent university culture (Stephens, Fryberg, et al., 2012). Previous research has shown that cultural mismatch can prevent working-class students from acculturating to the university culture, leading to persistent social-class achievement gaps until graduation (Phillips, Stephens, et al., 2020).

However, these findings are based on research in elite universities in the U.S. In this study, we aim to examine the extent to which prolonged exposure to the university environment leads working-class students to acculturate to middle/upper-class norms in two European university contexts: France and Germany. Additionally, this study goes beyond previous research by examining different dimensions of students' self-construal, including an implicit measure of

independence, offering a more comprehensive understanding of the impact of social-class on university outcomes (Vignoles et al., 2016).

Cultural Mismatch

Higher education can perpetuate social-class achievement gaps by promoting cultural norms of independence. These norms prioritize individuality, the expression of personal opinions and the pursuit of individual goals, rather than valuing group rules or the opinions of others (Stephens et al., 2019; Tibbetts et al., 2018).

Cultural mismatch theory (Stephens, Fryberg, et al., 2012) posits that working-class students may experience a mismatch between their relatively interdependent norms and the dominant culture of independence in higher education (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014). This mismatch is partly rooted in students' self-construal, which shapes their endorsement of diverse norms. Self-construal can be either independent or interdependent and is influenced by students' social-class background (Markus & Kitayama, 2010). Social-class socialization, involving differences in parenting styles, values, and practices between working-class and middle/upper-class families, plays a significant role in shaping self-construals. Working-class families tend to prioritize interdependence and resilience, while middle/upper-class families focus more on individual growth and independence (Kusserow, 2004; Lareau, 2003; Stephens, Markus, et al., 2014). As a result, working-class contexts tend to foster a more interdependent self-construal, which views the self as connected to others and part of a larger community (Stephens et al., 2007). In contrast, middle/upper-class contexts foster an independent self-construal, which sees the self as separate from the social environment and emphasizes individual agency (Fryberg & Markus, 2007; Stephens, Fryberg, et al., 2012).

Recent research has further nuanced the concept of self-construal by distinguishing between different forms of independence, such as expressive and hard independence (Chang et al., 2020; Covarrubias et al., 2019). Expressive independence prioritizes self-expression and pursuing personal interests, while hard independence emphasizes emotional control and self-reliance in the face of adversity. Middle/upper-class contexts and universities tend to

cultivate the former, while the latter is more common in working-class contexts (Kusserow, 2012; Stephens, Markus, et al., 2014).

The match or mismatch between students' self-construal and the culture of independence in higher education can have significant consequences. The independent university context is more compatible with middle/upper-class students' family socialization. In contrast, the interdependent and hard independent norms more common in working-class contexts represent somewhat a mismatch with the prioritized (expressive) independent culture at university (Harackiewicz et al., 2014; Stephens, Fryberg, et al., 2012). This mismatch can produce various negative consequences, including stress, negative emotions, a weakened sense of belonging, and decreased academic achievement (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens & Townsend, 2015).

Acculturation and Cultural Mismatch over Time

Acculturation is a process of psychological change in which individuals adapt to a new cultural environment, integrating or abandoning aspects of their original context (Berry, 1997; Sam & Berry, 2010). In higher education, acculturation can be applied to the context of social-class transition, where working-class students seek to overcome cultural mismatches in university by gradually adapting their norms and values to become more independent over time.

Berry (1997) identified four strategies of acculturation: integration, assimilation, separation, and marginalization. Integration is considered the most beneficial form of acculturation, where an individual identifies with both the original and new groups. Assimilation involves identifying solely with the new group, abandoning the norms and values of the original group. Separation refers to rejecting the new group and maintaining a connection to the original group, while marginalization involves rejecting both groups.

Although this work primarily focused on nation-state immigration, it can be adapted to social-class immigration (Phillips, Martin, et al., 2020). In the context of higher education, acculturation requires working-class students to adjust their self-construal in relation to the expectations and values of the university culture, which may prioritize independence over

interdependence (Haslam et al., 2021; Stephens, Markus, et al., 2014; Veldman et al., 2022). Consequently, working-class students must acculturate their self-construal towards independence.

Previous literature has suggested that a sense of belonging to university may fuel this change (Brannon et al., 2017; Croizet & Claire, 1998; Croizet & Millet, 2012; Tibbetts et al., 2016, 2018). However, the cultural mismatch perspective predicts that initial norms of working-class students may not change, as experiencing a mismatch could lower their sense of belonging to the university and ultimately perpetuate social-class achievement gaps.

The role of sense of belonging

Experiencing cultural mismatch may result in negative outcomes for working-class students, such as lower academic outcomes. Sense of belonging has been found to mediate the relationship between initial cultural mismatch and later outcomes. Phillips, Stephens, et al. (2020) found that working-class students who endorsed more interdependence, and thus experienced a mismatch, reported a weaker sense of belonging to the university over time, which ultimately led to lower academic outcomes at the end of their studies. It is not the working-class students' lack of independence, but rather their more interdependent self-construal that may prevent them from shifting towards the university's promoted norms of independence, by lowering their sense of belonging. They further emphasize the importance of social support and recognition of cultural norms in developing a sense of belonging to the university (Sam & Berry, 2010; Ward & Kennedy, 2001). However, as universities prioritize independence over interdependence, they may not provide the necessary social support for working-class students. Classroom discussions, for example, may not be effective in socializing interdependent students as intended, as these students may not engage in the independent, self-expressive behaviors expected of them (Fryberg et al., 2013). Thus, practices like classroom discussions do not help working-class students to develop a sense of belonging over time.

Recent research conducted in Europe supports the importance of sense of belonging in acculturating to university, finding that it also mediates the relationship between independent self-construal and learning behaviors necessary for academic success, such as attending

class or asking questions (Müller et al., in press). Nonetheless, a more nuanced examination of the role of independent self-construal among students of different social-classes is necessary to address potential differences in the acculturation process, uncover any limitations in the current understanding, and ultimately provide a more comprehensive understanding of the impact of social-class on acculturation to university.

The role of different dimensions of independent self-construal

Recent research suggests that working-class students do not necessarily endorse less independence overall compared to their middle/upper-class peers, but instead endorse different dimensions of independent self-construal. Middle/upper-class environments may emphasize expressive independence that highlights students' self-expression and uniqueness, while hard independent features of self-construal, such as self-reliance or emotional control, may be more common in working-class environments (Chang et al., 2020; Covarrubias et al., 2019; Kusserow, 2012; Vignoles et al., 2016). However, a greater endorsement of hard independent self-construal might have additional negative impacts: more self-reliance can reduce help-seeking behavior necessary for success at university, and further conflicts with university norms regarding self-expression. This may contribute to a stronger experience of cultural mismatch, hindering students' ability to acculturate to the university environment.

To extend prior research, this study examines the specific dimensions of independent self-construal, such as hard and expressive independence, that may be most relevant in the context of cultural mismatch. While prior work has primarily relied on explicit questionnaires or behavioral tasks to capture general independence (Phillips, Stephens, et al., 2020), we include an implicit measure of independence using an implicit association task (IAT). The IAT is a measure of implicit biases, unconscious norms, and values that can influence students' behavior and reveal biases that may not be captured through self-reported questionnaires or behavioral tasks (Amodio & Devine, 2006; Greenwald et al., 1998). Unlike self-report questionnaires, the IAT does not rely on participants' self-awareness or willingness to report their self-construal, and unlike behavioral tasks, the IAT is designed to measure implicit associations that may not be under conscious control.

Thus, this study aims to extend prior research by 1) examining the specific dimensions of independent self-construal that may be most relevant in the context of cultural mismatch and 2) incorporating an implicit measure of independence using the IAT, to provide a more nuanced understanding of the effects of cultural mismatch on students' acculturation to the university environment.

Overview and Hypotheses

By using longitudinal methods in one country (Study 1) and replicating the findings in a second study conducted across two countries (Study 2), the current research has two main goals. First, we aim to investigate the extent to which prolonged exposure to the university environment leads working-class students to acculturate to middle/upper-class norms in a European context, and to replicate and extend research on cultural mismatch over time beyond elite universities in the U.S. (Phillips, Stephens, et al., 2020). Specifically, we examine whether cultural mismatch over time is also relevant across various universities in Europe. Further, we aim to investigate how initial experiences of cultural mismatch affect social-class disparities in academic outcomes through their influence on students' sense of belonging to the university. Given the potential differences in cultural and institutional contexts between the U.S. and Europe, investigating this process in a European context can provide a more comprehensive understanding of the impact of cultural mismatch on students' academic outcomes.

Second, existing research on cultural mismatch has largely focused on general measures of students' self-construal. While this is important, a more comprehensive understanding of the impact of social-class requires considering the multifaceted nature of the self. Selves are malleable and can change (Markus & Kitayama, 2010), and a better understanding of the different dimensions of students' self-construal can help institutions develop a genuinely inclusive environment. Thus, our study builds on prior research by using various measures to capture diverse dimensions of students' self-construal.

As in prior research, our study focuses on two key outcomes of interest: grade point average (GPA) and subjective social status (SSS). GPA is an objective and common measure of academic success and is also considered a crucial predictor of future employment and

earnings (Jones & Jackson, 1990). On the other hand, SSS is a relatively subjective measure of individuals' social status, defined as the perception of where one stands in the social hierarchy relative to others (Kraus & Stephens, 2012). SSS has been shown to predict important life outcomes such as health and life satisfaction (Adler et al., 2000; Destin et al., 2017; Singh-Manoux et al., 2003).

Based on our theoretical framework, we developed the following hypotheses:

Hypothesis 1: Compared to their middle/upper-class peers, working-class students will exhibit higher levels of interdependent and lower levels of independent self-construals (on explicit and implicit levels), indicative of the experience of a cultural mismatch. In addition, working-class students will express a lower sense of belonging to university and receive poorer academic outcomes (i.e., GPA and SSS). Furthermore, in Study 2, we will measure levels of hard independence (i.e., self-reliance) and expressive independence (i.e., self-expression), with the expectation that working-class students will exhibit higher levels of hard independence and lower levels of expressive independence compared to their middle/upper-class peers.

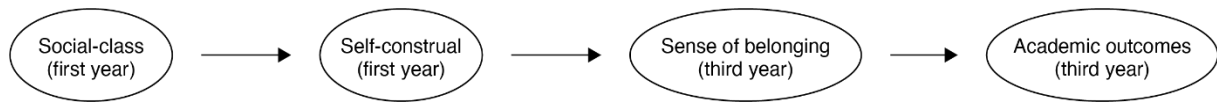
Hypothesis 2: These differences will persist over time.

In Study 2, we then used structural equation modelling to examine whether the experience of initial cultural mismatch influences students' sense of belonging to university over time, which, in turn, undermines their academic outcomes by the end of their studies.

Hypothesis 3: The impact of students' social-class on disparities in their academic outcomes at the end of their studies will be fueled by the initial experience of cultural mismatch and students' subsequent sense of belonging to university (Figure 1). Specifically:

- a. Working-class students will display initially more interdependent and less independent self-construals than their middle/upper-class peers.
- b. More interdependent and less independent self-construals will predict lower sense of belonging to university at the end of their studies.
- c. Lower sense of belonging to university will, in turn, predict lower academic outcomes (i.e., GPA and SSS) by the end of their studies.

Figure 1
Conceptual model of Hypothesis 3



Study 1: Longitudinal Study in France within One University

Method

Participants

First-year psychology students from a large psychology department in France were invited to participate in this study. The first survey (Time 1) was administered on campus, at the end of a social psychology introductory course, during the third week of the students' first academic year in September 2019. Due to the COVID-19 pandemic and the university's shift to distance learning, the second survey (Time 2) was conducted online in the first few months of the students' second academic year, from September to December 2020. The third survey (Time 3) was also conducted online during the final months of the students' third academic year, from January to April 2022.

Operationalizing social-class with parents' level of education. Following recent recommendations (Rodríguez-Hernández et al., 2020), we categorized participants' social-class using two separate proxies: parents' level of education ($N_{Education}$) and parents' occupations ($N_{Occupation}$). We measured parents' level of education using the International Standard Classification of Education (ISCED; UNESCO Institute for Statistics, 2015), and categorized participants as working-class if neither parent had a three-year university degree, and as middle/upper-class if at least one parent had a three-year degree. We included only those who reported information on their social-class and completed at least one part of the Time 1 survey (Time 2 and 3 survey, respectively), leading to a final sample of 312 participants at Time 1, 143 participants at Time 2, and 78 participants at Time 3. Table 1 presents the demographic characteristics of the participants.

Operationalizing social-class with parents' occupations. The occupation of participants' parents was classified using the International Standard Classification of Occupations¹

¹ In Time 1, we measured parents' occupations using the PCS (Professions et catégories socioprofessionnelles), a classification system developed by the French National Institute of Statistics and Economic Studies (INSEE) for classifying occupations and socioeconomic groups in France. For cases with missing data in Time 2 and 3, we utilized the PCS classification as well. However, to ensure consistency with our use of ISCO-08 for operationalizing social-class, we adjusted the PCS categories to align with the categorization system of the ISCO-08.

(ISCO-08; International Labour Organization, 2012). Occupations falling under the first two categories were considered middle/upper-class (e.g., managers, professionals), while those in the remaining categories were classified as working-class (e.g., blue-collar workers, unemployed individuals). However, the third category, which includes technicians and associate professionals, was excluded as middle-class ($N = 110$). Additionally, the tenth category, consisting of armed forces occupations, could not be classified due to the lack of information about specific positions, which could belong to either working-class or middle/upper-class ($N = 3$). The final sample included 234 participants at Time 1, 120 participants at Time 2, and 63 participants at Time 3.

Statistical power considerations

For our longitudinal study, linear mixed-effects analyses were required. Based on the guidelines provided by Arend and Schäfer (2019) for statistical power in two-level models, we calculated the minimum detectable effect sizes for our sample sizes and intraclass correlation coefficients (ICC) at a statistical power level of 80%. The minimum detectable effect sizes for our samples in both $N_{Education}$ and $N_{Occupation}$ ranged from $\eta_p^2 = .002$ to $\eta_p^2 = .013$. This suggests that our study may be sufficiently powered to detect small effect sizes.

Procedure

The study comprised three waves of data collection in which participants completed measures of independent and interdependent self-construal, sense of belonging, and demographics.² In addition, they undertook a Single Category Implicit Association Test, which measured implicit independence, using a recoding-free version (RF-SC-IAT; Karpinski & Steinman, 2006; Rothermund et al., 2009). To ensure seamless administration of the RF-SC-IAT, surveys were conducted on devices with keyboards, with mobile phones excluded.

The study adhered to the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association (2017) as well as the code of conduct of the French

² Participants also completed items from Singelis' (1994) self-construal scale as a measure of their acculturation strategy, consistent with preregistered exploratory hypotheses (see supplemental material, SM).

Psychology Society (2012). This entailed strict observance of ethical guidelines, including voluntary participation, anonymized data collection, informed consent with the option to withdraw from participation at any time, and debriefing after completion of the study. The study did not involve deception, and no personally sensitive data was collected in accordance with the EU's General Data Protection Regulation (e.g., data relating to religion, politics, health, etc.). Consequently, institutional guidelines and national regulations did not require ethics approval for the study.

Table 1
Demographics of Study 1

Variables	<i>N_{Education}</i>		<i>N_{Occupation}</i>	
	Working-class	Middle/upper-class	Working-class	Middle/upper-class
1. <i>N</i>				
T1	135 (43.27%)	177 (56.73%)	59 (25.21%)	175 (74.79%)
T2	62 (43.36%)	81 (56.64%)	42 (35.00%)	78 (65.00%)
T3	29 (37.18%)	49 (62.82%)	21 (33.33%)	42 (66.67%)
2. Gender				
Female	88.37%	86.67%	87.27%	87.80%
Male	10.85%	11.52%	12.73%	9.76%
Not specified	0.00%	0.00%	0.00%	0.00%
Self-description	0.78%	1.82%	0.00%	2.44%

Note. T1 = Time 1, T2 = Time 2, T3 = Time 3. Gender at T1. *N_{Education}*: $M_{Age} = 18.62$ ($SD = 2.33$); *N_{Occupation}*: $M_{Age} = 18.69$ ($SD = 2.51$) at T1.

Measures

In the following section, we present the Cronbach's alpha coefficients for several scales, along with the results of exploratory factor analyses (EFA), for *N_{Education}*. For *N_{Occupation}*, similar results were obtained and are provided in the supplemental material (see SM).

Self-construal

To assess independent and interdependent self-construal, we used the Motives for Attending College scale (Stephens, Fryberg, et al., 2012), which was translated into French with back translation and adapted to the French context. Prior research has demonstrated that independent and interdependent motives for completing university reflect culture-specific

assumptions about higher education and can be used to assess self-construal. Assuming that the university culture in France is commonly perceived as independent (Sommet et al., 2015), the endorsement of interdependence was considered a potential indicator of cultural mismatch (Phillips, Stephens, et al., 2020). Six items, reflecting interdependent motives for attending college as indicators of interdependent self-construal, represented relationship-oriented reasons (e.g., "I want to give back to my community.", $\alpha_{T1} = .82$, $\alpha_{T2} = .82$, $\alpha_{T3} = .78$). Seven items³ reflecting independent motives for attending college as indicators of independent self-construal, represented individual-focused reasons (e.g., "I want to become an independent thinker.", $\alpha_{T1} = .79$, $\alpha_{T2} = .70$, $\alpha_{T3} = .69$) for completing university.

Sense of belonging

To measure the sense of belonging to the university at Time 1, we used two adapted items from Tibbetts et al. (2018), "I belong in [university]" and "I feel like [university] is a good fit for me" ($\alpha_{T1} = .78$). We added one item from Trawalter et al. (2020) for Time 2 and Time 3, to enrich the assessment of the sense of belonging construct. The added item, "I feel 'out of place' at [the university]" (reverse-coded), captures an additional dimension, emphasizing the feeling of being out of place in the university context. This inclusion enhances the content validity of the measure, and the revised scale demonstrated acceptable internal consistency ($\alpha_{T2} = .71$, $\alpha_{T3} = .82$).

Exploratory factor analysis

We used the "psych" package (v2.2.9; Revelle, 2022), implemented in the "jmv" package (v2.3.4; Selker et al., 2022), to conduct an exploratory factor analysis⁴ (EFA) on all items using R software (Version 4.2.2). We included two items from Singelis' (1994) self-construal scale representing students' acculturation strategy, as it was preregistered for exploratory analyses (see SM). The EFA (maximum likelihood extraction method, oblimin rotation, parallel

³ One item has been added to the original scale (see SM).

⁴ As a first step, we performed a confirmatory factor analysis on the T1 data using the "lavaan" package (v0.6.14; Rosseel, 2012), which yielded satisfactory fit indices (root mean square error of approximation (RMSEA) = 0.07, 90% confidence interval (CI) [0.05, 0.08], comparative fit index (CFI) = 0.90, Tucker-Lewis Index (TLI) = 0.88). However, given the relatively small sample sizes at T2 and T3 might pose problems, we conducted exploratory factor analyses.

analysis technique) at Time 1 revealed that the seven independent items loaded onto one factor (range [.40, .84], Eigenvalue = 1.99, 15.08% variance explained), the six interdependent items loaded onto a second factor (range [.52, .80], Eigenvalue = 3.32, 15.61% variance explained), the two sense of belonging items loaded onto a third factor (range [.65, .99], Eigenvalue = 0.66, 8.86% variance explained), and the two acculturation strategy items loaded onto a fourth factor (range [.70, .75], Eigenvalue = 0.44, 6.83% variance explained). None of the remaining items had high loadings on the opposite factors (loadings < .30; other Eigenvalues range [-.68, .17]). The scree plot revealed that the point of inflection occurred after the fourth factor. The EFAs conducted at Time 2 and Time 3 showed similar results.

Implicit independence

To assess implicit independence, participants completed the RF-SC-IAT (Karpinski & Steinman, 2006; Rothermund et al., 2009) implemented in PsyToolkit (Stoet, 2010, 2017). The RF-SC-IAT involved two blocks. The first block had 10 trials where participants categorized 10 stimuli (extracted from Ric et al., 2013) into the categories of independence or interdependence. The independent stimuli included the words: independent, autonomous, ambitious, original, and capable. The interdependent stimuli included: cooperative, sociable, altruistic, empathetic, and respectful. The category labels were displayed in the left and right top corners of the screen. Participants categorized stimuli presented in the center of the screen by pressing a left or right key, with the position of the category labels counterbalanced across participants.

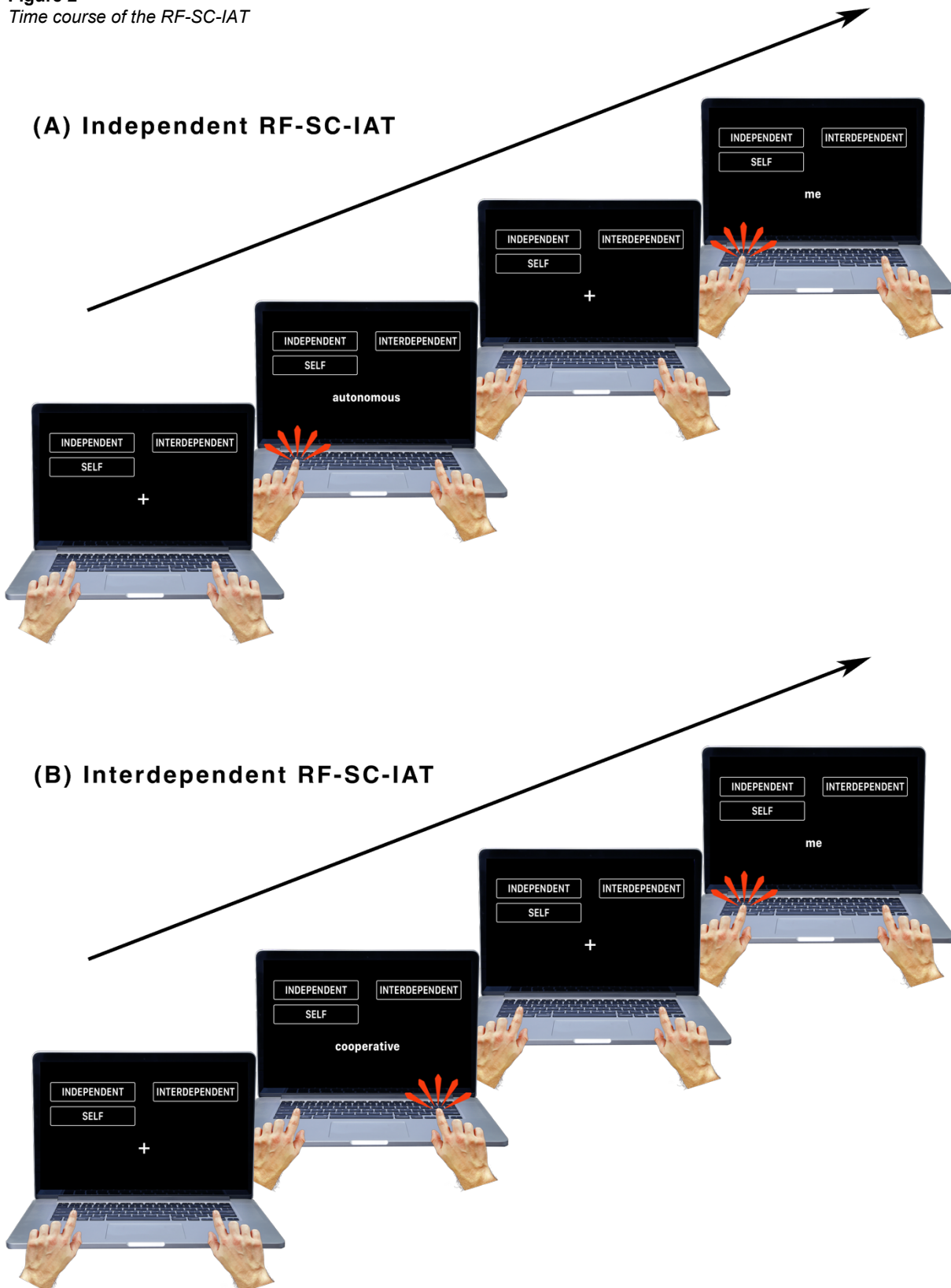
In the second block, the “self” target category was added (self-stimuli: me, mine, I, my, myself). The two possible label configurations were either: self and independent categories assigned to the same key (combined labels) and interdependent category assigned to the opposite key (single label), or self and interdependent categories assigned to the same key and independent category assigned to the opposite key. The self-related and stimuli presentations, as well as the label configurations, were randomized. Response assignment (left vs. right) for the categories (independence vs. interdependence) was fixed throughout the entire IAT for each participant, except for the target “self” category, which randomly alternated between the left and right upper corners of the screen on each trial (Figure 2). Participants first

completed a block of 30 training trials (with interdependent, independent, and self categories; 15 trials for each label configuration), followed by a block of 90 test trials (with interdependent, independent, and self categories; 45 trials for each label configuration). An error feedback followed each incorrect response and remained on the screen until a correct response was given⁵.

We used the improved D-algorithm (Greenwald et al., 2003) to calculate a score for each configuration. Higher D-scores reflected more independent/interdependent self-evaluations. We computed an index of self-evaluation by subtracting the interdependent D-score from the independent D-score. A positive difference indicated a more independent self.

⁵ During the IAT, stimuli and error feedback remained on the screen until a correct response was made or until one minute had elapsed. This time limit was imposed by PsyToolKit, which does not allow for infinite response time.

Figure 2
Time course of the RF-SC-IAT



Note. Stimuli categorization based on their independence, interdependence, or self-relatedness, with the category-label positions remaining constant throughout the trials. (A) left key press to categorize a stimulus as independent; (B) right key press to categorize a stimulus as interdependent (key responses were counterbalanced across participants). Self-category labels alternated randomly between left and right upper corners of the screen, and necessitated either left or right key press to categorize a stimulus as self-related.

Academic outcomes

Grade point average (GPA). For $N_{Education}$ at Time 1, we assessed participants' initial GPA_{T1} by asking them to self-report their score on the Baccalauréat, which is a widely-used university entrance qualification in France. Self-reported scores are considered to be sufficiently accurate when compared to actual grades (Cassady, 2001). It could range from 0 to 20 (range 10.00-18.54, $M = 14.26$, $SD = 1.78$). In Time 2 and Time 3, we used students' self-reported GPA from the previous year. To obtain power, missing data on GPA_{T2_Year} and GPA_{T3_Year} was replaced with $GPA_{T2_Semester}$ and $GPA_{T3_Semester}$, respectively, if available, as GPA_{T2} from the previous year and previous semester and GPA_{T3} from the previous year and semester were highly correlated ($\rho = .87$ and $r = .84$, respectively⁶). For GPA_{T2_final} , 22 cases were missing and 10 were replaced, resulting in a range of 7.00-18.50, $M = 14.44$, $SD = 1.85$. For GPA_{T3_final} , 14 cases were missing and 6 were replaced, resulting in a range of 10.50-17.68, $M = 13.91$, $SD = 1.55$.⁷ For analyses students' GPA scores were mean-centered.

Subjective social status (SSS). At each time point, participants used a ladder image to assess their social status relative to others in France (1 = lowest status to 10 = highest status; Adler et al., 2000). The ladder scale was translated into French and back-translated. For analyses students' SSS scores were mean-centered.

Social-class

For the analyses, we contrast-coded working-class students with -0.5, and middle/up-per-class students with 0.5.

Time

For the analyses, we treated the three time points as continuous variables and mean-centered them.

⁶ Throughout the text, we present Spearman's rank correlation coefficient ρ for non-normally distributed variables, and Pearson's r for normally distributed variables.

⁷ For $N_{Occupation}$, the same procedure was applied to compute the GPA scores at each time point: GPA_{T1} (range 10.00-18.54, $M = 14.37$, $SD = 1.75$); GPA_{T2} ($\rho = .86$; $N_{Missing} = 16$; $N_{Replaced} = 9$; range 7.00-18.50, $M = 14.45$, $SD = 1.88$); GPA_{T3} ($r = .86$; $N_{Missing} = 13$; $N_{Replaced} = 6$; range 10.50-17.68, $M = 14.07$, $SD = 1.57$).

Covariate – Gender

To isolate the effects of social-class, we controlled for participants' gender. Participants reported their gender identity as female, male, or chose to self-describe as gender non-conforming individuals. Previous studies have suggested associations between gender and academic performance and self-construal (Barone & Assirelli, 2020; Markus & Kitayama, 2010), possibly due to access to power and resources that directly affect students' lives. For contrast-coding gender, we used a binary variable, with male coded as 0.5 and non-male (-0.5; including both female and gender non-conforming individuals) as the reference category. We did not create a separate category for gender non-conforming individuals because 1) there are more than three categories of gender, 2) creating one separate category could lead to othering, and 3) we wanted to control for access to power, which is more prevalent among males.

Results – Hypothesis 1 & 2

In Study 1, we hypothesized that working-class students would experience a cultural mismatch (expressed via lower independent and higher interdependent self-construals), lower sense of belonging to university, and receive poorer academic outcomes, than their middle/upper-class peers. These differences should persist over time.

Analysis strategy

Table 2 presents means of variables based on social-class for $N_{Education}$ (see Table S5 for $N_{Occupation}$ and Table S6 in SM for their correlations). Analyses were carried out using the software R (Version 4.2.2). We performed linear mixed-effects analyses using the package “lme4” (v1.1.31; Bates et al., 2012). Dependent variables were treated as repeated measures, using time (mean-centered), along with social-class (-0.5 for working-class, 0.5 for middle/upper-class), their two-way interaction term, and gender (-0.5 for not male, 0.5 for male), as fixed effects. Random effects for the final model were selected in line with the procedure detailed by Bates et al. (2015) using the package “RePsychLing” (v0.0.4; Baayen et al., 2015). Participant was treated as a random-intercept.

Instead of excluding participants with missing data from the entire sample, we chose to remove missing cases listwise from individual analyses (see for a similar procedure Phillips,

Stephens, et al., 2020). The p -values were obtained by Satterthwaite approximation with the “lmerTest” package (v3.1.3; Kuznetsova et al., 2017). Result patterns did not change when using robust estimations (in case of normality and heteroscedasticity issues); thus, we present the results without robust estimations.

We used Cook's distance with the package “influence.ME” (v0.9.9; Nieuwenhuis et al., 2012) to identify influential observations. Cook's distance provides a summary measure of the change in all parameter estimates when a particular case is included or excluded. We considered higher- and lower-level observations as too influential if the associated Cook's distance value exceeded the cut-off of $4/N$, where N is the total number of observations/participants, and if the deletion of the observation affected the significance level of the variables in the model. We looked for influential data in the final model (after random effects selection) and found several observations that exceeded the Cook's distance cut-off. However, as their deletion did not affect the significance level of the predictors, they were retained in the data set.

To isolate the effects of social-class, we controlled for students' gender. Gender reached significant effects; thus, we present models with gender included. However, results persist without gender as covariate (for an overview of all results see Tables S7 – S8 in SM).

Results for $N_{Education}$

Self-Constraint. Students showed an increase in independent self-construal over time, $B = 0.06$, $SE = 0.04$, $t(308.28) = 2.09$, $p = .038$, $\eta_p^2 = .012$. However, no other main or interaction effects were found for independent self-construal, with $p_s > .340$.

In contrast, for interdependent self-construal, we observed a main effect of social-class, $B = -0.66$, $SE = 0.16$, $t(373.29) = -4.16$, $p < .001$, $\eta_p^2 = .050$, with working-class students endorsing higher interdependent self-construal than their middle/upper-class peers. Students also showed an increase in interdependent self-construal over time, $B = 0.15$, $SE = 0.06$, $t(279.91) = 2.39$, $p = .017$, $\eta_p^2 = .017$. However, these effects were qualified by a significant social-class by time interaction, $B = -0.26$, $SE = 0.12$, $t(280.47) = -2.08$, $p = .038$, $\eta_p^2 = .013$. Further analysis revealed that working-class students endorsed more interdependence than middle/upper-class students in lower years, $B = -0.45$, $SE = 0.15$, $t(321.55) = -3.11$, $p = .002$,

$\eta_p^2 = .029$, with the gap becoming even larger in later years, $B = -0.87$, $SE = 0.22$, $t(525.53) = -3.90$, $p < .001$, $\eta_p^2 = .044$. Working-class students also showed an increase in interdependence over time, $B = 0.28$, $SE = 0.10$, $t(282.02) = 2.88$, $p = .004$, $\eta_p^2 = .025$, while time had no effect on middle/upper-class students' interdependence, $p = .806$.

Sense of belonging. No main or interaction effects on students' sense of belonging to university were significant, $p_s > .520$.

Implicit independence. We found no significant main or interaction effects related to students' implicit independence, $p_s > .112$.

Academic outcomes. Because our academic outcomes were correlated ($\rho_{T1} = .116$, $p = .050$; $\rho_{T2} = .407$, $p < .001$; $\rho_{T3} = .231$, $p = .056$), we additionally controlled for SSS, when GPA was the dependent variable, and controlled for GPA when SSS was the dependent variable. Both controls were mean-centered.

GPA. Students showed a marginal decrease in their GPA over time, $B = -0.17$, $SE = 0.10$, $t(307.82) = -1.75$, $p = .080$, $\eta_p^2 = .009$. However, there were no social-class related main or interaction effects on GPA, $p_s > .475$.

SSS. Working-class students expressed a lower SSS than their middle/upper-class peers, $B = 1.23$, $SE = 0.17$, $t(386.16) = 7.44$, $p < .001$, $\eta_p^2 = .168$. We also found that over time students reported more SSS, $B = 0.13$, $SE = 0.06$, $t(255.06) = 1.99$, $p = .047$, $\eta_p^2 = .014$. However, there was no significant interaction effect between social-class and time on SSS, $p = .406$, indicating a persistent social-class gap in SSS over time.

Results for $N_{Occupation}$

Self-Constraint. Students showed a marginal increase in independent self-construal over time, $B = 0.08$, $SE = 0.05$, $t(232.92) = 1.82$, $p = .070$, $\eta_p^2 = .011$. However, no other main or interaction effects were found for independent self-construal, with $p_s > .404$.

In contrast, for interdependent self-construal, a main effect of social-class was observed, $B = -0.62$, $SE = 0.19$, $t(246.94) = -3.21$, $p = .001$, $\eta_p^2 = .037$. Working-class students endorsed higher interdependent self-construal than their middle/upper-class peers. Students also showed an increase in interdependent self-construal over time, $B = 0.16$, $SE = 0.07$,

$t(220.48) = 2.31, p = .022, \eta_p^2 = .020$. Moreover, there was no evidence of an interactive effect of social-class and time on interdependent motives, $p = .408$, indicating consistent endorsement of interdependence over time.

Sense of belonging. None of the main or interaction effects related to students' sense of belonging to the university reached significance, $p_s > .442$.

Implicit independence. No main or interaction effects on students' implicit independence were significant, $p_s > .438$.

Academic outcomes. As in $N_{Education}$, GPA and SSS were included as mean-centered control variables in the analyses.

GPA. There was no main effect of social-class, time, or their interaction on students' GPA, $p_s > .170$.

SSS. Working-class students reported significantly lower SSS compared to their middle/upper-class counterparts, $B = 1.61, SE = 0.20, t(269.22) = 7.99, p < .001, \eta_p^2 = .216$. We did not find, however, an effect of time nor their interaction, $p_s > .151$.

Discussion

Study 1 aimed to replicate previous research on the effects of prolonged exposure to the university environment on working-class students' acculturation to middle/upper-class norms. Our study was conducted at one university in France, focusing on a sample of psychology undergraduates.

Our findings confirmed previous research (Phillips, Stephens, et al., 2020), which had shown that working-class students had comparable levels of independence as their middle/upper-class peers. In our study, we replicated this finding both explicitly and implicitly, and also found that working-class students endorsed a significantly higher level of interdependent self-construal compared to their middle/upper-class peers. Furthermore, the gap between the two groups increased over time in the $N_{Education}$ sample, suggesting that social-class differences can persist and even widen over time, which may contribute to social-class achievement gaps.

Contrary to our initial expectations, we did not find social-class differences in students' sense of belonging to the university. One explanation for this finding is that the study was

conducted during a period when most learning took place online due to the COVID-19 pandemic, and limited personal contact with the university may have reduced students' sense of belonging. It is possible that working-class students had a lower sense of belonging to the university compared to their middle/upper-class peers prior to the shift to online learning, and that the reduction in personal contact contributed to similar levels of belonging between the two groups. This result is consistent with recent research on distance learning during the COVID-19 pandemic conducted in France (Müller et al., in press), which suggests that the shift to online learning may have reduced students' sense of belonging to their university community.

In terms of academic outcomes, we did not observe any social-class differences in students' GPA. Although this finding is encouraging, we did find social-class differences for students' SSS, with persistent lower SSS reported by working-class students over time. With obtaining a university degree, working-class students objectively change their social-class, but they may not subjectively experience this social-class transition. This can result in ongoing disadvantages for health and well-being, as well as later in the labor market (Adler et al., 2000; Autin et al., 2017; Sharps & Anderson, 2021).

Table 2

Variables for each time point of Study 1 French $N_{Education}$ sample ($N_{T1} = 312$, $N_{T2} = 143$, $N_{T3} = 78$), Study 2 French $N_{Education}$ sample ($N_{T1} = 557$, $N_{T2} = 266$, $N_{T3} = 173$), and Study 2 German $N_{Education}$ sample ($N_{T1} = 488$, $N_{T2} = 244$, $N_{T3} = 193$)

Variables	Time 1			Time 2			Time 3		
	Working-class	Middle/upper-class	<i>p</i>	Working-class	Middle/upper-class	<i>p</i>	Working-class	Middle/upper-class	<i>p</i>
Study 1 - France									
Independence	5.56 (0.87)	5.71 (0.81)	.131	5.74 (0.66)	5.82 (0.67)	.507	5.68 (0.61)	5.76 (0.66)	.572
Interdependence	4.17 (1.43)	3.76 (1.35)	.011*	4.58 (1.28)	4.07 (1.21)	.017*	4.44 (1.29)	3.75 (1.14)	.020*
Implicit independence	-0.03 (0.18)	-0.03 (0.17)	.963	-0.09 (0.20)	-0.00 (0.17)	.005**	-0.02 (0.19)	-0.03 (0.20)	.869
Sense of belonging	4.73 (1.33)	4.69 (1.25)	.786	4.89 (1.18)	4.89 (1.16)	.998	4.75 (1.42)	4.58 (1.17)	.592
GPA	-0.06 (1.89)	0.05 (1.68)	.597	-0.35 (1.58)	0.25 (1.99)	.059 [†]	-0.06 (1.54)	0.04 (1.58)	.794
SSS	-0.65 (1.53)	0.49 (1.29)	<.001***	-0.66 (1.34)	0.50 (1.22)	<.001***	-0.85 (1.91)	0.50 (1.08)	.002**
Study 2 -France									
Independence	5.72 (0.79)	5.83 (0.76)	.093 [†]	5.68 (0.77)	5.74 (0.66)	.457	5.60 (0.79)	5.66 (0.76)	.617
Interdependence	4.52 (1.29)	4.17 (1.30)	.001**	4.45 (1.25)	3.96 (1.34)	.003**	4.38 (1.36)	4.07 (1.40)	.150
Implicit independence	-0.04 (0.17)	-0.03 (0.18)	.687	-0.05 (0.22)	-0.05 (0.18)	.873	-0.03 (0.21)	-0.06 (0.22)	.536
Self-reliance	5.00 (1.28)	4.97 (1.15)	.810	5.17 (1.11)	4.97 (1.25)	.180	5.11 (1.23)	4.91 (1.30)	.296
Self-expression	4.25 (1.35)	4.26 (1.36)	.918	4.11 (1.19)	4.19 (1.39)	.616	4.13 (1.32)	4.18 (1.32)	.813
Sense of belonging	4.97 (1.21)	4.99 (1.24)	.835	4.84 (1.26)	4.92 (1.27)	.616	4.80 (1.39)	4.59 (1.27)	.300
GPA	-0.39 (1.82)	0.36 (1.96)	<.001***	-0.20 (1.90)	0.15 (1.97)	.181	0.11 (2.10)	-0.08 (1.91)	.575
SSS	-0.49 (1.40)	0.45 (1.41)	<.001***	-0.44 (1.21)	0.34 (1.38)	<.001***	-0.57 (1.58)	0.41 (1.29)	<.001***
Study 2 - Germany									
Independence	5.45 (0.90)	5.55 (0.93)	.229	5.44 (0.91)	5.49 (0.89)	.687	5.39 (0.92)	5.48 (0.96)	.475
Interdependence	4.17 (1.29)	3.78 (1.17)	<.001***	4.18 (1.31)	3.85 (1.15)	.035*	4.06 (1.37)	3.67 (1.27)	.042*
Implicit Independence	-0.03 (0.19)	-0.02 (0.18)	.461	-0.06 (0.18)	-0.06 (0.21)	.945	-0.05 (0.26)	-0.02 (0.24)	.483
Self-reliance	4.31 (1.25)	4.06 (1.11)	.022*	4.39 (1.13)	4.11 (1.10)	.052 [†]	4.43 (1.14)	4.04 (1.12)	.018*
Self-expression	4.05 (1.21)	4.17 (1.11)	.288	3.81 (1.14)	4.02 (1.09)	.128	3.95 (1.17)	3.98 (1.16)	.840
Sense of belonging	5.13 (1.10)	5.20 (1.03)	.449	5.03 (1.13)	5.32 (1.04)	.041*	4.79 (1.19)	5.07 (1.09)	.089 [†]
GPA	-0.14 (0.72)	0.14 (0.57)	<.001***	-0.07 (0.62)	0.07 (0.51)	.122	-0.04 (0.35)	0.03 (0.47)	.414
SSS	-0.52 (1.44)	0.55 (1.41)	<.001***	-0.39 (1.38)	0.42 (1.35)	<.001***	-0.58 (1.48)	0.53 (1.44)	<.001***

Note. GPA = grade point average; SSS = subjective social status; both mean-centered. Means (Standard Deviations) for all $N_{Education}$ samples. Statistical differences (using Welch's t-test, Delacre et al., 2017) within variables are highlighted as follows: [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Study 2: Longitudinal Study in France and Germany within Several Universities

While Study 1 provided valuable insights, its generalizability is limited due to being conducted at a single university in France with a predominantly psychology undergraduate student population. To overcome this limitation, we extended the study by utilizing longitudinal methods across multiple universities in two countries, incorporating a more diverse sample of students. Additionally, we explored specific dimensions of self-construal - hard (self-reliance) and expressive (self-expression) independence - that are relevant in the context of cultural mismatch, to investigate the effects of prolonged exposure to university environments on working-class students' acculturation to middle/upper-class norms.

Method

Participants

We recruited first-year students from different universities in France and Germany for this study. The Time 1 survey was conducted online, shared through professional and social networks during the first months of their first academic year (T1_{France}: October 2020 to January 2021; T1_{Germany}: November 2020 to March 2021). Similarly, the Time 2 survey was conducted online in the first few months of the students' second academic year, from October 2021 to February 2022, and the Time 3 survey was conducted online during the first months of the students' third academic year, from September to December 2022.

Operationalizing social-class with parents' level of education. As in Study 1, we categorized participants' social-class using two separate proxies: parents' level of education ($N_{Education}$) and parents' occupations ($N_{Occupation}$). Only those who reported information on their social-class and completed at least one part of the Time 1 survey were included in the analyses (for Time 2 and 3, respectively). In France, the final $N_{Education}$ sample comprised 557 participants at Time 1, 266 participants at Time 2, and 173 participants at Time 3, nested in 22 universities. Similarly, in Germany, the final $N_{Education}$ sample included 488 participants at Time 1, 244 participants at Time 2, and 193 participants at Time 3, nested in 57 universities. The demographic characteristics of the participants are presented in Table 3.

Operationalizing social-class with parents' occupations. Similar to Study 1, we used the ISCO-08 to operationalize the occupation of participants' parents. In France, we excluded 85 participants whose parents' occupation was categorized as middle-class, and one participant whose parents' occupation was related to the armed forces. The final French $N_{Occupation}$ sample included 470 participants at Time 1, 230 participants at Time 2, and 149 participants at Time 3, from 22 universities. In Germany, we excluded 59 participants whose parents' occupation was classified as middle-class (none of the participants indicated that their parents' occupation was related to the armed forces). The final German $N_{Occupation}$ sample included 437 participants at Time 1, 202 participants at Time 2, and 169 participants at Time 3, from 57 universities.

Statistical power considerations

As in Study 1, for Hypotheses 1 and 2, linear mixed-effects analyses were required. Following the statistical power guidelines outlined by Arend and Schäfer (2019) for two-level models, we computed the minimum detectable effect sizes at an 80% statistical power level, taking into account our sample sizes and ICC values. In France and Germany, the minimum detectable effect sizes for $N_{Education}$ and $N_{Occupation}$ ranged from $\eta_p^2 = .001$ to $\eta_p^2 = .007$, indicating adequate power to detect small effect sizes.

Procedure

This study involved three waves of data collection in two countries, in which participants completed the same measures as in Study 1 of independent and interdependent self-construal, sense of belonging, and demographics. In addition, they also completed subscales of the Culture and Identity Research Network Self Construal Scale Version 3 (CIRN-SCS-3; Vignoles et al., 2016), which measured different dimensions of self-construal: hard independence (students' self-reliance) and expressive independence (students' self-expression)⁸. At each wave, participants also completed the RF-SC-IAT, measuring implicit independence, after the

⁸ They also completed a CIRN-SCS-3 self-construal subscale representing students' consistency in moving between contexts, consistent with preregistered exploratory hypotheses (see SM).

questionnaires but before the demographics. Surveys were conducted on devices with keyboards, excluding mobile phones, and participants were instructed to complete the survey in a calm location without distractions to ensure seamless administration of the RF-SC-IAT.

The Institutional Review Board reviewed and approved this study before data collection (N° IRB: 00012020-68).

Table 3
Demographics of Study 2

Variables	<i>N_{Education}</i>		<i>N_{Occupation}</i>	
	Working-class	Middle/upper-class	Working-class	Middle/upper-class
France				
1. <i>N</i>				
T1	269 (48.29%)	288 (51.71%)	218 (46.38%)	252 (53.62%)
T2	115 (43.23%)	151 (56.77%)	93 (40.43%)	137 (59.57%)
T3	72 (41.62%)	101 (58.38%)	57 (38.26%)	92 (61.74%)
2. Gender				
Female	88.51%	88.97%	88.10%	90.24%
Male	10.34%	7.12%	10.48%	6.91%
Not specified	0.77%	1.42%	1.43%	0.81%
Self-description	0.38%	2.49%	0.00%	2.03%
3. Field of study				
Social sciences	100.00%	100.00%	100.00%	100.00%
STEM	0.00%	0.00%	0.00%	0.00%
Other	0.00%	0.00%	0.00%	0.00%
Germany				
1. <i>N</i>				
T1	251 (51.43%)	234 (48.57%)	185 (42.33%)	252 (57.67%)
T2	125 (51.23%)	129 (48.77%)	99 (44.00%)	126 (56.00%)
T3	94 (48.70%)	99 (51.30%)	81 (45.76%)	96 (54.24%)
2. Gender				
Female	82.01%	86.03%	84.88%	84.90%
Male	15.48%	12.66%	13.95%	13.06%
Not specified	0.84%	0.00%	0.58%	0.00%
Self-description	1.67%	1.31%	0.58%	2.04%
3. Field of study				
Social sciences	84.46%	88.14%	82.57%	88.53%
STEM	6.77%	7.63%	7.80%	7.34%
Other	8.76%	4.24%	9.63%	4.13%

Note. T1 = Time 1, T2 = Time 2, T3 = Time 3. Gender at T1. France: $N_{Education} M_{Age} = 18.66$ ($SD = 2.65$), $N_{Occupation} M_{Age} = 18.64$ ($SD = 2.50$) at T1. Germany: $N_{Education} M_{Age} = 20.86$ ($SD = 4.24$), $N_{Occupation} M_{Age} = 20.84$ ($SD = 4.26$) at T1. STEM = science, technology, engineering, and mathematics, Other = business, administration, and law; agriculture, forestry, fisheries, and veterinary; health and welfare; services.

Measures

For the following section, the Cronbach's alpha coefficients for several scales and the results of EFAs are presented for $N_{Education}$. The similar results for $N_{Occupation}$ are available in the SM.

General self-construal

As in Study 1, we used the Motives for Attending College scale (Stephens, Fryberg, et al., 2012) to represent independent (France: $\alpha_{T1} = .76$, $\alpha_{T2} = .75$, $\alpha_{T3} = .78$; Germany: $\alpha_{T1} = .79$, $\alpha_{T2} = .81$, $\alpha_{T3} = .85$) and interdependent self-construal (France: $\alpha_{T1} = .80$, $\alpha_{T2} = .82$, $\alpha_{T3} = .85$; Germany: $\alpha_{T1} = .76$, $\alpha_{T2} = .76$, $\alpha_{T3} = .82$).

Hard and expressive self-construal

We measured hard and expressive self-construal using the CIRN-SCS-3 self-construal scale (Vignoles et al., 2016), which has valid translations in French and German. To ensure direct reference to students' family and fellow students, we adjusted the items of each subscale. Participants used a 7-point scale (1 = doesn't describe me at all, 7 = describes me exactly) to rate how well each item described them. Composite measures of hard self-construal (i.e., self-reliance) and expressive self-construal (i.e., self-expression) were created by averaging the responses to the items within each subscale.

Self-reliance. For the subscale "Looking after oneself - self-reliance vs. dependence on others" of the CIRN-SCS-3, we assessed students' self-reliance. The subscale consisted of three items measuring self-reliance on an independent pole (e.g., "You prefer to rely completely on yourself rather than depend on your family or other students") and three items measuring dependence on others on an interdependent pole (e.g., "In difficult situations, you tend to seek help from your family or other students rather than relying only on yourself"). In France, the subscale showed good reliability across all three waves ($\alpha_{T1} = .82$, $\alpha_{T2} = .84$, $\alpha_{T3} = .88$), as did the German version ($\alpha_{T1} = .85$, $\alpha_{T2} = .84$, $\alpha_{T3} = .84$).

Self-expression. We used the CIRN-SCS-3 subscale "Communicating with others - self-expression vs. harmony" to assess students' self-expression (France: $\alpha_{T1} = .84$, $\alpha_{T2} = .86$, $\alpha_{T3} = .87$; Germany: $\alpha_{T1} = .82$, $\alpha_{T2} = .83$, $\alpha_{T3} = .85$). The subscale consists of three items

measuring self-expression on an independent pole (e.g., "You like to discuss your own ideas, even if it might sometimes upset your family or other students") and three items measuring harmony in communicating with others on an interdependent pole (e.g., "You try not to express disagreement with members of your family or with other students").

Sense of belonging

We used the same sense of belonging items as in Study 1, which were adapted from Tibbetts et al. (2018) and Trawalter et al. (2020) (France: $\alpha_{T1} = .75$, $\alpha_{T2} = .77$, $\alpha_{T3} = .76$; Germany: $\alpha_{T1} = .79$, $\alpha_{T2} = .80$, $\alpha_{T3} = .79$). However, contrary to Study 1, we used all 3 items from Time 1 onwards.

Exploratory factor analysis

In line with Study 1⁹, we conducted an EFA (maximum likelihood extraction method, oblimin rotation, parallel analysis technique) on all items for each country and time wave. Consistent with our preregistered hypothesis, we included a CIRN-SCS-3 self-construal subscale that measured students' consistency in moving between contexts (see SM).

In France, the EFA conducted at Time 1 revealed that the seven independent items loaded onto one factor (range [.36, .84], Eigenvalue = 1.73, 7.14% variance explained), the six interdependent items loaded onto a second factor (range [.49, .81], Eigenvalue = 1.97, 7.57% variance explained), the six self-reliance items loaded onto a third factor (range [.36, .87], Eigenvalue = 2.33, 8.28% variance explained), the six self-expression items loaded onto a fourth factor (range [.47, .87], Eigenvalue = 2.61, 8.81% variance explained), the three sense of belonging items loaded onto a fifth factor (range [.65, .78], Eigenvalue = 0.71, 4.78% variance explained), and the six consistency items loaded onto a sixth factor (range [.65, .78], Eigenvalue = 4.07, 9.64% variance explained). The scree plot revealed that the point of inflection occurred after the sixth factor. No other items loaded highly onto the opposite factor (item loadings < .30; other Eigenvalues range [-.74, .38]).

⁹ An initial CFA was performed on all T1 items, but the results revealed a non-satisfactory fit due to the small sample size in both France (RMSEA = 0.06, 90% CI [0.05, 0.06], CFI = 0.87, TLI = 0.86) and Germany (RMSEA = 0.06, 90% CI [0.05, 0.06], CFI = 0.88, TLI = 0.87).

For Germany, the EFA conducted at Time 1 showed the same structure as in France: the seven independent items loaded onto a one factor (range [.53, .71], Eigenvalue = 1.39, 7.00% variance explained), the six interdependent items loaded onto a second factor (range [.39, .83], Eigenvalue = 1.62, 7.84% variance explained), the six self-reliance items loaded onto a third factor (range [.42, .84], Eigenvalue = 2.92, 8.97% variance explained), the six self-expressive items loaded onto a fourth factor (range [.42, .85], Eigenvalue = 2.53, 8.23% variance explained), the three sense of belonging items loaded onto a fifth factor (range [.67, .88], Eigenvalue = 0.91, 5.50% variance explained), and the six consistency items loaded onto a sixth factor (range [.65, .84], Eigenvalue = 4.74, 10.64% variance explained). The scree plot revealed that the point of inflection occurred after the sixth factor. No other items loaded highly onto the opposite factor (item loadings < .37; other Eigenvalues range [-.76, .34]).

The EFAs conducted at Time 2 and Time 3 in both countries produced similar results.

Implicit independence

Consistent with Study 1, we measured implicit independence using the same RF-SC-IAT (Karpinski & Steinman, 2006; Rothermund et al., 2009) in both countries. We employed the improved D-algorithm (Greenwald et al., 2003) to compute an index of self-evaluation by subtracting the interdependent D-score from the independent D-score, with a positive difference indicating a more independent self.

Academic outcomes

GPA. In France and Germany, we measured initial GPA_{T1} by assessing students' self-reported score on their university entrance qualification (i.e., Baccalauréat in France, Abitur in Germany, or equivalent).

In France for $N_{Education}$, GPA_{T1} ranged from 0 to 20 (range 10.00-19.30, $M = 13.92$, $SD = 1.93$). Self-reported GPAs from the previous year were used for Time 2 and Time 3, with missing data replaced by the corresponding previous semester's GPA, as they were highly correlated ($\rho_{T2} = .92$ and $\rho_{T3} = .92$). For GPA_{T2_final} , 52 cases were missing and 18 were replaced, resulting in a range of 7.50-18.60, $M = 13.90$, $SD = 1.94$. For GPA_{T3_final} , 33 cases were

missing and 11 were replaced, resulting in a range of 7.00-17.00, $M = 12.94$, $SD = 1.98$.¹⁰ Students' GPA scores were mean-centered for analyses.

In Germany for $N_{Education}$, GPA_{T1} ranged from 1 to 4 (range 1.00-3.70, $M = 1.91$, $SD = 0.67$), while lower values indicate better performance. Self-reported GPAs from the previous year were also used for Time 2 and Time 3, with missing data replaced by the corresponding previous semester's GPA, as they were highly correlated ($\rho_{T2} = .95$ and $\rho_{T3} = .92$). For GPA_{T2_final} , 115 cases were missing and 27 were replaced, resulting in a range of 1.00-3.70, $M = 1.83$, $SD = 0.57$. For GPA_{T3_final} , 124 cases were missing and 25 were replaced, resulting in a range of 1.00-3.70, $M = 1.65$, $SD = 0.43$.¹¹ To facilitate analyses, GPA scores from German students were reverse-coded, so that a higher value indicates better performance, and then mean-centered.

SSS. As in Study 1, participants in France and Germany used a ladder image to assess their social status relative to others in France/Germany at each time point (1 = lowest status to 10 = highest status; Adler et al., 2000), with the ladder description translated into French/German and back-translated. For analyses, students' SSS scores were mean-centered.

Social-class

Consistent with Study 1, we contrast-coded working-class students with -0.5, and middle/upper-class students with 0.5.

Time

As in Study 1, the three time points were treated as continuous variables and were mean-centered.

Covariate – Gender

Following our considerations in Study 1, we contrast-coded gender with male as 0.5 and not male (-0.5; female and gender non-conforming individuals) as the reference category.

¹⁰ France $N_{Occupation}$: GPA scores were computed using the same procedure: GPA_{T1} (range 10.00-19.30, $M = 13.99$, $SD = 1.93$); GPA_{T2} ($\rho = .94$; $N_{Missing} = 44$; $N_{Replaced} = 15$; range 7.50-18.60, $M = 13.93$, $SD = 2.00$); GPA_{T3} ($\rho = .91$; $N_{Missing} = 9$; $N_{Replaced} = 15$; range 7.00-17.00, $M = 12.95$, $SD = 2.95$).

¹¹ Germany $N_{Occupation}$: GPA scores were computed using the same procedure: GPA_{T1} (range 1.00-3.70, $M = 1.90$, $SD = 0.66$); GPA_{T2} ($\rho = .94$; $N_{Missing} = 105$; $N_{Replaced} = 25$; range 1.00-3.70, $M = 1.80$, $SD = 0.56$); GPA_{T3} ($\rho = .91$; $N_{Missing} = 116$; $N_{Replaced} = 24$; range 1.00-3.70, $M = 1.64$, $SD = 0.44$).

Results – Hypotheses 1 & 2

In Study 2, we aimed to replicate the findings of Study 1 in a broader context by expanding our sample to include multiple universities across two countries. Additionally, we explored different dimensions of self-construal, i.e., hard (self-reliance) and expressive (self-expression) independence. We hypothesized that working-class students would experience a cultural mismatch and demonstrate higher levels of self-reliance, lower levels of self-expression, weaker sense of belonging to their university, and poorer academic outcomes compared to their middle/upper-class counterparts. These differences were expected to persist over time.

Analysis strategy

Table 2 presents means of the variables based on social-class for $N_{Education}$ (see Table S5 for $N_{Occupation}$ and Tables S11 – S14 in SM for their correlations). We followed a similar analysis strategy as in Study 1, performing linear mixed-effects analyses, treating dependent variables as repeated measures, with time (mean-centered), social-class (-0.5 for working-class, 0.5 for middle/upper-class), their two-way interaction term, and gender (-0.5 for not male, 0.5 for male), as fixed effects. Random effects were selected using the procedure outlined by Bates et al. (2015), with participant and university included as random-intercepts.

Missing cases were removed listwise from individual analyses, and results are presented without robust estimations (as using them did not change the pattern of results). Influential higher- and lower-level observations were identified using Cook's distance, with a cut-off of $4/N$, where N is the total number of observations/participants/universities. However, the influential observations were retained in the dataset, as their deletion did not affect the significance level of the predictors in the model. The models include gender as a covariate, though results persisted without this covariate. For ease of interpretation, we present results separately for France and Germany (for an overview of all results see Tables S15 – S18 in SM).

France: Results for $N_{Education}$

General self-construal. Students showed a decrease in independent self-construal over time, $B = -0.08$, $SE = 0.02$, $t(557.54) = -3.46$, $p = .001$, $\eta_p^2 = .019$. However, no other main or interaction effects were found for independent self-construal, with $p_s > .306$.

In contrast, for interdependent self-construal, we observed a main effect of social-class, $B = -0.41$, $SE = 0.11$, $t(644.33) = -3.65$, $p < .001$, $\eta_p^2 = .022$, with working-class students endorsing higher interdependent self-construal than their middle/upper-class peers. However, we found no main effect of time nor their interaction with social-class, $p_s > .330$, indicating consistent endorsement of interdependence over time.

Hard and expressive self-construal. No main or interaction effects on students' self-reliance were significant, $p_s > .131$. Similarly, we did not observe any significant main or interaction effects related to students' self-expression, $p_s > .396$.

Sense of belonging. Students expressed less sense of belonging to university over time, $B = -0.16$, $SE = 0.05$, $t(664.82) = -3.43$, $p = .001$, $\eta_p^2 = .016$. However, there were no social-class related main or interaction effects on students' sense of belonging, $p_s > .366$.

Implicit independence. There were no main effects for social-class, time, or their interaction on students' implicit independence, $p_s > .317$.

Academic outcomes. Since our academic outcomes were correlated for the first two years ($\rho_{T1} = .186$, $p > .001$; $\rho_{T2} = .174$, $p = .008$; $\rho_{T3} = .007$, $p = .928$), we additionally controlled for SSS and GPA (both mean-centered), as in Study 1.

GPA. Though we found no main effect of social-class, $p = .389$, students indicated lower GPA scores over time, $B = -0.44$, $SE = 0.13$, $t(10.21) = -3.40$, $p = .007$, $\eta_p^2 = .019$. The interaction effect between social-class and time was significant, $B = -0.38$, $SE = 0.14$, $t(583.75) = -2.75$, $p = .006$, $\eta_p^2 = .013$. Further analyses indicated that in lower years, working-class students had lower GPAs than their middle/upper-class peers, $B = 0.45$, $SE = 0.15$, $t(634.05) = 2.94$, $p = .003$, $\eta_p^2 = .014$, while no significant difference was found in higher years, $p = .488$. Additionally, middle/upper-class students had lower GPAs over time, $B = -0.63$, $SE = 0.14$, $t(14.29) = -4.44$, $p = .001$, $\eta_p^2 = .032$, whereas no significant change over time was found for working-class students, $p = .113$.

SSS. Working-class students indicated a lower SSS than their middle/upper-class peers, $B = 0.80$, $SE = 0.12$, $t(655.89) = 6.45$, $p < .001$, $\eta_p^2 = .076$. However, there were no main effects of time or interaction with social-class on SSS, $p_s > .657$.

France: Results for $N_{Occupation}$

General self-construal. There was a significant decrease in independent self-construal over time, $B = -0.09$, $SE = 0.03$, $t(488.14) = -3.30$, $p = .001$, $\eta_p^2 = .020$. However, no other main or interaction effects were found for independent self-construal, with $p_s > .428$.

On the other hand, a main effect of social-class was observed for interdependent self-construal, $B = -0.41$, $SE = 0.12$, $t(586.87) = -3.39$, $p = .001$, $\eta_p^2 = .022$, with working-class students endorsing higher interdependent self-construal than their middle/upper-class peers. No significant main effect of time or interaction with social-class was found for interdependent self-construal, $p_s > .372$, indicating consistent endorsement of interdependence over time.

Hard and expressive self-construal. Working-class students expressed more self-reliance than their middle/upper-class peers, $B = -0.24$, $SE = 0.12$, $t(587.80) = -2.15$, $p = .032$, $\eta_p^2 = .009$. However, we found no effect of time or the interaction with social-class on self-reliance, $p_s > .199$. We did not observe any significant main or interaction effects related to students' self-expression, $p_s > .165$.

Sense of belonging. We did not find any main effect of social-class on sense of belonging to university, $p = .783$. However, students' sense of belonging decreased over time, $B = -0.17$, $SE = 0.05$, $t(588.45) = -3.42$, $p = .001$, $\eta_p^2 = .018$. The interaction effect between social-class and time was significant, $B = -0.20$, $SE = 0.10$, $t(588.02) = -1.99$, $p = .047$, $\eta_p^2 = .006$. Follow-up analyses revealed that there was no significant difference in sense of belonging between social-classes in lower and higher years, $p_s > .280$. In contrast, middle/upper-class students showed a significant decrease in sense of belonging over time, $B = -0.28$, $SE = 0.07$, $t(555.396) = -4.23$, $p < .001$, $\eta_p^2 = .027$, while working-class students did not show a significant change over time, $p = .353$.

Implicit independence. There were no main effects for social-class, time, or their interaction on students' implicit independence, $p_s > .217$.

Academic outcomes. As in $N_{Education}$, GPA and SSS were included as mean-centered control variables in the analyses.

GPA. Working-class students scored lower GPAs compared to their middle/upper-class peers, $B = 0.37$, $SE = 0.19$, $t(592.98) = 2.00$, $p = .046$, $\eta_p^2 = .008$. There was also a significant decrease in GPAs over time for all students, $B = -0.46$, $SE = 0.14$, $t(9.68) = -3.18$, $p = .010$, $\eta_p^2 = .019$. However, the interaction between social-class and time was not significant, $p = .941$, suggesting that the social-class disparity in GPAs persisted over time.

SSS. Working-class students reported lower SSS than their middle/upper-class peers, $B = 1.13$, $SE = 0.13$, $t(588.53) = 8.48$, $p < .001$, $\eta_p^2 = .140$. However, we found no main effects of time or interaction with social-class on SSS, $p_s > .623$.

Germany: Results for $N_{Education}$

General self-construal. In the German sample, we observed a significant decrease in independent self-construal over time, similar to the French sample, $B = -0.05$, $SE = 0.02$, $t(519.29) = -2.22$, $p = .027$, $\eta_p^2 = .009$. No other main or interaction effects were found for independent self-construal, with $p_s > .575$.

As with the French sample, we found a main effect of social-class for interdependent self-construal in the German sample, $B = -0.43$, $SE = 0.12$, $t(48.20) = -3.70$, $p = .001$, $\eta_p^2 = .025$. Working-class students endorsed higher interdependent self-construal than their middle/upper-class peers. There were no main effects of time or interaction with social-class, $p_s > .565$, indicating consistent endorsement of interdependence over time.

Hard and expressive self-construal. In terms of self-reliance, working-class students exhibited higher scores than their middle/upper-class peers, $B = -0.27$, $SE = 0.10$, $t(533.77) = -2.62$, $p = .009$, $\eta_p^2 = .012$. However, there were no significant effects of time or the interaction with social-class on self-reliance, $p_s > .158$. Regarding self-expression, we did not find any significant main or interaction effects, $p_s > .156$.

Sense of belonging. Working-class students expressed lower sense of belonging to university than their middle/upper-class peers, $B = 0.22$, $SE = 0.10$, $t(523.52) = 2.34$, $p = .020$, $\eta_p^2 = .010$. Further, students' sense of belonging decreased over time, $B = -0.10$, $SE = 0.04$, $t(24.03) = -2.99$, $p = .006$, $\eta_p^2 = .016$. However, these effects were qualified by the interaction between social-class and time, $B = 0.14$, $SE = 0.06$, $t(491.61) = 2.17$, $p = .031$, $\eta_p^2 = .008$.

Follow-up analyses revealed that there was no significant difference in sense of belonging between social-classes in lower years, $p = .237$. Nevertheless, in higher years, middle/upper-class students showed more sense of belonging than their working-class peers, $B = 0.34$, $SE = 0.12$, $t(843.50) = 2.76$, $p = .006$, $\eta_p^2 = .013$. Over time, middle/upper-class students also showed constant sense of belonging to university, $p = .446$, while working-class students experienced a decrease in their sense of belonging, $B = -0.17$, $SE = 0.05$, $t(63.20) = -3.62$, $p < .001$, $\eta_p^2 = .023$.

Implicit independence. Students' implicit independence did not significantly vary by social-class, time, or their interaction, $p_s > .219$.

Academic outcomes. To be consistent with the French samples in Study 1 and 2 and as our academic outcomes correlated at Time 1 ($\rho_{T1} = .097$, $p > .041$; other $p_s > .167$), we additionally controlled for SSS and GPA (both mean-centered). However, results persisted without these additional covariates.

GPA. Working-class students scored lower GPAs compared to their middle/upper-class peers, $B = 0.14$, $SE = 0.06$, $t(476.09) = 2.44$, $p = .015$, $\eta_p^2 = .013$. However, we found no main effect of time nor their interaction with social-class, $p_s > .484$. This suggests that the social-class gap in GPA scores persisted over time.

SSS. Working-class students reported significantly lower SSS compared to their middle/upper-class peers, $B = 1.03$, $SE = 0.14$, $t(585.15) = 7.13$, $p < .001$, $\eta_p^2 = .116$. However, we found no main effect of time nor their interaction with social-class, $p_s > .484$, indicating that the social-class gap in SSS persisted over time.

Germany: Results for $N_{Occupation}$

General self-construal. As in $N_{Education}$, we observed a significant decrease in independent self-construal over time, $B = -0.05$, $SE = 0.03$, $t(470.48) = -2.02$, $p = .044$, $\eta_p^2 = .008$. No other main or interaction effects were found for independent self-construal, with $p_s > .476$.

We found a main effect of social-class for interdependent self-construal, $B = -0.45$, $SE = 0.12$, $t(469.54) = -3.88$, $p < .001$, $\eta_p^2 = .029$. Specifically, working-class students endorsed higher interdependent self-construal compared to their middle/upper-class peers. There was

no main effect of time on interdependent self-construal, $p = .679$. However, there was a marginally interaction effect between social-class and time, $B = -0.13$, $SE = 0.07$, $t(463.30) = -1.93$, $p = .054$, $\eta_p^2 = .007$. Further analyses revealed that in both lower and higher years, working-class students expressed more interdependence than their middle/upper-class peers, $B = -0.34$, $SE = 0.12$, $t(474.31) = -2.99$, $p = .003$, $\eta_p^2 = .018$, and $B = -0.56$, $SE = 0.14$, $t(750.54) = -3.96$, $p < .001$, $\eta_p^2 = .030$, respectively. Additionally, the analysis of the interaction effect showed that working-class students did not change their endorsement of interdependence over time, $p = .306$, while their middle/upper-class peers were marginally less interdependent over time, $B = -0.08$, $SE = 0.05$, $t(469.21) = -1.75$, $p = .081$, $\eta_p^2 = .006$.

Hard and expressive self-construal. There was a marginal increase in students' self-reliance over time, $B = 0.07$, $SE = 0.03$, $t(476.25) = 1.92$, $p = .056$, $\eta_p^2 = .007$. However, we found no main effect of social-class or their interaction with time on self-reliance, $p_s > .536$. For self-expression, we did not observe any significant main or interaction effects, $p_s > .480$.

Sense of belonging. Working-class students expressed lower sense of belonging to university than their middle/upper-class peers, $B = 0.28$, $SE = 0.10$, $t(464.63) = 2.73$, $p = .007$, $\eta_p^2 = .014$. In addition, students' sense of belonging decreased over time, $B = -0.12$, $SE = 0.03$, $t(434) = -3.48$, $p = .001$, $\eta_p^2 = .023$. However, these effects were qualified by the interaction between social-class and time, $B = 0.17$, $SE = 0.07$, $t(21.51) = 2.45$, $p = .023$, $\eta_p^2 = .012$. Follow-up analyses revealed that there was no significant difference in sense of belonging between social-classes in lower years, $p = .178$. However, in higher years, middle/upper-class students showed more sense of belonging than their working-class peers, $B = 0.42$, $SE = 0.13$, $t(365.76) = 3.23$, $p = .001$, $\eta_p^2 = .020$. Over time, middle/upper-class students showed constant sense of belonging to university, $p = .505$, while working-class students experienced a decrease in their sense of belonging, $B = -0.20$, $SE = 0.05$, $t(58.87) = -3.95$, $p < .001$, $\eta_p^2 = .029$.

Implicit independence. We did not find any significant main or interaction effects for students' implicit independence based on social-class, time, or their interaction, with $p_s > .320$.

Academic outcomes. Consistent with $N_{Education}$, we included GPA and SSS as mean-centered control variables in the analyses.

GPA. We did not find any significant main or interaction effects for students' GPA based on social-class, time, or their interaction, with $p_s > .180$.

SSS. Our findings indicated that working-class students had significantly lower SSS compared to their middle/upper-class peers, as evidenced by a main effect of social-class, $B = 1.05$, $SE = 0.18$, $t(46.56) = 5.72$, $p < .001$, $\eta_p^2 = .084$. Yet, we found no main effect of time nor their interaction with social-class, $p_s > .862$, suggesting that the disparity in SSS persisted over time.

Results – Hypothesis 3

We further hypothesized that social-class predicts academic outcomes (GPA and SSS) indirectly through the initial self-construal of participants. Specifically, their initial self-construal predicts their sense of belonging at the end of their studies, which in turn predicts their academic outcomes. Separate models for GPA and SSS were tested (Figure 3 and Figure 4).

Analysis strategy

Using small effect size estimates from 0.10 – 0.12 with power of 0.80, $\alpha = .05$, 3 latent variables and 19 observed variables, the recommended minimum sample sizes is between 1258 - 866 (Soper, 2021). To retain statistical power and simplify the analysis, we decided to pool the samples from both countries. Our decision was based on several reasons: (a) we wanted to retain power, (b) previous EFAs yielded consistent factor loadings in both countries, (c) the study conditions were relatively equal across countries (e.g., same time points for study completion, similar COVID conditions regarding distance/campus learning), and (d) we did not test for country differences. However, we controlled for possible country (coded as -0.5 for France, 0.5 for Germany) effects by including its variable as a moderator on the relationship of social-class on academic outcomes.¹²

Only those who reported complete information at Time 1 (for Time 2 and 3, respectively) on the observed variables were included in the analysis. This resulted in a usable

¹² GPAs from Germany were converted to the French grading system using an official grading grid provided by Campus France, a public institution of the French Ministry of Foreign Affairs.

sample for $N_{Education} = 982$ at Time 1, $N_{Education} = 388$ at Time 2 (40% retention of T1), and $N_{Education} = 245$ at Time 3 (25% retention of T1). The final usable sample size for participants who completed all three waves and met all inclusion criteria was $N_{Education} = 228$ (23% of the T1 sample).¹³

We examined attrition rates and best practices for handling the high degree of missing data (see for similar procedure Birnbaum et al., 2023). Participants who completed all three waves differed significantly in their GPA at Time 1 and country of origin. Those with higher grades in their university entrance qualification and from France were more likely to complete all three waves (Table S23 for demographic differences in completion in SM). That is, the missing data in our sample were conditionally dependent on our observed variables and can thus be characterized as missing at random (MAR). This can bias the results since our sample was skewed towards participants with a higher degree in their university entrance qualification and from France. To debias the results, we used a multiple imputation method to produce five complete data sets (for each $N = 982$; predictive mean matching, R package “mice”; v3.15.0; Buuren & Groothuis-Oudshoorn, 2011), following best practices recommended in the literature (Enders, 2022; Nissen et al., 2019). However, our results were largely equivalent when analyzing the smaller, non-imputed sample, as well as when analyzing the non-pooled country samples (see SM). In cases where the results did not reach statistical significance, the patterns were in the same direction as the results presented here.

We used then the “lavaan” package (v0.6.14; Rosseel, 2012) with maximum likelihood estimation to fit structural equation modeling on the pooled data, after centering continuous variables and contrast-coding categorical variables. We excluded two variables for independent self-construal from analysis due to their low factor loadings. We present results for $N_{Education}$; similar results for $N_{Occupation}$ for both models can be found in SM.

¹³ For $N_{Occupation}$: at time 1 usable sample $N = 875$; at Time 2, usable sample $N = 350$ (40% retention of T1); at Time 3 usable sample $N = 214$ (24% retention of T1). Final usable sample $N = 199$ (i.e., 20% of the T1 sample).

GPA (Time 3)

Three indices indicated that our model fit the data well: RMSEA = .04, 90% CI [.03, .04]; CFI = .91; TLI = .89.

Resulting path coefficients showed that social-class was not associated with independent self-construal at Time 1, $\beta = 0.08$, $SE = 0.06$, 95% CI = [-0.06; 0.18], $p = .364$, and independent self-construal was not associated with sense of belonging at Time 3, $\beta = -0.04$, $SE = 0.07$, 95% CI = [-0.17; 0.08], $p = .500$, or with students' GPA at Time 3, $\beta = 0.00$, $SE = 0.11$, 95% CI = [-0.25; 0.26], $p = .976$.

Social-class was, however, negatively associated with students' interdependent self-construal at Time 1, $\beta = -0.33$, $SE = 0.12$, 95% CI = [-0.66; -0.18], $p = .001$, indicating that working-class students had more interdependent self-construal than middle/upper-class students at the beginning of their studies. Interdependent self-construal was, however, not associated with sense of belonging at Time 3, $\beta = -0.00$, $SE = 0.04$, 95% CI = [-0.08; 0.08], $p = .941$, though sense of belonging was marginal positively associated with students' GPA at Time 3, $\beta = 0.16$, $SE = 0.11$, 95% CI = [-0.03; 0.41], $p = .092$. Nevertheless, students' interdependent self-construal at Time 1 was marginal negatively associated with students' GPA at Time 3; $\beta = -0.17$, $SE = 0.07$, 95% CI = [-0.28; 0.01], $p = .063$. Those who were more interdependent reported marginally lower GPAs upon graduation.

Country did not moderate the association between students' social-class and their GPA, $\beta = 0.33$, $SE = 0.30$, 95% CI = [-0.33; 0.99], $p = .297$. As social-class was not directly associated with students' GPA at Time 3, $\beta = 0.03$, $SE = 0.15$, 95% CI = [-0.29; 0.34], $p = .870$, the indirect effects on students' GPA via independent and interdependent self-construal were not significant, $p_s > .141$.

SSS (Time 3)

Our second model demonstrated good fit, as indicated by the following indices: RMSEA = .04, 90% CI [.04, .05]; CFI = .90; TLI = .88.

Social-class was not associated with independent self-construal at Time 1, $\beta = 0.08$, $SE = 0.06$, 95% CI = [-0.07; 0.18], $p = .380$, nor was independent self-construal associated

with sense of belonging at Time 3, $\beta = -0.04$, $SE = 0.07$, 95% CI = [-0.17; 0.09], $p = .513$, or with students' SSS at Time 3, $\beta = 0.04$, $SE = 0.10$, 95% CI = [-0.15; 0.25], $p = .604$.

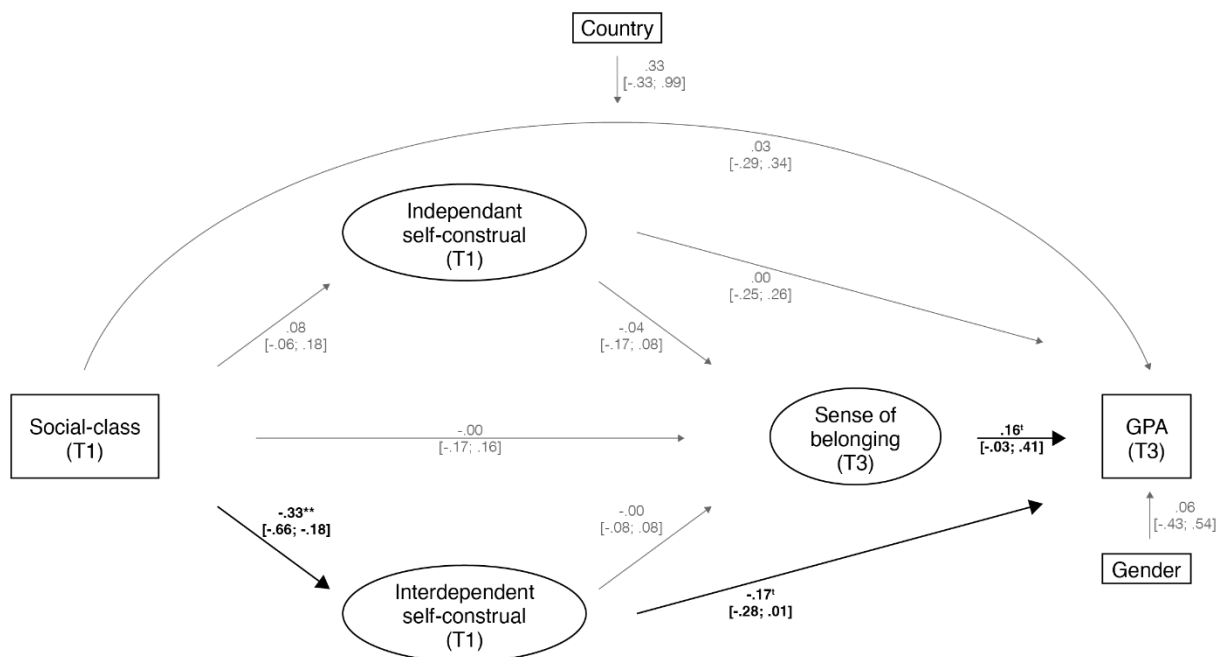
Social-class was, however, negatively associated with students' interdependent self-construal at Time 1, $\beta = -0.33$, $SE = 0.13$, 95% CI = [-0.67; -0.17], $p = .001$, indicating that working-class students had more interdependent self-construal than middle/upper-class students at the beginning of their studies. Interdependent self-construal was not associated with sense of belonging at Time 3, $\beta = -0.01$, $SE = 0.04$, 95% CI = [-0.08; 0.08], $p = .927$, and sense of belonging not with students' SSS at Time 3, $\beta = 0.10$, $SE = 0.09$, 95% CI = [-0.08; 0.31], $p = .243$. However, students' interdependent self-construal at Time 1 was marginally negatively associated with students' SSS at Time 3, $\beta = -0.16$, $SE = 0.06$, 95% CI = [-0.27; 0.02], $p = .073$. Those who were more interdependent reported marginally lower SSS upon graduation.

In addition, social-class was directly and positively associated with students' SSS, $\beta = 0.37$, $SE = 0.13$, 95% CI = [0.10; 0.64], $p = .010$, indicating that middle/upper-class students reported higher levels of SSS. This association was not moderated by country, $\beta = 0.09$, $SE = 0.25$, 95% CI = [-0.46; 0.64], $p = .721$. We tested the indirect effects of social-class on students' SSS via independent and interdependent self-construal.¹⁴ We found a marginal significant effect for social-class on students' SSS at Time 3 via their interdependent self-construal at Time 1, $\beta = 0.05$, $SE = 0.03$, 95% CI = [-0.01; 0.12], $p = .088$. This suggests that students' interdependent self-construal at Time 1 mediates the relationship between social-class and higher SSS at Time 3, among more interdependent students who are more likely to be working-class.¹⁵

¹⁴ In both models, we also tested for the indirect effects of social-class on sense of belonging via independent/interdependent self-construal, and the indirect effects of independent/interdependent self-construal on academic outcomes via students' sense of belonging. However, none of these effects were significant, $p_s > .634$.

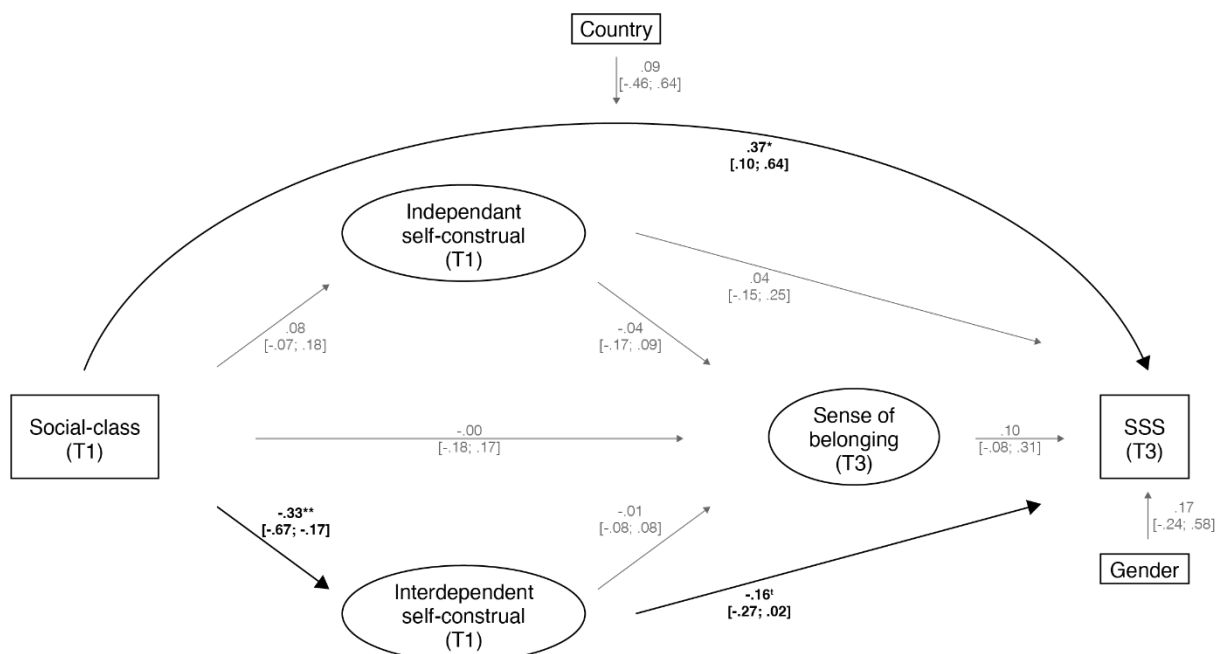
¹⁵ An exploratory analysis was conducted to test an alternative model with sense of belonging as an outcome from students' academic outcomes (see SM).

Figure 3
Structural equation model for GPA (Time 3)



Note. Standardized path coefficients and their confidence intervals in brackets. Significant statistical associations are highlighted in bold and indicated as follows: $^{\dagger} p < .10$; $* p < .05$; $** p < .01$; $*** p < .001$.

Figure 4
Structural equation model for SSS (Time 3)



Note. Standardized path coefficients and their confidence intervals in brackets. Significant statistical associations are highlighted in bold and indicated as follows: $^{\dagger} p < .10$; $* p < .05$; $** p < .01$; $*** p < .001$.

Discussion

The aim of Study 2 was to replicate the findings of Study 1 in a broader context, encompassing multiple universities in France and Germany, while also examining specific dimensions of self-construal to provide a more comprehensive understanding of the impact of social-class on university outcomes.

Our results indicate that, consistent with the findings of Study 1, there were no significant social-class differences in both explicit and implicit independent self-construal among students in both countries. However, working-class students consistently endorsed more interdependence than their middle/upper-class peers throughout their studies until graduation, indicating a persistent experience of cultural mismatch.

In terms of expressive independence, no significant social-class differences were observed in either country. However, in the French *N_{Occupation}* sample and the German *N_{Education}* sample, working-class students exhibited greater endorsement of hard independence (i.e., self-reliance) than their middle/upper-class peers, which persisted until graduation. This greater emphasis on self-reliance may limit their ability to seek necessary help, potentially reducing their chances of success at university (Chang et al., 2020; Covarrubias et al., 2019).

Regarding students' sense of belonging to the university, the two countries showed slightly different results. In France, the sense of belonging for all students decreased over time, while in Germany, working-class students expressed a weaker sense of belonging to the university compared to their middle/upper-class peers, driven by a decrease among working-class students over time. While these slight differences between the samples may have occurred by chance, they may also reflect the unique characteristics of each cohort, and emphasize the period during which the data was collected, which included the sudden shift to distance learning due to the COVID-19 pandemic. Both countries had to grapple with integrating online learning into their curriculum, which may have disadvantaged both groups and led to a decline in the sense of belonging over time. However, it is possible that this disadvantage disproportionately affected the less dominant working-class group in Germany.

Our findings indicate that, despite some inconsistencies across all samples, working-class students in both countries generally had lower GPA scores than their middle/upper-class peers throughout their studies until graduation. Moreover, in line with Study 1, our results indicate that working-class students also reported lower SSS than their middle/upper-class peers. These persistent disparities in their academic outcomes can have detrimental effects on their health, well-being, and future labor market outcomes (Adler et al., 2000; Autin et al., 2017; Sharps & Anderson, 2021).

We also tested a model to understand the relationship between social-class, initial self-construal, and sense of belonging with academic outcomes. Despite similar levels of independent self-construal, working-class students endorsed more interdependent self-construal at the beginning of their studies, which was associated with lower GPA scores and SSS by the end of their studies. Contrary to prior research (Phillips, Stephens, et al., 2020), our findings indicate that interdependent self-construal had a direct effect on academic outcomes, without reducing students' sense of belonging. This effect was particularly strong for the subjective experience of social-class, highlighting interdependent self-construal's mediating role in perpetuating cultural mismatch and social-class achievement gaps. This direct effect could be attributed to working-class students facing challenges in navigating the university environment, which often emphasizes independence, even if their sense of belonging remains unaffected. The discrepancy between our findings and previous research highlights the need for further investigation into the complex relationship between interdependent self-construal, sense of belonging, and academic outcomes in the context of social-class disparities. These findings suggest that merely endorsing interdependent self-construal can lead to negative experiences of cultural mismatch and exacerbate social-class disparities, whereas independent self-construal may not offer protection against these negative consequences.

Our study sheds light on the critical role of initial cultural mismatch in perpetuating social-class achievement gaps throughout students' university experiences. Our findings are consistent with prior research, indicating that prolonged exposure to university environment do not lessen the impact of initial social-class differences, and working-class students do not

necessarily acculturate to the independent norms of their middle/upper-class peers. Instead, social-class backgrounds can lead students on different paths, resulting in persistent disparities in university experiences and outcomes that continue until graduation.

General Discussion

In multiple longitudinal studies conducted at universities in France and Germany, we investigated whether prolonged exposure to the university environment prompts working-class students to acculturate to middle/upper-class norms. Consistent with previous research conducted at elite U.S. universities (Phillips, Stephens, et al., 2020), we replicated and extended these findings to a European context. We found that working-class students do not naturally adjust to the university environment or develop a sense of belonging that could facilitate their acculturation to these norms. Instead, when working-class students gain access to university and persist until graduation, their initial experience of cultural mismatch shapes their experiences and academic outcomes throughout their time at university, with significant consequences.

Universities are widely viewed as a means for upward social mobility, offering the chance to transition to a higher social-class and improve long-term financial and health outcomes. However, our research in Europe confirmed prior studies in the U.S. and found that students from lower social-classes may face systemic barriers in accessing opportunities and building relationships within university environments. Despite the potential for upward mobility, social-class achievement gaps in students' GPA and subjective experience of their social-class persist over time. Working-class students may enter universities with a relatively more interdependent self-construal, reflecting their background, which clashes with the university's culture of independence, shaped by those from middle/upper-class backgrounds. This cultural mismatch can lead to a lower sense of belonging, higher need for self-reliance, leading to less help from peers or institutions, and ultimately lower GPA and SSS at graduation for working-class students.

Theoretical Contributions

The current study contributes to the literature in several ways. First, it extends and confirms prior research by investigating the effects of prolonged exposure to the university environment on working-class students' acculturation to middle/upper-class norms in natural settings across two European countries with diverse university populations. While past

research has mainly focused on elite university settings, where the effects of independence may be more pronounced, our study considers a wider range of universities, providing a more comprehensive understanding of the impact of social-class on university experiences and outcomes.

Second, our longitudinal studies were conducted during a time of significant changes in university settings and curricula, particularly due to the COVID-19 pandemic. The pandemic accelerated the opportunities and challenges of online learning, which can provide advantages, such as reaching people in rural areas, but also disadvantages for groups who may have less access and understanding of the university environment. Despite these changes, we found that cultural mismatch effects persisted, highlighting the ongoing importance of addressing this issue for more inclusive education policies. Our findings underscore the need for continued attention to the impact of social-class on university experiences and outcomes, particularly in light of current and future changes in university settings.

Third, we made methodological advances by using more nuanced measures of self-construal and incorporating implicit measures that are less dependent on conscious processing. Specifically, we examined different dimensions of self-construal and found that although working-class and middle/upper-class students had similar levels of explicit and implicit independence, differences in specific forms of independence, such as hard independence, were associated with the effects of cultural mismatch. These findings suggest that merely endorsing general independence may not be sufficient to protect against the detrimental effects of cultural mismatch. Instead, specific forms of independence may amplify these effects, as working-class students are expected to be more self-reliant and less likely to seek help when needed. Our study highlights the importance of using more nuanced measures of self-construal to gain a more comprehensive understanding of the impact of social-class on university outcomes.

Fourth, our studies indicate that differences in hard independence and interdependence can both lead to tremendous effects of cultural mismatch on working-class students' university experiences and outcomes. Across our studies, we observed that working-class

students endorsed more interdependence than their middle/upper-class peers, which, combined with their endorsement of more hard independence, contributed to depressed academic outcomes. This finding underscores the need for universities to move beyond promoting independence as the sole standard and instead value and integrate interdependence into their curricula and policies. As highlighted in previous literature (e.g., Herrmann et al., 2021; Phillips, Stephens, et al., 2020; Smeding et al., 2013; Stephens, Markus, et al., 2014; Tibbetts et al., 2016, 2018), developing interventions that address the psychological challenges faced by working-class students and promote interdependence may be key to reducing the negative effects of cultural mismatch on their experiences and outcomes.

Generalizability, Limitations, and Future Directions

Our study was conducted at several universities in France and Germany, two countries with educational and cultural contexts similar to those found in other Global North countries (Muthukrishna et al., 2020). Thus, our findings can be generalized to other similar contexts. However, it is important to note that our sample was predominantly comprised of students in social sciences (100% in France, >80% in Germany), which may limit the generalizability of our findings to other academic disciplines. Additionally, we controlled for gender in our analysis to isolate the effects of social-class, but our sample was biased as over 80% of our participants identified as female. This gender imbalance may have influenced our results, as previous research has suggested gender differences in self-construal (Markus & Kitayama, 2010). Moreover, we did not have sufficient power to examine intersectional effects of social-class by gender and conduct robust statistical analyses.

In addition, our study did not measure and examine the intersectionality of social-class with other identities beyond gender, including but not limited to those who experience marginalization due to factors such as racism, ableism, or discrimination against LGBTQI+ individuals. Considering that an individual's self and identity are shaped by the interaction of multiple social identities, this is an important area for future research to explore (APA Task Force on Socioeconomic Status, 2007). Individuals who belong to multiple marginalized groups may experience additional challenges and unique cultural mismatches within university settings.

Future research should take an intersectional approach to explore how the experiences of cultural mismatch may vary across different marginalized identities, as well as the potential moderating effects of campus representation (Fryberg et al., 2013; Harackiewicz et al., 2016; McGarrity, 2014). This approach can inform the development of more targeted interventions and policies to support the success of students from diverse backgrounds.

The current study found no social-class differences in students' general or implicit independent self-construal, which contrasts with previous European research, even during the COVID-19 pandemic (Müller et al., in press). However, the IAT measurement's validity can be affected by contextual factors, such as online settings, which can introduce noise and impede effect detection (Greenwald et al., 2022; Jost, 2019). Future studies should ensure calm environments and committed participants when using this measurement. While chance could have played a role in our three longitudinal studies, other possible explanations include recent findings in the U.S. indicating a shift towards greater independence among students, regardless of social-class (Phillips, Stephens, et al., 2020; Tibbetts et al., 2018). Another explanation is that the difference in independence in Europe may be small but still impactful (Götz et al., 2022), and our studies may have lacked sufficient power to detect it. Despite the lack of social-class differences in general and implicit independent self-construal, we did find systematic differences in interdependence and hard independence. To better understand cultural mismatch beyond the U.S., future studies should conduct more highly powered research to consider the possibility of small effects. It is important to note that cultural mismatch may exist in various educational systems, and targeted programs should be tailored accordingly.

Implications for Social Policy and Conclusion

Our findings indicate that the social-class achievement gap is a widespread issue that transcends national borders and educational contexts. While universities are often viewed as avenues for upward social mobility, our research highlights that social-class can significantly impact students' social and academic outcomes until graduation. It is crucial for higher education institutions to actively implement programs that facilitate the acculturation of working-class students. They need to help them overcome initial hurdles due to social-class and gain cultural

capital of the middle/upper class (Goudeau & Croizet, 2017; Lareau, 2015). However, social-class mobility can be a slow and challenging process, and failure to address the lag in subjective social-class experience could hinder students' progress (Martin & Côté, 2019; Phillips, Stephens, et al., 2020).

To address social-class inequalities in higher education, universities need to integrate both independent and interdependent values and norms (Brannon et al., 2015, 2017) into their curricula. The literature offers various strategies to achieve this goal, but these approaches need to be adapted and tested in different educational contexts around the world. Only by taking action and interrupting the pattern of cultural mismatch can we hope to create a more inclusive environment for all students.

Disclosures

In this article we utilize the following open scientific practices: (a) provide open materials, and (b) provide open data. Materials, data, syntax for analyses, and supplemental material are available on the Open Science Framework. The studies were preregistered prior to data inspection. Links to the preregistration of rationale and hypotheses, methodology, variables of interest, sample characteristics, analysis strategy are also available on OSF:

https://osf.io/pz2sg/?view_only=da87c9779739414f868a4902bf124d00

Study 1 was also conducted on a sample in Germany and preregistered. However, due to the COVID-19 pandemic, data acquisition was interrupted during the first wave, resulting in a shift from campus to online assessment, and high drop-out rates resulted in only 11% retention of Time 1 at Time 3. Therefore, we deemed the results non-reliable, but they are reported in the supplemental material for completeness.

Author Contributions

Fabian Müller: Conceptualization; methodology; data collection; formal analysis; writing – original draft; documentation for OSF; writing – review and editing.

Sébastien Goudeau: Conceptualization; methodology; writing – review and editing.

Rasyid Bo Sanitioso: Conceptualization; methodology; writing – review and editing.

Acknowledgements

We are grateful to Agathe Gabillaud for assistance in data collection in Study 1, Ivane Nuel for contributions in programming the RF-SC-IAT, and to Martin Müller for help in illustrating the figures.

CHAPTER 2

Acculturation of Some Working-Class Students

Based on:

Müller, F., Goudeau, S., Aelenei, C., & Sanitioso, R. B. (2023). *Acculturation in higher education institutions: How high-performing working-class students reduce cultural mismatch at university*. Manuscript in preparation. Université Paris Cité, France.

The acculturation process of high-performing working-class students has received little attention in the literature (Phillips, Martin, et al., 2020). In Chapter 1, we made initial attempts to explore this process in an exploratory manner, investigating whether working-class students with different academic outcomes exhibited differences in their acculturation strategies for their self-construal (see supplemental material for Chapter 1). Our preliminary results indicated that students' subjective experience of social-class was associated with differences in their acculturation strategies. Working-class students with higher subjective social-class experience were more flexible in adjusting their self-construal to different environments, being more independent at university and more interdependent with family. However, these findings were limited by the correlational design of the studies in Chapter 1, necessitating further investigation of the acculturation strategies of high-performing working-class students using experimental manipulations.

Therefore, Chapter 2 aims to fill this gap by examining the acculturation of working-class students, particularly changes in their self-construal at university and the exclusivity or flexibility of this process. We employed experimental manipulations to explore the specific acculturation processes of high-performing working-class students who succeed against the odds. The manipulations involved primings of self-construal as well as contextual variations where students completed questionnaires regarding their self-construal in both a home and university setting. By using these manipulations, Chapter 2 aims to answer the question of whether high-performing working-class students acculturate their self-construal in a flexible way, which resembles the integrative strategy (Berry, 1997; Sam & Berry, 2010) that involves identifying with both new and original social-class as the most beneficial form of acculturation.

Manuscript in preparation:

Acculturation in Higher Education Institutions: How High-Performing Working-Class Students Reduce Cultural Mismatch at University

Fabian Müller¹, Sébastien Goudeau², Cristina Aelenei¹, Rasyid Bo Sanitioso¹

¹ Université Paris Cité, Laboratoire de Psychologie Sociale, Boulogne-Billancourt, France

² Centre de Recherches sur la Cognition et l'Apprentissage, CNRS, Université de Poitiers,
Poitiers, France

Author Note

Fabian Müller  <https://orcid.org/0000-0002-8363-9285>

Sébastien Goudeau  <https://orcid.org/0000-0001-7293-0977>

Cristina Aelenei  <https://orcid.org/0000-0002-4232-6506>

Rasyid-Bo Sanitioso  <https://orcid.org/0000-0001-7949-408X>

Preregistration, data, analysis code, and additional online materials are openly available at the project's Open Science Framework page. We have no conflicts of interest to disclose.

Abstract

Working-class students experience a mismatch between the independent norms at university and the interdependent norms more common at home, potentially leading to lower academic success. Yet, some working-class students perform as well as their middle/upper-class peers. This could be partly due to the acculturation to university context: some working-class students may become more independent over time. In the present study, we examine the nature of this acculturation process. We investigate whether students acculturate flexibly, developing an independent self-construal that coexists with their interdependent self-construal, and activate the appropriate self as a function of the immediate context. Alternatively, we explore whether they acculturate exclusively by developing an independent self-construal that replaces their interdependent self-construal. In three studies (total $N = 1217$), when primed with an independent self-construal, high-performing working-class students endorsed significantly higher independence than did low-performing working-class students. They also flexibly adapted their self-construal to the immediate context: high-performing working-class students showed higher independence at university than their low-performing peers but not when at home. Finally, working-class students adhered to a different form of independence, i.e., higher self-reliance, compared to middle/upper-class students. In sum, high-performing working-class students acculturate to higher education institutions flexibly, reducing the mismatch with university culture, which could partly explain their success. Universities should therefore provide social support and facilitate this acculturation process to enable genuine upward social mobility.

Keywords: higher education, social-class, cultural mismatch, acculturation, high-achievers, social mobility

Transition to higher education can be more challenging for working-class (i.e., those whose parents do not have a three-year university degree or are blue-collar workers) than for middle/upper-class students (i.e., those with at least one parent with a three-year university degree or a professional occupation that requires advanced education or managerial roles; OECD, 2018). As evidence, working-class students tend to have lower academic success, such as higher drop-out rates or lower academic performance (Jury et al., 2017; Stephens et al., 2015). This achievement gap cannot, however, be fully explained by interconnected structural and individual factors alone, such as lower academic preparation due to attending under-resourced schools, limited access to support networks, or reduced financial resources (Atherton, 2014; Bailey & Dynarski, 2011; Ishitani, 2003). One possible explanation could be a cultural mismatch likely to be experienced by working-class students in university. That is, working-class students tend to have a more interdependent/less independent self-construal that does not match the more independent university culture (Stephens, Fryberg, et al., 2012). Yet, some working-class students perform as well as their middle/upper-class peers, suggesting that they manage to acculturate to higher education institutional contexts. The specific acculturation process of high-performing working-class students, however, has remained unexplored (Phillips, Martin, et al., 2020). Thus, the current research aimed to help fill this gap by examining working-class students' acculturation, in particular related to changes in their self-construal at university.

Cultural Mismatch

Educational contexts may contribute to social-class achievement gaps by promoting cultural norms of independence: students are expected to forge their own path, express their opinions, and to influence the world, rather than respecting others' opinions or group rules (Stephens et al., 2019; Tibbetts et al., 2018). Cultural mismatch theory (Stephens, Fryberg, et al., 2012) suggests that working-class students experience a mismatch between the prevalent norms of independence in higher education and the relatively interdependent norms more dominant among working-class students (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014). This mismatch stems partly from students' self-

construal, which influences their endorsement of diverse norms. The social-class background of a student shapes their self-construal, which can be either independent or interdependent (Markus & Kitayama, 2010; Vignoles et al., 2016). Differences in parenting styles, values, and practices between working-class and middle/upper-class families play a significant role in shaping self-construals. Working-class contexts foster a more interdependent self-construal, emphasizing connections to others and a sense of community (Stephens et al., 2007). In contrast, middle/upper-class contexts nurture an independent self-construal, focusing on individuality and separation from others (Fryberg & Markus, 2007; Stephens, Fryberg, et al., 2012). The culture of independence in higher education can either match or mismatch with students' self-construal and associated norms. This independent culture aligns more closely with the family socialization of middle/upper-class students. However, the interdependent norms more common among working-class students represent somewhat a mismatch with the prioritized independent culture at university (Harackiewicz et al., 2014; Stephens, Fryberg, et al., 2012). This mismatch between working-class students' interdependent self-construal and the independent higher education setting can lead to negative consequences, such as stress, negative emotions, lowered sense of belonging, and decreased academic achievement (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Townsend, et al., 2012).

Acculturation

A non-negligible percentage of working-class students nonetheless does reach levels of educational success comparable to that of their middle/upper-class peers (Agasisti & Longobardi, 2014; OECD, 2011; O'Shea, 2020; Wong & Chiu, 2019). One explanation, based on cultural mismatch theory, is the acculturation process within the university context: some working-class students become more independent over time. Acculturation is defined as the psychological change resulting from the encounter between different groups, usually non-dominant and dominant (Berry, 1997; Sam & Berry, 2010).

Berry (1997) identified four acculturation strategies: integrative, assimilative, separation, and marginalization. The integrative strategy involves individuals identifying with both the new, dominant group and the original, non-dominant group. The assimilative strategy

has individuals identifying only with the new, dominant group while abandoning the original one. The separation strategy results in individuals rejecting the new, dominant group while holding on to the original, non-dominant group. Lastly, the marginalization strategy entails individuals rejecting both the new and original groups.

While initially focused on nation-state immigration, these strategies can be adapted to social-class immigration (Phillips, Martin, et al., 2020). In the latter case, universities serve as gateways for upward social mobility, reflecting and promoting independence as a standard. That is, they require their students to develop an appropriate identity that must be integrated into one's self (Haslam et al., 2021; Stephens, Markus, et al., 2014; Veldman et al., 2022). Consequently, working-class students must acculturate their self-construal towards independence.

The acculturation process involving an adaptation of students' self-construal can be of two types: exclusive and flexible. Exclusive acculturation involves working-class students gradually developing a more independent self-construal, eventually replacing their interdependent self-construal, comparable to Berry's assimilative strategy. In contrast, flexible acculturation enables students to develop independent self-construals that coexist with their interdependent self-construals. The immediate context activates the appropriate self-construal, such as being more interdependent in the family context and independent in the classroom (Herrmann & Varnum, 2018a, 2018b).

Overview and Hypotheses

The integrative acculturation strategy (i.e., a person identifies with the current and the past social-class) is considered the most beneficial form (Phillips, Martin, et al., 2020). Therefore, we expect the most beneficial acculturation process of the self-construal to be flexible. The current research examines whether high-performing working-class students acculturate to higher education institutions in a flexible manner: by increasing their independence at university while remaining more interdependent when at home. To this end, we conducted three studies in samples among university students. In Experiment 1, we used a standard priming task to activate the concepts of independence and interdependence and examined if high-

performing working-class students subsequently construe their selves accordingly. In Experiment 2, we explored if high-performing working-class students flexibly adapt their self-construal to specific environments, namely higher education institutions versus home context. As there are different ways of being independent (Vignoles et al., 2016), we investigated in Experiment 3 these acculturation processes on different dimensions of independent self-construal. In particular, we differentiated between forms of expressive independence (students' self-expression and self-interest) and hard independence (students' self-reliance; Chang et al., 2020; Covarrubias et al., 2019; Stephens, Markus, et al., 2014). To examine our research question, we developed the following hypotheses:

Hypothesis 1: Working-class students exhibit higher interdependent self-construals and lower independent self-construals compared to middle/upper-class students, indicating a potential cultural mismatch.

Hypothesis 2: Working-class students with higher academic performance demonstrate greater independent self-construal compared to their lower-performing peers.

Hypothesis 3: As working-class students' academic performance improves, their independent self-construal increases within the university context. However, there is no difference in independence levels between high- and low-performing working-class students in their home context, suggesting flexible acculturation.

General Method

The Institutional Review Board reviewed and approved this study before data collection (N° IRB: 00012021-72).

Participants

Undergraduate students from various universities in France were invited to participate in these online experiments. Following recent recommendations (Rodríguez-Hernández et al., 2020), we categorized participants' social-class using two separate objective proxies: parents' level of education ($N_{Education}$) and parents' occupations ($N_{Occupation}$). Consistent with the literature on cultural mismatch, which typically focuses on first-generation students (Stephens, Fryberg, et al., 2012), we present results for $N_{Education}$.¹ Thus, participants were considered as working-class if neither parent has a three-year university degree, and as middle/upper-class if at least one parent has a three-year degree.

Table 1 presents participants' demographics for the three experiments. In Experiment 1, after applying the exclusion criteria (uncompleted questionnaires = 260, postgraduate students = 1), the sample included 408 participants. We excluded participants who did not indicate their parents' level of education ($N = 14$) and their grade point averages (i.e., GPA, to indicate participants' performance; see detailed description below, $N = 74$) from analyses. The final sample comprised 320 participants nested in 29 universities ($M_{age} = 19.4$, $SD = 2.73$; 97.8% first-year students).

In Experiment 2, we applied the following exclusion criteria: uncompleted questionnaires ($N = 340$), failing attention checks² ($N = 145$), missing GPA ($N = 28$), and missing parents' level of education ($N = 13$). Since this experiment focused on acculturation processes at universities and to ensure similar online/on-site learning experiences due to the COVID-19 pandemic, we targeted second- and third-year students, leading us to exclude first-year ($N =$

¹ Details and results for $N_{Occupation}$ can be found in the Supplemental Material (SM).

² Participants had to complete two attentional control questions, asking them to rate their attentiveness to the survey and select a predetermined response from the response options. See codebook on the project's web page.

25) and postgraduate students ($N = 15$). Given the structure of our data and our study design (see below), participants from universities that contained either only working-class or middle/upper-class students in each condition ($N = 61$) were excluded. The final sample consisted of 418 participants nested in 13 universities ($M_{\text{age}} = 21.5$, $SD = 2.99$; 95.45% third-year students).

In Experiment 3, we applied the following exclusion criteria: uncompleted questionnaires ($N = 278$), failing attention checks ($N = 179$), missing GPA ($N = 28$), and missing parents' level of education ($N = 23$). As in Experiment 2, we targeted second- and third-year students, leading us to exclude first-year ($N = 32$), and postgraduate students ($N = 13$), and participants from universities that contained either only working-class or middle/upper-class students in each condition ($N = 12$). The final sample consisted of 479 participants nested in 26 universities ($M_{\text{age}} = 21.5$, $SD = 3.18$; 93.53% third-year students).

Past research has shown that subjective measures of social-class are distinct from, but strongly correlated with, objective proxies of social-class (Herrmann & Varnum, 2018a; Kraus et al., 2013; Singh-Manoux et al., 2003). A subjective proxy of social-class is defined as the perception of one's standing in the social hierarchy relative to others (Kraus & Stephens, 2012). We also present results for students' subjective social status in Experiment 2 (final $N = 475$) and Experiment 3 (final $N = 509$).

Statistical Power Considerations

Given our data structure (i.e., students nested in universities), linear mixed-effects analyses were required. Based on the guidelines provided by Arend and Schäfer (2019) for statistical power in two-level models, we derived the minimum detectable effect sizes considering our sample sizes, and the size of the ICC (i.e., intraclass correlation coefficient) at a level of statistical power of 80%. The minimum detectable effect sizes in our experiments range from $\eta_p^2 = .03$ to $\eta_p^2 = .05$ (i.e., small to medium effect sizes).

Table 1
Demographics for N_{Education}

Variables	Experiment 1		Experiment 2		Experiment 3	
	Working-class	Middle/upper-class	Working-class	Middle/upper-class	Working-class	Middle/upper-class
1. <i>N</i>	146 (45.62%)	174 (54.37%)	243 (58.13%)	175 (41.87%)	258 (53.86%)	221 (46.14%)
2. Gender						
Female	76.71%	66.67%	76.54%	73.71%	81.01%	73.76%
Male	20.55%	26.44%	19.75%	24.00%	16.67%	19.00%
Not specified	1.37%	3.45%	0.82%	0.57%	0.39%	2.71%
Self-description	1.37%	3.45%	2.88%	1.71%	1.94%	4.52%
3. Marg. group	37.12%	30.82%	28.40%	32.00%	27.52%	30.32%
4. Field of study						
Social sciences	88.97%	83.24%	84.65%	80.70%	83.00%	82.19%
STEM	8.28%	12.72%	7.88%	11.70%	8.70%	8.68%
Other	2.76%	4.05%	7.47%	7.60%	8.30%	9.13%

Note. Marg. group = membership in other marginalized groups, STEM = science, technology, engineering, and mathematics, Other = business, administration, and law; agriculture, forestry, fisheries, and veterinary; health and welfare; services.

Experiment 1

Materials and Procedure

Procedure

Experiment 1 employed a between-subjects design in which participants were randomly assigned to a pronoun-circling task (Brewer & Gardner, 1996; Gardner et al., 1999) to prime either an interdependent or an independent self-construal. This task has been demonstrated to shift the balance between independent and interdependent self-construals. The task includes paragraphs describing a trip to the city, with two versions differing only in the pronouns being independent (e.g., I, mine) or interdependent (e.g., we, ours). Participants were tasked with counting all the pronouns in the paragraph. Next, they completed the Motives for Attending College scale (Stephens, Fryberg, et al., 2012) and the Inclusion of Other in the Self (IOS) scale (Aron et al., 1992), which were presented in a randomized order. Finally, participants provided demographic information and were debriefed.

Measures

Self-construal. We assessed independent and interdependent self-construal using the Motives for Attending College scale (Stephens, Fryberg, et al., 2012). The scale was translated into French, back translated, and adapted to the French context. Previous research has shown that independent vs. interdependent motives for completing university reflect culture-specific assumptions concerning university education and can be used as an indicator of self-construal. Assuming that university culture in France is seen as independent (Sommet et al., 2015), the endorsement of interdependence indicates cultural mismatch (Phillips, Stephens, et al., 2020). Six items reflecting interdependent motives for attending college as indicators of interdependent self-construal represented relationship-oriented reasons (e.g., “I want to give back to my community.”, $\alpha = .81$). Seven items³ reflecting independent motives for attending college as indicators of independent self-construal represented individual-focused reasons (e.g., “I want to become an independent thinker.”, $\alpha = .83$) for completing university. Items were intermixed. Participants responded using a scale, 1 (not at all important) to 7 (extremely important). Responses were averaged to create composite measures of interdependence and independence.

We conducted an exploratory factor analysis⁴ (EFA) with the software program R (Version 4.0.3) using the package “psych” (v2.2.9; Revelle, 2022) implemented in the package “jmv” (v2.3.4; Selker et al., 2022). EFA (maximum likelihood extraction method, oblimin rotation, number of components fixed) of all 13 items revealed that the seven independent items loaded onto one factor (range [.40, .83], Eigenvalue = 3.61, 24.47% variance explained), and six interdependent items loaded onto a second factor (range [.57, .79], Eigenvalue = 1.79, 20.01% variance explained). No other items loaded highly onto the opposite factor (item loadings < .30; all other Eigenvalues < 1).

³ One item has been added to the original scale (see SM).

⁴ As a first step, we conducted a confirmatory factor analysis using the package “lavaan” (v0.6.12; Rosseel, 2012). Due to the small sample size, the fit was not sufficient (RMSEA = 0.08, 90% CI [0.07, 0.01], CFI = 0.90, TLI = 0.88), thus we conducted an EFA.

Inclusion of Other in the Self (IOS). To represent interpersonal interconnectedness with other students, we used the IOS Scale (Aron et al., 1992). We asked participants which diagram represents best the relationship with other students, following a single-item scale containing a set of seven Venn-like diagrams each representing different degrees of overlap (which progresses linearly) of two circles (one labelled with “Self”, the other with “Other”). Higher values on the IOS scale indicate greater interpersonal interconnectedness with other students, representing one dimension of interdependence. Conversely, lower values signify less interpersonal interconnectedness with other students, which can be seen as reflecting one dimension of independence.

Performance. Students’ performance was measured by students’ self-reported GPA of the previous semester (self-reported scores are sufficiently accurate compared to actual grades; Cassady, 2001), which could range from 0 to 20 (range 5.00-18.23, $M = 12.43$, $SD = 2.58$). For analyses, students’ GPA was mean-centered.

Covariates. To isolate the effects of social-class, we controlled for the following variables.

Gender. Participants indicated their gender identity as female, male, or they had the option to self-describe to identify themselves as gender non-conforming individuals. Past research indicates associations between gender with academic performance and self-construal (Barone & Assirelli, 2020; Markus & Kitayama, 2010). This could result from access to power and resources that directly affects students’ live. Thus, we contrast-coded gender as either male (0.5) or not male (-0.5; female and gender non-conforming individuals). We did not create a separate category for gender non-conforming individuals as 1) there are not only three categories of gender, 2) creating one separate category could lead to othering, and 3) we wanted to control for access to power which is more prevalent among males.

Marginalized group. Research on social-class is not independent of intersecting other social constructs (APA Task Force on Socioeconomic Status, 2007). The development of self and identity is influenced by the interaction among one’s many social identities. Being a member of many marginalized groups could moderate the experience of a cultural match or

mismatch between students' self-construal and norms at university (Harackiewicz et al., 2016). Thus, we assessed membership in other marginalized groups ($= -0.5$; no membership $= 0.5$) to control for shared experiences across these groups (Cole, 2009).

Results and Discussion

Analysis strategy

Table 2 presents means of variables based on social-class (see Table S3 in SM for their correlations). Analyses were carried out using R software (Version 4.0.3). Given the structure of our data (i.e., students nested in different universities), linear mixed-effects analyses were performed using the package “lme4” (v1.1.28; Bates et al., 2012). Dependent variables included students' self-construal (independence, interdependence) and interpersonal interconnectedness with other students (IOS). Fixed effects included students' social-class (-0.5 for working-class, 0.5 for middle/upper-class), performance (mean-centered), context (-0.5 for independent prime, 0.5 for interdependent prime), all two-way interaction terms, and the three-way interaction term.

Random effects for the final model were selected in line with the procedure detailed by Bates et al. (2015), using the package “RePsychLing” (v0.0.4; Baayen et al., 2015). For our final model of independent self-construal, random effects included a random intercept for university and a by-university random slope for the interaction between social-class and context. The random effects for our final models of interdependent self-construal and IOS included a random intercept for university and a by-university random slope for the main effect of social-class. We obtained p -values through Satterthwaite approximation using the “lmerTest” package (v3.1.3; Kuznetsova et al., 2017). Result patterns remained unchanged when using robust estimations (in case of normality and heteroscedasticity issues); therefore, we present results without robust estimations.

To detect influential observations, we used Cook's distance with the package “influence.ME” (v0.9.9; Nieuwenhuis et al., 2012), which provides a summary measure of the change in all parameter estimates between inclusion and exclusion of a particular case. Observations were considered too influential if their associated value for Cook's distance

exceeded the cut-off value of $4/N$, where N is the total number of students, and if deleting the observation affected the significance level of the variables in the model. We examined influential data in the final model after random effects selection. Although several observations exceeded the cut-off value for Cook's distance, their deletion did not affect the significance level of the predictors, so they were retained in the dataset.

To isolate the effects of social-class, we controlled for students' gender and membership in other marginalized groups. Covariates did not reach significant effects; thus, we present models without covariates. However, results persisted when gender and marginalized group membership were included as covariates.

Results

Self-construal. The three-way interaction between students' social-class, GPA, and primed self-construal significantly predicted students' independent self-construal, $B = -0.17$, $SE = 0.08$, $t(264.27) = -2.06$, $p = .040$, $\eta_p^2 = .015$. No other social-class related main or interaction effects for independent self-construal were significant, $p_s > .220$ (Table S4 in Supplemental Material, SM).

Follow-up analyses revealed that when primed with independent self-construal, high-performing (vs. low-performing) working-class students endorsed marginally more independent self-construal, $B = 0.07$, $SE = .04$, $t(225.53) = 1.75$, $p = .082$, $\eta_p^2 = .011$ (Figure 1); however, no difference was observed when primed with interdependent self-construal, $p = .628$. Looking at the interaction pattern from a different perspective, low-performing working-class students were found to have marginally decreased their independence when primed with independent self-construal, $B = -0.39$, $SE = .22$, $t(58.80) = -1.78$, $p = .077$, $\eta_p^2 = .012$; but high-performing working-class students did not, $p = .756$.

For middle/upper-class students, follow-up analyses revealed a reverse pattern: when primed with interdependent self-construal, high-performing (vs. low-performing) middle/upper-class students endorsed more independent self-construal, $B = 0.11$, $SE = .04$, $t(246.79) = 2.56$, $p = .011$, $\eta_p^2 = .024$; but no difference was observed when primed with independent self-construal, $p = .318$. From a different perspective, neither high-performing nor low-performing

middle/upper-class students increased their independence when primed with independent self-construal, $p_s > .141$.

No significant social-class related main or interaction effect was found for interdependent self-construal, $p_s > .212$ (Table S4 in SM).

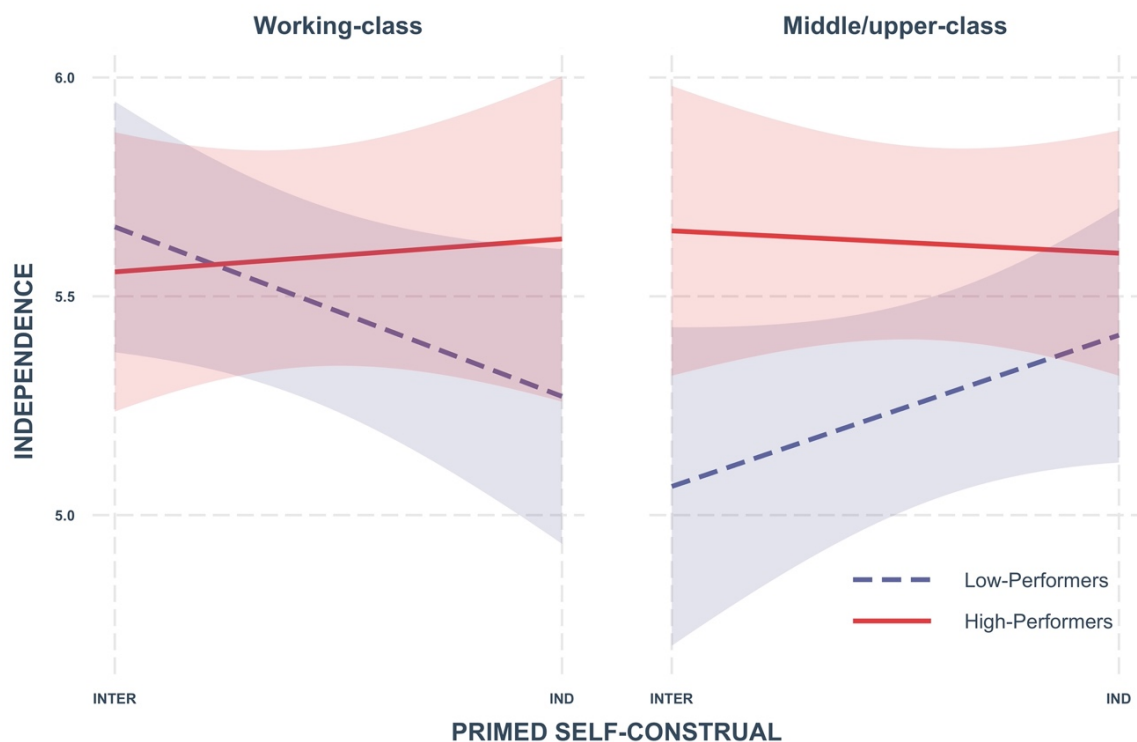
IOS. A significant three-way interaction between students' social-class, GPA, and primed self-construal significantly predicted students' interpersonal interconnectedness with other students, $B = -0.32$, $SE = 0.13$, $t(281.50) = -2.49$, $p = .013$, $\eta_p^2 = .021$. No other social-class related main or interaction effect for IOS was significant, $p_s > .333$ (Table S4 in SM).

Although the pattern of slopes indicated (Figure S1 in SM), follow-up analyses revealed no significant difference in expressing IOS between high-performing versus low-performing working-class students when primed with independent or interdependent self-construal, $p_s > .100$. Looking at the interaction pattern from a different perspective, low-performing working-class students decreased their IOS when primed with independent self-construal, $B = -0.75$, $SE = .32$, $t(277.80) = -2.37$, $p = .018$, $\eta_p^2 = .020$; but no difference was observed for high-performing working-class students, $p = .428$.

In contrast, high-performing (vs. low-performing) middle/upper-class students expressed more IOS when primed with interdependent self-construal, $B = .17$, $SE = .07$, $t(284.65) = 2.39$, $p = .018$, $\eta_p^2 = .020$; and no difference when primed with independent self-construal, $p = .402$. From a different perspective, however, neither high-performing nor low-performing middle/upper-class students were found to have changed their IOS when primed with independent self-construal, $p_s > .103$.

Figure 1

Three-way interaction of Experiment 1 between social-class, GPA, and primed self-construal on independence



Note. Simple slopes with 95% confidence regions. Low-performers refers to 1 SD below the mean of the GPA, and high-performers to 1 SD above the mean of the GPA.

Discussion

The goal of Experiment 1 was to examine if high-performing working-class students construe their selves in line with a standard priming task that activates concepts of independence and interdependence. The results did not support the first two hypotheses of a main effect of social-class nor of an interaction effect of social-class and GPA. However, the results for independent self-construal supported the hypothesis of the three-way interaction between students' social-class, GPA, and primed self-construal. High-performing working-class students maintained their independent self in both priming tasks, while their low-performing working-class peers decreased it in the independent priming task. In other words, high-performing (vs. low-performing) working-class students endorsed more independence in the independent priming task. This suggests that while the independent priming task led to a paradoxical effect for low-performing working-class students, resulting in less independence, high-performing working-class students preserved their independence, which could be beneficial for them.

The significant three-way interaction of students' interpersonal interconnectedness with other students indicates that when primed with independent self-construal, high-performing working-class students maintained close relationships with other students, while their low-performing working-class peers experienced a decrease. This suggests that in an independent setting, high-performing working-class students can draw on more social support from other students they typically encounter in independent university settings than their low-performing working-class peers.

Although we had no hypotheses for middle/upper-class students, their results offer new insights. Both high- and low-performing middle/upper-class students maintained their independent self and close relationships with other students in both priming tasks. However, in the interdependent priming task, high-performing (vs. low-performing) middle/upper-class students endorsed more independence and close relationships with other students. This renders them less vulnerable to the potential negative effects of interdependent settings, while still allowing them to leverage greater social support from other students, even within such environments.

Experiment 2

Materials and procedure

Procedure

In Experiment 2, using a between-subjects design, participants were randomly assigned to one of two conditions: recalling and writing about a typical day either at home or at university.⁵ After the manipulation, they completed the Motives for Attending College scale (Stephens, Fryberg, et al., 2012) and the IOS scale (Aron et al., 1992), presented in randomized order. Finally, they provided demographic information and were debriefed.

Manipulation check

A pilot study with $N = 70$ confirmed that participants correctly completed the manipulation setup. We opted not to include additional manipulation checks, as they might result in weaker hypothesis tests (Gruijters, 2022).

Measures

Self-construal and IOS. As in Experiment 1, we used the Motives for Attending College scale⁶ to assess independent and interdependent self-construal and the IOS scale to evaluate interpersonal interconnectedness with other students.

Subjective social status (SSS). Participants ranked their social status compared to "other people in France" using a ladder image (1 = lowest status to 10 = highest status; Adler et al., 2000). The scale has been translated into French with back-translation.

Performance. We used students' self-reported GPA of the previous year. As GPA from the previous year and previous semester were highly correlated ($\rho = .73$), and to obtain power, we replaced missing data on GPA_{Year} ($N_{\text{Missing}} = 76$) with GPA_{Semester} if available ($N_{\text{Replaced}} = 48$; GPA_{final}: range 5.00-18.50, $M = 12.88$, $SD = 1.91$).

Covariates. As in Experiment 1, we controlled for participants gender identity and membership in other marginalized groups. Additionally, we controlled for the emotional valence

⁵ See details in the codebook at the project's Open Science Framework page.

⁶ See SM for detailed information on internal consistency and factorial structure.

of the written text about a typical day at home/university, assessed using the valence dimension of the Self-Assessment Manikin (Bradley & Lang, 1994), which depicts five images ranging from a frowning, unhappy figure to a smiling, happy figure.

Results and Discussion

Analysis strategy

Table 2 presents the means of variables based on social-class (refer to Table S5 in SM for their correlations). We performed linear mixed-effects analyses, as in Experiment 1. The dependent variables were students' self-construal (independence, interdependence) and interpersonal interconnectedness to other students (IOS). As fixed effects, we entered students' social-class (-0.5 for working-class, 0.5 for middle/upper-class), performance (mean-centered), context (-0.5 for home context, 0.5 for university context), all the two-way interaction terms, and the three-way interaction term. Random effects for the final model were selected as in Experiment 1, with a random intercept-only by university. To isolate the effects of social-class, we controlled for students' gender (-0.5 for male, 0.5 for not male), membership in other marginalized groups (-0.5 for membership, 0.5 for no membership), and emotional valence (mean-centered) towards the manipulation. Covariates reached significant effects; thus, we present models with covariates included. However, results persisted without gender, marginalized group membership, and emotional valence as covariates. In a second step, we conducted the same analyses with the subjective proxy of social-class SSS (mean-centered) and present models with covariates.

Results for $N_{Education}$

Self-construal. The three-way interaction between students' social-class, GPA, and context significantly predicted students' independent self-construal, $B = -0.22$, $SE = .09$, $t(404) = -2.52$, $p = .012$, $\eta_p^2 = .015$. No other social-class related main or interaction effect for independent self-construal was significant, $p_s > .579$ (Table S6 in SM).

Follow-up analyses revealed that in the university context, high-performing (vs. low-performing) working-class students endorsed more independent self-construal, $B = 0.10$, $SE = .04$, $t(404) = 2.25$, $p = .025$, $\eta_p^2 = .012$ (Figure 2); however, no difference was found in the

home context, $p = .573$. From a different perspective, high-performing working-class students marginally increased their independence in the university context compared to the home context, $B = 0.29$, $SE = .17$, $t(404) = 1.76$, $p = .079$, $\eta_p^2 = .008$; whereas no change was observed among low-performing working-class students, $p = .944$.

For middle/upper-class students, the follow-up analysis revealed a reverse pattern: in the home context, high-performing (vs. low-performing) middle/upper-class students endorsed more independent self-construal, $B = 0.14$, $SE = .05$, $t(404) = 2.77$, $p = .006$, $\eta_p^2 = .019$; but there was no difference in the university context, $p = .863$. From a different perspective, low-performing middle/upper-class students decreased their independence in the home context compared to the university context, $B = 0.50$, $SE = .20$, $t(404) = 2.45$, $p = .015$, $\eta_p^2 = .015$; but no change was observed among high-performing working-class students, $p = .678$.

For interdependent self-construal, we obtained a main effect for students' social-class, $B = -0.35$, $SE = .13$, $t(397.80) = -2.60$, $p = .010$, $\eta_p^2 = .017$. Working-class students endorsed higher interdependent self-construal than middle/upper-class students. Furthermore, the two-way interaction between students' social-class and context significantly predicted students' interdependent self-construal, $B = 0.53$, $SE = .26$, $t(395.51) = 2.00$, $p = .046$, $\eta_p^2 = .010$. No other social-class related interaction effect for interdependent self-construal was significant, $p_s > .706$.

Follow-up analyses revealed that at home, working-class students endorsed more interdependence than middle/upper-class students, $B = -0.61$, $SE = .18$, $t(395.81) = -3.31$, $p = .001$, $\eta_p^2 = .027$, but not at the university, $p = .661$ (Figure S2 in SM). From a different perspective, working-class students did not endorse more interdependence in one context, $p = .527$, while middle/upper-class students decreased it from a university to a home context, $B = 0.41$, $SE = .21$, $t(393.15) = 2.01$, $p = .045$, $\eta_p^2 = .010$.

IOS. No social-class related main or interaction effect for IOS was significant, $p_s > .276$ (Table S6 in SM).

Results for *N_{Subjective social status}*

Self-construal. For independent self-construal, no social-class related main or interaction effect was significant, $p_s > .348$ (Table S6 in SM)

For interdependent self-construal, we obtained a main effect for students' SSS, $B = -0.10$, $SE = .04$, $t(455.22) = -2.46$, $p = .014$, $\eta_p^2 = .013$. Lower (vs. higher) SSS students endorsed more interdependent self-construal. Furthermore, the three-way interaction between students' SSS, GPA, and context significantly predicted students' interdependent self-construal, $B = 0.11$, $SE = .04$, $t(450.12) = 2.71$, $p = .007$, $\eta_p^2 = .016$. No other social-class related interaction effect for interdependent self-construal was significant, $p_s > .454$.

Follow-up analyses⁷ revealed that in the university context, high-performing (vs. low-performing) lower SSS students endorsed marginally less interdependent self-construal, $B = -0.10$, $SE = .06$, $t(458.09) = -1.82$, $p = .070$, 95% confidence interval (CI) [-0.22, 0.01] (Figure S3 in SM); but there was no difference in the home context, $p = .197$. From a different perspective, for high- and low-performing lower SSS students, no change in the endorsement of interdependence from one context to another was observed, $p_s > .104$.

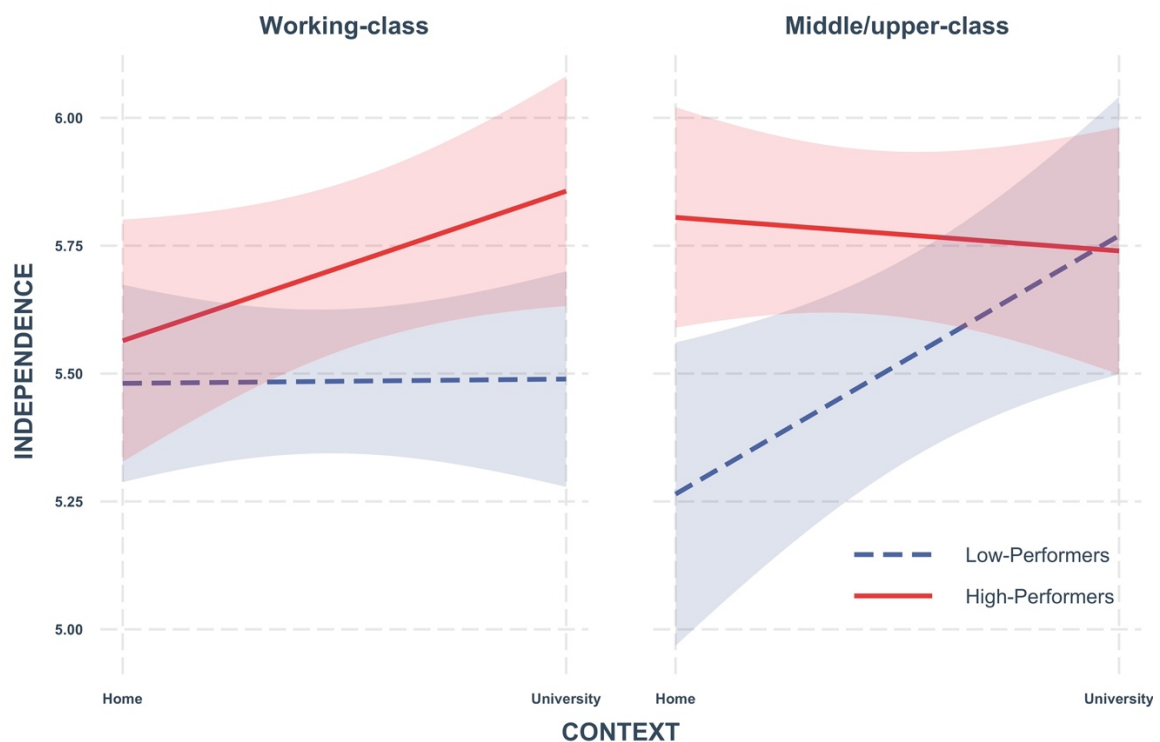
For higher SSS students, follow-up analysis revealed a reverse pattern: at home, there was no difference between high-performing (vs. low-performing) higher SSS students, $p = .132$; but at university high-performing (vs. low-performing) higher SSS students endorsed marginally more interdependence, $B = 0.10$, $SE = .05$, $t(453.60) = 1.79$, $p = .075$, 95% CI [-0.01, .21]. From a different perspective, high-performing higher SSS students endorsed more interdependence from home to university, $B = 0.52$, $SE = .21$, $t(456.03) = 2.52$, $p = .012$, 95% CI [.11, .92]. Their low-performing lower SSS peers, however, had no change in the endorsement of interdependence from one context to another, $p = .462$.

IOS. There was no social-class related main or interaction effect for IOS significant, $p_s > .084$ (Table S6 in SM).

⁷ Due to the rank-deficiency issues encountered during simple effect analyses of this contrast using the "lme4" package, we opted to use the "gamlj" package (v2.2.6; Gallucci, 2019) instead. However, the "gamlj" package does not support the calculation of η_p^2 for linear mixed-effects analyses. As a result, we provide the confidence intervals of the estimate in our report.

Figure 2

Three-way interaction of Experiment 2 between social-class, GPA, and context on independence



Note. Simple slopes with 95% confidence regions. Low-performers refers to 1 SD below the mean of the GPA, and high-performers to 1 SD above the mean of the GPA.

Discussion

The goal of Experiment 2 was to investigate whether high-performing working-class students flexibly adapt their self-construal to a specific environment, such as higher education institutions. Although there was no difference in students' independence overall, working-class students endorsed higher interdependent self-construal, which could potentially result in a cultural mismatch with the independent university settings (Hypothesis 1). The same was true for students with lower subjective social-class experiences. The results did not support Hypothesis 2, which predicted an interaction effect between social-class and GPA. However, the findings regarding independent self-construal did support the hypothesis of a three-way interaction between students' social-class, GPA, and context.

Transitioning from a home to a university context, high-performing working-class students were able to shift their self-construal towards greater independence. They exhibited a

significant difference from their low-performing counterparts in university but showed no differences with their low-performing peers when at home. Thus, they adapted their self-construal in line with the context. This finding was supported by the results of interdependent self-construal from students with lower subjective social-class experiences. Although high- and low-performing lower SSS students maintained their endorsement of interdependence across contexts, high-performing (vs. low-performing) lower SSS students expressed less interdependence at university, which could reduce a potential mismatch with the independent university setting.

Middle/upper-class students displayed a pattern opposite to that of working-class students. High-performing middle/upper-class students maintained their independence from a university to a home context, while low-performing middle/upper-class students decreased their independence at home, resulting in a mismatch with the more independent norms common among middle/upper-class individuals. Unable to meet the high standards of success typically expected in middle/upper-class families, low-performing middle/upper-class students may have contrasted their self-construal with the more independent home context, leading to a less independent self-construal. Another possible explanation is that, since having a more independent self at university did not lead to success for them, they compensated by being less independent and thus more interdependent at home with friends and family. The results of students with higher subjective social-class experiences support this idea. High-achieving higher SSS students decreased their interdependence from a university to a home context, while their low-performing peers maintained it. This suggests that low-performing low SSS students are more interdependent at home with friends and family.

Experiment 3

Materials and Procedure

Procedure

Experiment 3 employed a within-subject design. Participants completed the IOS and the same subscales of a self-construal questionnaire (Culture and Identity Research Network Self Construal Scale Version 3, CIRN-SCS-3; Vignoles et al., 2016) in both a home and a university context. In the home context, the items of each scale targeted relationships with family members, while in the university context, they targeted relationships with other students. Each subscale represented different dimensions of self-construal, specifically hard independence (students' self-reliance) and expressive independence (students' self-expression and self-interest). The scales were presented in randomized order within each context, and the order of the contexts was counterbalanced across participants. Subsequently, independent of the context, participants completed a CIRN-SCS-3 self-construal subscale representing students' consistency in moving between contexts. Finally, they provided demographic information and were debriefed.

Manipulation check

A pilot study ($N = 69$) demonstrated that there were no order effects for the dependent variables (all $p_s > .107$). However, to exclude potential order effects, we incorporated a filler task between the different sets of scales in the various contexts. The filler task consisted of an anagram task with five anagrams. We did not include further manipulation checks, as they may result in weaker hypothesis tests (Gruijters, 2022).

Measures

Self-construal. We assessed different dimensions of self-construal using the CIRN-SCS-3 self-construal scale (Vignoles et al., 2016), which has valid French translations. The items of each subscale were adjusted to either the university or home context. Items within each subscale were intermixed, and participants responded using a scale ranging from 1 (doesn't describe me at all) to 7 (describes me exactly). Responses were averaged to create composite measures of each subdimension in the university or family context.

Self-reliance. We assessed students' self-reliance in both home and university contexts using the "Looking after oneself - self-reliance vs. dependence on others" subscale, $\alpha_{\text{Home}} = .84$, $\alpha_{\text{University}} = .84$. This subscale included three items measuring self-reliance on an independent pole (e.g., "You prefer to rely completely on yourself rather than depend on your family/other students") and three items measuring dependence on others on an interdependent pole (e.g., "In difficult situations, you tend to seek help from your family/other students rather than relying only on yourself").

Self-expression. The "Communicating with others – self-expression vs. harmony" subscale assessed students' self-expression in home and university contexts, $\alpha_{\text{Home}} = .86$, $\alpha_{\text{University}} = .85$. Three items measured self-expression on an independent pole (e.g., "You like to discuss your own ideas, even if it might sometimes upset your family/other students"), while three items measured harmony on an interdependent pole (e.g., "You try not to express disagreement with members of your family/other students").

Self-interest. Students' self-interest in home and university contexts was assessed using the "Dealing with conflicting interests – self-interest vs. commitment to others" subscale, $\alpha_{\text{Home}} = .84$, $\alpha_{\text{University}} = .81$. Three items measured self-interest on an independent pole (e.g., "You usually give priority to your personal goals, before thinking about the goals of your family/other students"), while three items measured commitment to others on an interdependent pole (e.g., "You usually give priority to your family/other students, before yourself").

Consistency. Independent of the contexts, students' consistency was assessed using the "Moving between contexts – Consistency vs. variability" subscale, $\alpha = .90$. Items were adjusted to both students' home and university contexts. Three items measured consistency on an independent pole (e.g., "You behave in a similar way with your family and with other students"), while three items measured variability on an interdependent pole (e.g., "You act very differently with your family compared to how you act with other students").

An EFA⁸ was conducted using the R software program (Version 4.0.3) with the package “psych” (v2.2.9; Revelle, 2022) implemented in the package “jmv” (v2.3.4; Selker et al., 2022). The EFA (maximum likelihood extraction method, oblimin rotation, number of components based on parallel analysis) of all 42 items revealed that the six self-reliance items in the home context loaded onto one factor (range [.44, .82], Eigenvalue = 2.37, 7.25% variance explained), the six self-reliance items in the university context loaded onto a second factor (range [.43, .83], Eigenvalue = 3.14, 7.26% variance explained), the six self-expressive items in the home context loaded onto a third factor (range [.56, .83], Eigenvalue = 4.13, 7.74% variance explained), the six self-expressive items in the university context loaded onto a fourth factor (range [.47, .79], Eigenvalue = 1.65, 7.10% variance explained), the six self-interest items in the home context loaded onto a fifth factor (range [.54, .78], Eigenvalue = 1.29, 6.82% variance explained), the six self-interest items in the university context loaded onto a sixth factor (range [.55, .78], Eigenvalue = 0.93, 6.47% variance explained), and the six consistency items loaded onto a seventh factor (range [.70, .81], Eigenvalue = 5.75, 8.93% variance explained). It also revealed that 2 self-expressive items in the university context and 1 self-interest items in the home context loaded onto an eighth factor (range [-.32, .42], Eigenvalue = 0.49, 3.47% variance explained). However, since the loadings on the theoretically assigned components were higher, the Eigenvalue below 1 and the explained variance substantially smaller, we decided for the first 7 other factors. No other items loaded highly onto the opposite factor (item loadings < .30; all other Eigenvalues < 1).

IOS. As in Experiments 1 and 2, the IOS scale was used to represent interpersonal interconnectedness, once with family members and once with other students.

Performance. As in Experiment 2, we used students’ self-reported GPA_{Year} , and replaced missing data ($N_{Missing} = 100$) with $GPA_{Semester}$ ($N_{Replaced} = 72$; $\rho_{GPA_{Year}/GPA_{Semester}} = .79$; GPA_{final} : range 6.00-18.00, $M = 13.12$, $SD = 2.00$). Students’ GPA_{final} was mean-centered.

⁸ Like in Experiment 1, as a first step, we conducted a confirmatory factor analysis using the package “lavaan” (v0.6.12; Rosseel, 2012). Due to the small sample size, the fit was not sufficient (RMSEA = 0.06, 90% CI [0.06, 0.06], CFI = 0.86, TLI = 0.85), thus we conducted an EFA.

Covariates. As in Experiments 1 and 2, we controlled for participants' gender identity and membership in other marginalized groups.

Results and Discussion

Analysis strategy

Table 2 displays the means of variables based on social-class (see Table S7 in SM for their correlations). We conducted linear mixed-effects analyses, as in Experiments 1 and 2. The dependent variables were students' self-construal (for Hypothesis 1 and 2: consistency, and means of university/home context for self-reliance, self-expression, and self-interest; for Hypothesis 3: difference scores of university - home context for self-reliance, self-expression, and self-interest) and interpersonal interconnectedness (for Hypothesis 1 and 2: means of university/home for IOS; for Hypothesis 3: difference score of university - home context for IOS). Fixed effects included students' social-class (-0.5 for working-class, 0.5 for middle/upper-class) and performance (mean-centered), along with their two-way interaction term. Random effects for the final model were chosen as in Experiments 1 and 2, with a random intercept-only by university. To isolate social-class effects, we controlled for students' gender (-0.5 for male, 0.5 for not male) and membership in other marginalized groups (-0.5 for membership, 0.5 for no membership). Covariates had significant effects, so we present models with covariates. Results remained consistent without gender and marginalized group membership as covariates. In a second step, we conducted the same analyses using the subjective proxy of social-class SSS (mean-centered) and present models with covariates.

Results for $N_{Education}$

Self-construal. Working-class students displayed more self-reliance than middle/upper-class students, $B = -0.36$, $SE = .09$, $t(461.91) = -3.85$, $p < .001$, $\eta_p^2 = .031$. No other social-class related main or interaction effect for self-reliance, self-expression, self-interest, or consistency was significant, $p_s > .146$ (Table S8 in SM).

IOS. No social-class related main or interaction effect for IOS was significant, $p_s > .185$.

Results for *N_{Subjective social status}*

Self-construal. Students with lower (vs. higher) SSS exhibited more self-reliance, $B = -0.14$, $SE = .03$, $t(488.87) = -4.73$, $p < .001$, $\eta_p^2 = .044$. No other social-class related main or interaction effect for self-reliance, self-expression, or self-interest was significant, $p_s > .072$ (Table S8 in SM).

The two-way interaction between students' SSS and GPA significantly predicted consistency, $B = -0.05$, $SE = .02$, $t(485.67) = -2.69$, $p = .007$, $\eta_p^2 = .015$. The main effect of social-class was not significant, $p = .405$.

Follow-up analyses revealed that high-performing (vs. low-performing) lower SSS students endorsed marginally more consistency, $B = 0.09$, $SE = .05$, $t(483.29) = 1.92$, $p = .056$, $\eta_p^2 = .007$. High-performing (vs. low-performing) higher SSS students endorsed marginally less consistency, $B = -0.07$, $SE = .04$, $t(447.17) = -1.68$, $p = .094$, $\eta_p^2 = .006$ (Figure S4 in SM).

IOS. Lower (vs. higher) SSS students expressed less IOS and thus less interpersonal interconnectedness with other students, $B = 0.13$, $SE = .03$, $t(481.60) = 4.17$, $p < .001$, $\eta_p^2 = .034$. No other social-class related interaction effect for IOS was significant, $p_s > .171$ (Table S8 in SM).

Discussion

The aim of Experiment 3 was to examine acculturation processes on different dimensions of self-construal, particularly focusing on differences in expressive (self-expression, self-interest) and hard (self-reliance) independence. The results did not support the Hypotheses 2 and 3 regarding specific acculturation processes on different dimensions of self-construal (which might be due to the manipulation setup; see limitations in the general discussion section). However, working-class students adhered to a different form of independence, namely self-reliance. This could indicate that they underutilize social support. This is supported by the results of students with lower subjective social-class experience, as they endorsed more self-reliance and, in addition, less interpersonal interconnectedness with other students.

Table 2
Variables for $N_{Education}$

Variables	<i>N</i> _{Education}						Cohen's <i>d</i> [95% CI]
	Working-class		Middle/upper-class		<i>t</i> (<i>df</i>)	<i>p</i>	
1. Experiment 1							
Independence	5.49	(1.01)	5.45	(0.86)	0.34 (285.84)	.734	.04 [-.18; .26]
Interdependence	4.75	(1.27)	4.50	(1.28)	1.73 (309.69)	.083 ^t	.19 [-.03; .42]
IOS	2.81	(1.39)	2.98	(1.48)	-1.05 (313.99)	.295	-.12 [-.34; .10]
GPA	12.10	(2.66)	12.71	(2.49)	-2.10 (300.50)	.037*	-.23 [-.46; -.02]
2. Experiment 2							
Independence	5.60	(0.82)	5.65	(0.93)	-0.60 (346.85)	.551	-.06 [-.26; .13]
Interdependence	4.53	(1.34)	4.20	(1.32)	2.54 (376.79)	.011*	.25 [.06; .45]
IOS	3.59	(1.61)	3.66	(1.50)	-0.42 (389.39)	.675	-.04 [-.24; .15]
GPA	12.61	(1.88)	13.25	(1.89)	-3.45 (373.54)	.001**	-.34 [-.54; -.15]
3. Experiment 3							
Self-reliance _{Home}	4.54	(1.35)	4.19	(1.25)	2.86 (473.83)	.004**	.26 [.08; .44]
Self-reliance _{University}	5.30	(1.20)	4.93	(1.33)	3.16 (447.64)	.002**	.29 [.11; .47]
Self-expression _{Home}	4.53	(1.34)	4.33	(1.42)	1.63 (455.49)	.103	.15 [-.03; .33]
Self-expression _{University}	4.04	(1.39)	3.98	(1.34)	0.50 (470.45)	.616	.05 [-.13; .23]
Self-interest _{Home}	3.95	(1.32)	3.87	(1.19)	0.70 (475.75)	.485	.06 [-.12; .24]
Self-interest _{University}	5.03	(1.14)	4.95	(1.18)	0.83 (460.30)	.404	.08 [-.10; .26]
IOS _{Home}	4.31	(1.70)	4.19	(1.57)	0.83 (474.28)	.407	.08 [-.10; .26]
IOS _{University}	2.59	(1.19)	2.77	(1.27)	-1.63 (455.20)	.103	-.15 [-.33; .03]
Consistency	3.05	(1.54)	2.93	(1.46)	0.94 (472.24)	.349	.09 [-.09; .27]
GPA	12.85	(2.05)	13.43	(1.90)	-3.19 (473.85)	.002**	-.29 [-.47; -.11]

Note. Means (Standard Deviations) for the three experiments ($N_{Experiment1} = 320$, $N_{Experiment2} = 418$, $N_{Experiment3} = 479$). Statistical differences (using Welch's t-test, Delacre et al., 2017) within variables are highlighted as follows: [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. CI = confidence interval.

General discussion

Against the odds, some working-class students perform as well as their middle/upper-class peers in university (Agasisti & Longobardi, 2014; OECD, 2011; O'Shea, 2020; Wong & Chiu, 2019). The goal of this study was to shed light on the specific acculturation process related to their self-construal, as it might partly explain their success. Our results showed that when primed with an independent self, high-performing (vs. low-performing) working-class students demonstrated more independence and used it to acculturate to specific contexts. From a home to a university context, they were able to shift their self-construal towards higher independence, while at home they showed no differences compared to their low-performing peers. Thus, high-performing working-class students acculturate in higher education institutions in a flexible way. This flexible manner of acculturating to higher education institutions allows them to reduce the mismatch with university culture and could explain why they perform well.

Furthermore, compared to their middle/upper-class peers, working-class students expressed higher self-reliance, as did students with a lower subjective social-class experience, who also expressed fewer close relationships with other students. As a result, working-class students adhere to a different form of independence, namely hard independence, which could indicate that they underutilize social support and partly explain the social-class achievement gap (Chang et al., 2020; Covarrubias et al., 2019; Stephens, Markus, et al., 2014).

With universities working-class students can experience upward social mobility. To achieve this, they need to develop an appropriate independent identity and integrate it into their selves (Haslam et al., 2021; Stephens, Markus, et al., 2014; Veldman et al., 2022). High-performing working-class students accomplish this by flexibly construing their self according to the immediate situation, which facilitates upward social mobility. Their acculturation strategy can be considered integrative, as they identify with both their current and past social-class. However, it is debatable whether they truly identify with the new social-class. We found this effect when operationalizing social-class with the objective measure of parents' level of education, but not with their subjective experience of social-class. This suggests that they lag behind in their subjective experience of class transitioning because they either slowly or even

fail to identify with the new context. This is in line with previous literature (Phillips, Martin, et al., 2020; Phillips, Stephens, et al., 2020).

Generalizability, Limitations, and Future Directions

Our studies demonstrated social-class differences at several universities across France, a context that shares similarities in education and culture with other countries in the Global North (Muthukrishna et al., 2020). This supports the generalizability of our findings to these countries. However, our sample primarily consisted of social science students (> 80 %), who may not represent the entire student population. Additionally, to isolate social-class effects, we controlled for students' gender and membership in other marginalized groups, but our samples were biased, with more than 70% of participants identifying as female. This may have influenced our results, as previous research has found gender variations in self-construal (Markus & Kitayama, 2010). We did not observe context-dependent differences in self-construal dimensions, which could be attributed to the manipulation setup. Since students were not required to explicitly think and write about different contexts, they might not have internalized them when responding to the questionnaires. Indeed, prior research has shown that writing about specific topics can enhance interventions (Walton & Cohen, 2007). Future studies should incorporate more diverse and gender-balanced student samples and explore different self-construal dimensions using manipulation setups that involve writing tasks.

Concerning the flexible acculturation process of high-performing working-class students, increased independence was observed in an independent prime/university context, as evidenced by the pattern of slopes with mixed significance levels across two experiments. Despite this inconsistency, the recurring effect suggests a potentially meaningful phenomenon. The sample size may have been underpowered for reliable simple slope analyses, impacting significance levels. Future studies with larger sample sizes could help confirm these results and highlight the practical implications of small effects (Götz et al., 2022).

Implications for Social Policy and Conclusion

Working-class students can adopt the necessary norms of universities within their self-construal and activate the relevant self in response to the immediate context. This allows them

to mitigate the negative consequences of a mismatch with university culture and, consequently, perform well. However, their subjective class experience may lag behind, potentially preventing them from fully benefiting from this process. Universities should endeavor to facilitate this acculturation process. One potential factor for successful acculturation is fostering students' sense of belonging to the university (Herrmann et al., 2021; Phillips, Martin, et al., 2020) through proven interventions. With such social support, working-class students can achieve integrative experiences of their identities (Destin & Debrosse, 2017; Herrmann & Varnum, 2018a, 2018b) and genuinely experience upward social mobility.

Disclosures

In this article we utilize the following open scientific practices: (a) provide open materials, and (b) provide open data. Materials, data, syntax for analyses, and supplemental material can be accessed on the Open Science Framework. Experiments 2 and 3 were preregistered before examining the data. Links to the preregistration of rationale, hypotheses, methodology, variables of interest, sample characteristics, and analysis strategy are available on OSF:

https://osf.io/pz2sg/?view_only=da87c9779739414f868a4902bf124d00

Experiments 2 and 3 were also conducted on separate German samples and preregistered. However, since we only reached approximately 50% of the French sample sizes, we considered these samples insufficiently powered. As a result, their findings were deemed unreliable and not included in the main paper. For completeness, these results are presented in the supplemental material.

Author Contributions

Fabian Müller: Conceptualization; methodology; data collection; formal analysis; writing – original draft; documentation for OSF; writing – review and editing.

Sébastien Goudeau: Conceptualization; methodology; writing – review and editing.

Cristina Aelenei: Methodology; formal analysis; writing – review and editing.

Rasyid Bo Sanitioso: Conceptualization; methodology; writing – review and editing.

CHAPTER 3

Cultural Mismatch, Distance Learning, and COVID-19

Based on:

Müller, F., Goudeau, S., Stephens, N. M., Aelenei, C., & Sanitioso, R. B. (in press). Social-class inequalities in distance learning during the COVID-19 pandemic: Digital divide, cultural mismatch, and psychological barriers. *International Review of Social Psychology*.

Shifting the focus from the acculturation process explored in Chapter 2, Chapter 3 of this thesis examines two previously documented barriers that contribute to social-class disparities in French universities during the COVID-19 pandemic. When the COVID-19 pandemic emerged in France, universities were forced to move their teaching online, raising concerns about the potential negative impact on underprivileged groups like working-class students. While online learning has advantages like greater accessibility for rural populations, it has also been associated with a widening social-class achievement gap (Betthäuser et al., 2023; Engzell et al., 2021; Goudeau et al., 2021).

Chapter 3 investigates the digital divide and the experience of cultural mismatch as barriers to social-class disparities in universities. Specifically, it explores their continued relevance in the French university context during closures due to the COVID-19 pandemic and the extent to which they relate to the psychological experiences of working-class students, such as their sense of belonging to the university.

These barriers may be associated with academic inequalities, posing challenges to the development of learning behaviors (e.g., asking questions, participating in group discussions) essential for academic success. The chapter provides pandemic-specific data that can serve as a comparison point for future research. Overall, it aims to answer the question of how the experience of the digital divide and cultural mismatch relate to the psychological experience of working-class students and their essential learning behaviors during online learning caused by the COVID-19 pandemic in French universities. The findings suggest that future policies should target structural psychological challenges experienced by working-class students, as identified in this study.

Social-Class Inequalities in Distance Learning During the COVID-19 Pandemic: Digital Divide, Cultural Mismatch, and Psychological Barriers

Fabian Müller¹, Sébastien Goudeau², Nicole M. Stephens³, Cristina Aelenei¹, Rasyid Bo Sanitioso¹

¹ Université Paris Cité, Laboratoire de Psychologie Sociale, Boulogne-Billancourt, France

² Centre de Recherches sur la Cognition et l'Apprentissage, CNRS, Université de Poitiers, Poitiers, France

³ Department of Management and Organizations, Kellogg School of Management, Northwestern University, Evanston, IL, USA

Author Note

Fabian Müller  <https://orcid.org/0000-0002-8363-9285>

Sébastien Goudeau  <https://orcid.org/0000-0001-7293-0977>

Nicole M. Stephens  <https://orcid.org/0000-0001-7035-3213>

Cristina Aelenei  <https://orcid.org/0000-0002-4232-6506>

Rasyid-Bo Sanitioso  <https://orcid.org/0000-0001-7949-408X>

Preregistration, data, analysis code, and additional online materials are openly available at the project's Open Science Framework page: https://osf.io/qvk4n/?view_only=a264bfc041ff4c889dfff8772b38630e.

Abstract

The COVID-19 pandemic forced universities to move towards distance learning, requiring increased use of digital tools and more independent learning from students. In this context, the present study examined two previously documented barriers that contribute to social-class disparities in universities: the digital divide and the experience of cultural mismatch. *Cultural mismatch* refers to the disconnect between the highly independent cultural norms of universities and the interdependent cultural norms common among working-class students. Our goals are to (1) replicate the findings related to these barriers in a European context (2) provide pandemic-specific data related to these barriers, and (3) examine how the digital divide and cultural mismatch relate to psychological factors and learning behaviors necessary for academic success. Two thousand two hundred and seventy-five students in France answered questions about their digital access/use, self-construal, psychological factors (i.e., sense of belonging, self-efficacy, intentions to drop-out from the university), and learning behaviors (e.g., attending class, asking questions). Results showed that working-class students have less digital access, and value interdependence more than their middle/upper-class peers, suggesting they are more likely to experience a cultural mismatch. Structural equation modeling revealed that both the digital divide and the experience of cultural mismatch undermines working-class students' psychological experience (e.g., belonging), which, in turn, hinders their learning behavior. The distance learning required by the pandemic led to increased needs for digital access and independence, and therefore more negatively affected working-class students, which could fuel and widen the social-class achievement gap.

Keywords: higher education, social-class, digital divide, cultural mismatch, COVID-19

A university student is attending an online class from home. They listen attentively and participate in the lecture by asking questions, and later, contribute to the discussion. There are no distractions around them. Simultaneously, a fellow classmate is logging in to the online class from a noisy apartment, with their siblings moving around the space. They must relocate to a quieter corner multiple times during the class and turn off their camera to avoid distracting the class. This student is unable to concentrate and to actively participate in class. They feel out of place, but don't want to stand out, and in turn, begin doubting their ability to succeed academically.

The above vignette illustrates two divergent distance learning experiences shaped by social-class. In the spring of 2020, the closure of schools and universities was detrimental for more than 1.3 billion learners (UNESCO, 2020). The crisis resulted in less on-campus teaching and more distance learning globally and contributed to the widening of the social-class achievement gap (Betthäuser et al., 2022; Engzell et al., 2021; Goudeau et al., 2021). To explain how university closures and the resulting distance learning could have amplified the social-class achievement gap, scholars have argued that working-class students are likely to experience two specific challenges compared to middle/upper-class students: less digital access (i.e., the digital divide) and lower levels of independence in the independent university setting (i.e., cultural mismatch; Goudeau et al., 2021). We use the term *working-class students* to refer to those whose parents don't have a three-year university degree, or their parents are employed as blue-collar workers. We use the term *middle/upper-class students* to refer to those who have at least one parent either with a three-year university degree, or a professional occupation (OECD, 2018).

The goal of this paper is threefold. First, we seek to identify whether these two previously documented barriers (i.e., the digital divide and the experience of cultural mismatch) also occur in a context different from the settings where previous cultural mismatch research has been conducted: the French university context. Second, we seek to provide pandemic-specific data related to these barriers that can be used as a comparison point in future research. Third, we seek to examine the extent to which the digital divide and the experience of cultural

mismatch predict the psychological barriers that underlie academic inequalities (i.e., differences in belonging, self-efficacy, and intention to drop-out) and learning behaviors (e.g., attending class, asking questions) necessary for academic success.

The Digital Divide and Cultural Mismatch

Digital divide

Research conducted before the COVID-19 pandemic showed a *digital divide*: working-class students have less access to digital/material equipment than do middle/upper-class students (Robinson et al., 2020). However, this issue may have become even more pronounced during the pandemic because participating in online classes requires that students have access to digital equipment (e.g., computer). Although overall digital access has increased over time (World Bank, 2019), digital disparities in access to equipment (e.g., quality of hardware, software, and internet access) persist (González-Betancor et al., 2021). Furthermore, social-class not only shapes access to digital tools, but also how they are used (Harris et al., 2017). Thus, compared to their middle/upper-class peers, working-class students tend to use digital tools for leisure activities than for educational purposes (Drabowicz, 2017). Finally, the digital divide may be exacerbated because working-class students are less likely to have a dedicated and quiet space (i.e., material equipment; APA Task Force on Socioeconomic Status, 2007), which is also likely to impair their participation during online classes. To mitigate digital divide in France during closure, universities provided portable computers and 4G cards to students (MESRI, 2021). However, universities did not provide a quiet or dedicated place of study to facilitate participation in online classes.

Cultural mismatch

Research conducted before the COVID-19 pandemic showed another key barrier that working-class students face: the *cultural mismatch* between the norms of independence that pervade higher education and the relatively interdependent norms more common among working-class students (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Markus, et al., 2014; Stephens, Townsend, et al., 2012). Indeed, middle/upper-class contexts

tend to promote cultural norms of independence, thus fostering an independent self-construal that affords an understanding of the self as separate from others and the social environment (Fryberg & Markus, 2007; Stephens, Fryberg, et al., 2012). In contrast, working-class contexts tend to foster a more interdependent self-construal that affords an understanding of the self as connected to others and part of a community (Stephens et al., 2007). The culture of independence in higher education is thus compatible with middle/upper-class students' family socialization, but presents a mismatch with the interdependent norms more common in working-class contexts. This cultural mismatch has been shown to have negative consequences on working-class students' subjective experience and performance: it triggers stress, negative emotions, lowered sense of belonging, and decreases academic achievement (Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012; Stephens, Townsend, et al., 2012).

We suggest that the transition to online classes during the pandemic exacerbates cultural mismatch by both (1) requiring more independent behavior of students and (2) emphasizing students' interdependence while they are learning at home with their families. First, distance learning required even more independence than on-site classes. Social interactions and group work with fellow students and teachers normally facilitated in on-campus settings are less likely. Thus, students need to work individually more often, exert high self-regulation skills (e.g., setting individual goals), and participate more in online vs. in-person settings (e.g., asking questions, voicing their opinions, answering teacher's questions; Goudeau et al., 2021). That means to benefit from online classes, students must demonstrate behaviors that reflect independent cultural norms (Miller & Sperry, 2012; Stephens, Markus, et al., 2014). The requirement that students use digital devices (e.g., cameras or microphones) in online learning could also amplify cultural mismatch by emphasizing independence, as being featured on the camera would require that students stand out from the group and be the focus of attention.

Second, the pandemic may also exacerbate cultural mismatch because these independent behaviors required by online learning occur in students' relatively interdependent home/family context. This context likely makes salient and reinforces working-class students' interdependent self-construal, which in turn increases their experience of mismatch.

Supporting this suggestion, empirical findings showed that the immediate situation (e.g., being at home) shapes the values students endorse (Aelenei et al., 2017).

Cultural mismatch and digital divide predict psychological factors and learning behaviors

During ordinary times, social-class predicts the psychological factors sense of belonging, self-efficacy, and intention to drop-out. These factors, in turn, predict academic success and drop-out rates (Bandura et al., 1996; Jury et al., 2017; Phillips, Stephens, et al., 2020; Wiederkehr et al., 2015). For example, when students experience a cultural mismatch or lack the digital resources necessary for online learning, these experiences should predict psychological factors. That is, students may doubt their sense of belonging to university, feel less self-efficacy, and question whether they have what it takes to succeed in the university (Goudeau et al., 2021; Phillips, Stephens, et al., 2020). These psychological experiences, in turn, should lead students to demonstrate fewer learning behaviors (e.g., attending class, asking questions).

Overview and Hypotheses

The current research has three key goals. First, we examine the relevance of the digital divide and cultural mismatch and replicate previous research in a European context. Indeed, until now cultural mismatch has only been studied in elite universities in the U.S. (e.g., Phillips, Stephens, et al., 2020; Stephens, Fryberg, et al., 2012). Second, prior to the pandemic, both digital divide and cultural mismatch have been documented as barriers for working-class students. Although these factors are likely to become even more important during the pandemic, they have not yet been examined in this context. To fill this gap, we document the digital divide and cultural mismatch during the pandemic. In doing so, we provide data that can be used in future post-pandemic comparisons. Third, we examine how the digital divide and cultural mismatch relate to psychological factors, and to learning behaviors necessary for academic success.

We seek to accomplish these goals by examining social-class differences in digital divide, and in self-construal. We then test how social-class predicts the psychological factors sense of belonging to university, self-efficacy, and intention to drop-out. Third, as distance learning requires more independent behaviors essential for online learning (e.g., asking questions, working alone) and other facilitative learning behaviors (e.g., attending class, listening/reading carefully, i.e., learning behaviors not necessarily related to independence/interdependence), we examine how social-class predicts these behaviors.

Hypothesis 1: Compared to middle/upper-class students, we predict that working-class students will:

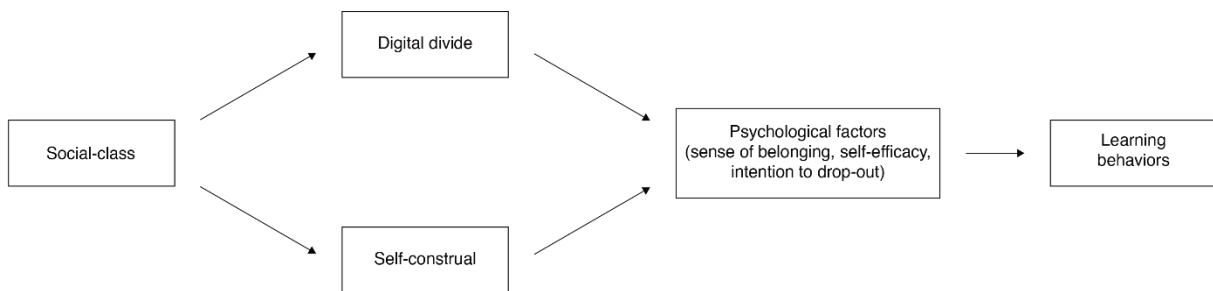
- a. Have less digital/material equipment and use this equipment less frequently for educational purposes (digital divide).
- b. Have higher interdependent and lower independent self-construals (cultural mismatch).
- c. Experience lower sense of belonging to the university, lower self-efficacy, and higher intentions to drop-out (psychological factors).
- d. Exhibit fewer learning behaviors essential for online learning (e.g., attending class, asking questions).

We use structural equation modeling to explore if the digital divide and the experience of cultural mismatch (as measured by self-construal) impact psychological factors (e.g., belonging) that can undermine students' learning behaviors (e.g., attending class, asking questions).

Hypothesis 2: The relationship between social-class and students' learning behaviors can be explained, in part, by differences in digital divide, self-construal, and psychological factors (Figure 1). We predict that:

- a. Less digital access and more interdependent and less independent self-construal will predict psychological factors (i.e., lower sense of belonging, lower self-efficacy, and higher intentions to drop-out among working-class students).
- b. These psychological factors will predict less successful learning behaviors (i.e., attending fewer classes, asking fewer questions).

Figure 1
Conceptual model of Hypothesis 2



Method

This study was preregistered. Study hypotheses, rationale, protocol, variables of interest, sample characteristics, exclusion criteria, analysis strategy (completed on March 29, 2021), data, analysis code, and supplementary materials are openly available at the project's Open Science Framework page (https://osf.io/qvk4n/?view_only=a264bfc041ff4c889dfff8772b38630e). Data inspection began at the end of data collection. We report all measures, exclusions, and all pre-registered analyses in this study. This study was conducted according to the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association (2017) as well as the code of conduct of the French Psychology Society (2012). As such the following ethical guidelines were applied: voluntary participation; anonymized data collection and informed consent, including the possibility of stopping participation at any time. There was no experimental manipulation nor deception and no personal sensitive data was collected, according to the EU's General Data Protection Regulation (e.g., data relating to religion, politics, health, etc.). Thus, an ethics approval was not required by institutional guidelines or national regulations.

Operationalizing Social-Class

Undergraduate students in the social sciences from several universities in France were invited to respond to an online questionnaire shared through professional and social networks during the period of one month (March/April 2021). Applying the exclusion criteria (uncompleted questionnaires = 621, postgraduate students = 19, failing attention checks¹ = 88) led to a final sample size of 2275.

Following recent recommendations (Rodríguez-Hernández et al., 2020), we categorized participants' social-class using two separate proxies: parents' level of education and parents' occupations. Details for the classification procedure can be found in the preregistration and in the codebook on the project's web page. We contrast-coded working-class with -1, and

¹ Participants had to complete two attentional control questions, asking them to rate their attentiveness to the survey and select a predetermined response from the response options. See codebook on the project's web page.

middle/upper-class with 1. Participants who could not be categorized as working-class or middle/upper-class were excluded from analyses,² leading to a final sample of $N_{Education} = 2170$ and of $N_{Occupation} = 1802$ (see Table 1 for participants' demographics). A sensitivity power analysis (using G*Power software version 3.1.9.4) with the power of 0.80 and $\alpha_{adjusted} = .01$ (see the Benjamini-Hochberg correction procedure described below) indicated that these two sample sizes allowed us to detect an effect of $f^2_{Education} = 0.005$ (\triangleq partial eta squared ($\eta_p^2, Education$) = 0.005; $f^2_{Occupation} = 0.006 \triangleq \eta_p^2, Occupation = 0.006$). Consistent with a conservative effect size (Richard et al., 2003), we considered the sample sizes as reasonable.

Table 1
Demographics

Variables	Social-class _{Education}		Social-class _{Occupation}	
	Working-class	Middle/upper-class	Working-class	Middle/upper-class
1. <i>N</i>	1247	923	952	850
2. Gender				
Female	86.69%	86.13%	86.24%	86.82%
Male	11.95%	11.38%	12.39%	11.18%
Not specified	0.48%	0.87%	0.53%	0.94%
Self-description	0.88%	1.62%	0.84%	1.06%
3. Year				
First	36.65%	40.30%	37.39%	38.82%
Second	37.77%	34.24%	36.35%	35.53%
Third	25.58%	25.46%	26.26%	25.65%

Note. In social-class_{Education} participants were on average 20.37 years old ($SD = 3.41$, $min = 17$, $max = 56$) and social-class_{Occupation} 20.42 years old ($SD = 3.55$, $min = 17$, $max = 56$).

² In social-class_{Education} participants were considered as working-class if neither parent has a three-year university degree, and as middle/upper-class if at least one parent has a three-year degree. 105 participants did not indicate parents' level of education. Social-class_{Occupation} was measured by the International Standard Classification of Occupations (ISCO-08; International Labour Organization, 2012). The first two categories were assigned to middle/upper-class (managers/professionals), and the other categories were assigned to working-class (e.g., blue-collar workers, unemployed persons). The third category "Technicians and Associate Professionals" (386 participants) was excluded as middle-class, and the tenth category "Armed Forces Occupations" (41 participants) could not be categorized. 64 participants did not indicate parents' occupations.

Measures

Digital divide

Digital equipment. Participants were asked to report whether or not, at their home, they had access to (1) a desktop computer, (2) a portable computer/laptop/notebook, (3) a tablet, (4) a mobile phone with internet access, (5) internet connection, and (6) high-speed internet. Responses for access to each digital equipment were summed. Participants were also asked to indicate how many of each digital devices they owned (desktop computer, portable computer/laptop/notebook, tablet, and mobile phone) as well as the number of users for each (both from 1 = none to 5 = four or more). Responses were averaged to create composite measures of the number of each digital device and its users.

Material equipment. Two items measured the availability of (1) a desk, and (2) a quiet place to study at home. Both scales were binary coded (0 = No, 1 = Yes). Responses for each availability were summed.

Digital use. Participants were asked how frequently they used the devices (from 1 = almost never to 7 = almost always) for (1) leisure activities, (2) university work, (3) information search related to their studies on social media platforms, and (4) staying in contact with others on social media platforms. Responses were averaged to create composite measures of the frequency of each digital use.

Cultural mismatch (measured by self-construal)

We assessed independent and interdependent self-construal with the Motives for Attending College scale (Stephens, Fryberg, et al., 2012). Previous research has shown that independent versus interdependent motives for completing university reflect culture-specific assumptions concerning university education and can be used as an indicator of self-construal. Assuming that university culture in France is seen as independent (Sommet et al., 2015), the endorsement of interdependence indicates cultural mismatch (Phillips, Stephens, et al., 2020). Six items, reflecting interdependent motives for attending college as indicators of interdependent self-construal, represented relationship-oriented reasons (e.g., “I want to bring honor to my

family”, $\alpha_{\text{Education}}$ and $\alpha_{\text{Occupation}} = .83$). Seven items³ reflecting independent motives for attending college as indicators of independent self-construal, represented individual-focused reasons (e.g., “I want to explore new interests.”, $\alpha_{\text{Education}}$ and $\alpha_{\text{Occupation}} = .80$) for completing university. Items were intermixed. Participants responded using a scale, 1 (not at all important) to 7 (extremely important). Responses were averaged to create composite measures of interdependence and independence.

Psychological factors: sense of belonging, self-efficacy, intention to drop-out

Sense of belonging to university was measured with three items ($\alpha_{\text{Education}} = .74$; $\alpha_{\text{Occupation}} = .73$), adapted from two different scales. Two items were taken from Tibbetts et al. (2018; “I belong in [university]” and “I feel like [university] is a good fit for me”) and one item from Trawalter et al. (2020; “I feel ‘out of place’ at [the university]” – reverse coded). Student’s perceived self-efficacy in online classes was measured using five modified items from Midgley et al. (2013) and Stephens, Hamedani, et al. (2014; e.g., “I’m certain I can master the skills taught in online classes this year”; $\alpha_{\text{Education}}$ and $\alpha_{\text{Occupation}} = .90$). Students’ intention to drop-out of university was measured using four items from Rump et al. (2017; (1) “I sometimes think about dropping out of university”, (2) “Sometimes I feel unsure if I want to continue my studies”, (3) “It is very unlikely that I will drop out of university” – reverse coded, and (4) “If I had a good alternative, I would drop out of university”; $\alpha_{\text{Education}}$ and $\alpha_{\text{Occupation}} = .76$; $\alpha_{\text{Education}}$ and $\alpha_{\text{Occupation}}$ after dropping item (3) = .84). Items on each scale were intermixed. Participants indicated agreement from 1 (strongly disagree) to 7 (strongly agree).

Multi-group confirmatory factor analyses

As we further compared two different student populations (working-class and middle/upper-class), it was necessary to demonstrate that they construed the psychological concepts in the same way. Therefore, we tested different levels of measurement invariance by running a multi-group confirmatory factor analysis (MG-CFA) on the self-construal and psychological variables. Following the guidelines outlined in Gana and Broc (2019), in stage one we conducted

³ One item has been added to the original scale (see Table S1 in SM for item statistics).

a confirmatory factor analysis (CFA) on the overall sample with the software program R (Version 4.0.3) using the package “lavaan” (v0.6-8; Rosseel, 2012). Three indices indicated that our model fit the data well: robust root mean square error of approximation (robust-RMSEA) = .05, 90% confidence interval (CI) [.05, .05]; robust comparative fit index (robust-CFI) = .94; robust Tucker-Lewis index (robust-TLI) = .93 (parameter estimates, Table S3 in Supplemental Material, SM).⁴ Thus, items do saturate on the factors independence, interdependence, sense of belonging, self-efficacy, and intention to drop-out⁵. In stage two, we tested the CFA model in each group separately. The CFA model’s plausibility for each group was confirmed: for the working-class group, robust-RMSEA = .05, 90% CI [.04, .05], robust-CFI = .95, robust-TLI = .94; for the middle/upper-class group, robust-RMSEA = .05, 90% CI [.05, .06], robust-CFI = .93, robust-TLI = .92. In the following steps, we assessed configural invariance (ensuring that the two groups share the same number of factors and the same factorial pattern), followed by the test of metric invariance (which assumes intergroup equality of factor loadings), and finally the assessment of scalar invariance (assuming intergroup equivalence for both factor loadings and items’ intercepts). Changes in CFI < .01 and in RMSEA < .01 were considered indicators of invariance (Rutkowski & Svetina, 2014). Satisfying these steps would allow us to conclude on a measurement invariance.

The configural invariance was tolerated by the data, robust-RMSEA = .049, 90% CI [.047, .052], robust-CFI = .939, robust-TLI = .930, so we proceeded with the test of metric invariance, robust-RMSEA = .049, 90% CI [.046, .051], robust-CFI = .938, robust-TLI = .932. Comparing these two models confirmed that metric invariance was achieved. Finally, we tested for scalar invariance, with constrained loadings and intercepts, robust-RMSEA = .049, 90% CI [.046, .052], robust-CFI = .935, robust-TLI = .931, and compared it with the metric model, thus confirming that we reached full scalar invariance. Reaching this stage of measurement invariance ensures that if we further document a difference between the two groups, it implies a real

⁴ We report indices for *N_{Education}*. Similar indices for *N_{Occupation}* can be found in Table S2 in SM.

⁵ Due to its low factor loading in the CFA ($\beta < 0.30$) and an increase in α in the reliability analysis without item (3) of the intention to drop-out scale, it was excluded from further analyses.

difference at the level of the constructs and not a difference that can be imputed to the way they are measured.

Learning behaviors

Participants answered questions on the following learning behaviors during a typical week of the pandemic-induced university closure.

Class attendance. Six items measured the frequency (1 = almost never to 7 = almost always) for (1) attending online classes, (2) being late for online classes, and (3) missing entire online, distanced classes, as well as (4) attending on-campus class, (5) being late for on-campus classes, and (6) missing entire on-campus classes, when they were offered. Responses were averaged to create composite measures of the frequency of attending, being late, or missing online or on-campus classes.

Out-of-class behaviors. Four items measured the frequency (1 = almost never to 7 = almost always) of (1) doing homework and other assignments alone, (2) doing homework and other assignments with fellow students online, (3) looking over class notes, and (4) keeping up with the readings, outside of online classes. Items were intermixed. Responses were averaged to create composite measures for each out-of-class behavior.

Independent and other in-class behaviors. Seven items assessed the frequency (1 = almost never to 7 = almost always) of (1) asking questions, (2) participating in discussions, (3) answering questions (4) switching on their camera, (5) activities non-related to online classes, (6) taking notes, and (7) listening/reading carefully, during online classes. The first four items could be categorized into independent behaviors that match university's expectations, whereas the last three items are essential for learning but not categorizable as independent or interdependent. Items were intermixed. Responses were averaged to create composite measures for each in-class behavior.

Demographics and general information

Year at university was self-reported (1 = first-year; 2 = second-year; 3 = third-year). As a categorical variable, it was coded into two dummy variables with first-year as the reference category. Participants indicated their gender identity as female, male, or they had the option

to self-describe. Associations between gender with academic performance and self-construal (Barone & Assirelli, 2020; Markus & Kitayama, 2010) can be seen as a result of access to power and resources (more prevalent among males) that directly affects students' lives. Thus, we contrast-coded males with further categories (i.e., female and other self-descriptions = -1, male = 1; for analyses we coded gender as numeric in 1 = other categories and 2 = male).

Precise information of all measures can be found in the codebook on the project's web page.

Results

Hypotheses 1: Replication of Previous Findings in a Pandemic-Specific Online Environment

Analysis strategy

Table 2 presents means of variables based on social-class, and Table 3 their correlations. Analyses were carried out using the software program R (Version 4.0.3). We present results of robust linear regressions (due to normality and heteroscedasticity issues) with heteroskedasticity-consistent standard error estimators HC4 using the package “sandwich” (v3.0-1; Zeileis, 2004; Zeileis et al., 2020). For categorical data we used binomial logistic models, using the package “robustbase” (v0.93-8; Maechler et al., 2021). We calculated three models, where each dependent variable was regressed on 1) social-class, year, and gender, and 2) on an interactive effect of social-class \times year, and social-class \times gender, and finally 3) on social-class. Research indicates associations between year and social-class (Phillips, Stephens, et al., 2020), as well as gender with academic performance and self-construal (Barone & Assirelli, 2020; Markus & Kitayama, 2010). To isolate the effects of social-class, we control for year and gender. Overall, the results persist without year and gender as covariates. To maximize power, we controlled the false discovery rate with the Benjamini-Hochberg (BH) procedure (Benjamini & Hochberg, 1995), as it is appropriate to identify effects in large sets (Cramer et al., 2016). First, we ordered the p -values resulting from our analyses in an ascending order. Then we computed an adjusted α -level: we multiplied .05 with the division of the rank number of the largest p -value divided by the number of analyses. Finally, we compared each p -value with the corresponding α_{adjusted} . Only those analyses for which the p -values fell below the BH threshold were considered to meet the significance criteria, i.e., $\alpha_{\text{adjusted}} = .01$ (see project’s web page). After applying this correction, no interactive effects were found, indicating constant effects of social-class across year and gender. Thus, we present results of the first model, robust to the BH correction. Results for $N_{\text{Education}}$ and $N_{\text{Occupation}}$ did not differ, indicating that both participants’ parents’ level of education and parental occupations are equally good proxies for social-class. For an overview of all results, and consistent with the literature on cultural mismatch that

typically focuses on first-generation students (Stephens, Fryberg, et al., 2012), we present results for $N_{Education}$. See Table S4 in the supplemental materials.

Digital divide

Digital equipment. We divided the number of owned digital devices by the number of its users to represent real digital access for the digital devices. Working-class students had fewer portable computers/laptops/notebooks than middle/upper-class students, $B = 0.10$, 95% CI [0.06; 0.15], $SE = 0.02$, $t(2165) = 4.28$, $p < .001$, $\eta_p^2 = 0.009$. There were no social-class differences for desktop or tablet computers and mobile phones, nor for internet or high-speed internet access (Table S4, SM).

Material equipment. Fewer working-class students had a quiet place to study in their home, log-odds = 0.16, 95% CI [0.05; 0.28], $SE = 0.06$, $z(2165) = 2.80$, $p = .005$, $OR = 1.18$, 95% CI [1.05; 1.32], in comparison to their middle/upper-class peers. However, there were no social-class differences for access to a desk at which to study, log-odds = 0.19, 95% CI [0.01; 0.38], $SE = 0.09$, $z(2165) = 2.06$, $p = .039$, $OR = 1.21$, 95% CI [1.01; 1.46].

Digital use. There were no social-class differences in digital use for leisure activities, university work, information search, or staying in contact with others (Table S4, SM).

Cultural mismatch (measured by self-construal)

Middle/upper-class students had more independent self-construal compared to working-class students, $B = 0.06$, 95% CI [0.02; 0.09], $SE = 0.02$, $t(2165) = 3.17$, $p = .002$, $\eta_p^2 = 0.005$. In contrast, working-class students endorsed higher interdependent self-construal than middle/upper-class students, $B = -0.23$, 95% CI [-0.29; -0.18], $SE = 0.03$, $t(2165) = -7.94$, $p < .001$, $\eta_p^2 = 0.029$.

Psychological factors: sense of belonging, self-efficacy, intention to drop-out

Working-class students expressed more intentions to drop-out than did middle/upper-class students, $B = -0.16$, 95% CI [-0.24; -0.09], $SE = 0.04$, $t(2165) = -4.23$, $p < .001$, $\eta_p^2 = 0.008$. However, there were no social-class differences for sense of belonging, $B = 0.03$, 95% CI [-0.02; 0.09], $SE = 0.03$, $t(2165) = 1.22$, $p = .222$, $\eta_p^2 = 0.001$, or for perceived self-efficacy, $B = 0.02$, 95% CI [-0.04; 0.07], $SE = 0.03$, $t(2165) = 0.59$, $p = .554$, $\eta_p^2 = 0.000$.

Learning behaviors

Class attendance. There were no social-class differences in the frequency of attending, being late, or missing online or on-campus classes (Table S4, SM).

Out-of-class behaviors. There were no social-class differences in the frequency of doing homework alone, with fellow students, looking over class notes, or keeping up with the readings when not attending online classes (Table S4, SM).

Independent and other in-class behaviors. Working-class students asked fewer questions, $B = 0.10$, 95% CI [0.03; 0.17], $SE = 0.04$, $t(2165) = 2.68$, $p = .007$, $\eta_p^2 = 0.003$, and answered questions less frequently, $B = 0.10$, 95% CI [0.02; 0.17], $SE = 0.04$, $t(2165) = 2.60$, $p = .009$, $\eta_p^2 = 0.003$, than did middle/upper-class students. Further, middle/upper-class students switched their camera on more often than working-class students, $B = 0.13$, 95% CI [0.07; 0.20], $SE = 0.03$, $t(2165) = 4.03$, $p < .001$, $\eta_p^2 = 0.008$. No social-class differences were found for participating in discussions, taking notes, listening/reading carefully, or non-related activities to online classes (Table S4, SM).

Table 2
Variables depending on social-class^{Education} (*N* = 2170), social-class^{Occupation} (*N* = 1802)

Variables	Social-class:Education				Social-class:Occupation					
	Working-class	Middle/upper-class	t(df)	p	Cohen's d [95% CI]	Working-class	Middle/upper-class	t(df)	p	Cohen's d [95% CI]
1. Digital Equipment										
Desktop computer										
- Access	405 (32.5%)	308 (33.4%)	-0.44 (1978.93)	.663	-0.02 [-0.10; 0.07]	305 (32.0%)	291 (34.2%)	-0.99 (1769.99)	.323	-0.05 [-0.14; 0.05]
- Number	1.53 (0.83)	1.57 (0.91)	-0.94 (1886.51)	.347	-0.04 [-0.13; 0.04]	1.53 (0.83)	1.59 (0.90)	-1.53 (1731.33)	.126	-0.07 [-0.17; 0.02]
- Users	1.66 (1.12)	1.69 (1.17)	-0.56 (1933.98)	.579	-0.02 [-0.11; 0.06]	1.68 (1.14)	1.72 (1.20)	-0.72 (1752.73)	.470	-0.03 [-0.13; 0.06]
- Number/Users	1.06 (0.55)	1.08 (0.61)	-0.78 (1866.31)	.433	-0.03 [-0.11; 0.05]	1.06 (0.55)	1.08 (0.62)	-0.77 (1499.10)	.444	-0.04 [-0.13; 0.06]
Portable computer										
- Access	1221 (97.9%)	910 (98.6%)	-1.21 (2142.74)	.228	-0.02 [-0.10; 0.07]	932 (97.9%)	838 (98.6%)	-1.12 (1788.24)	.264	-0.05 [-0.14; 0.04]
- Number	2.69 (1.00)	2.90 (1.11)	-4.58 (1871.43)	<.001***	-0.20 [-0.28; 0.12]	2.67 (0.99)	2.88 (1.11)	-4.31 (1711.12)	<.001***	-0.20 [-0.30; -0.11]
- Users	2.12 (0.98)	2.06 (0.95)	1.60 (2021.95)	.109	0.07 [-0.02; 0.15]	2.14 (0.97)	2.05 (0.97)	1.80 (1774.95)	.072 ^t	0.09 [-0.01; 0.18]
- Number/Users	1.53 (1.00)	1.75 (1.21)	-4.39 (1763.68)	<.001***	-0.20 [-0.28; 0.11]	1.50 (0.98)	1.75 (1.21)	-4.62 (1413.13)	<.001***	-0.23 [-0.33; -0.14]
Tablet computer										
- Access	423 (33.9%)	340 (36.8%)	-1.40 (1965.83)	.161	-0.06 [-0.15; 0.02]	315 (33.1%)	318 (37.4%)	-1.92 (1764.71)	.055 ^t	-0.09 [-0.18; 0.00]
- Number	1.54 (0.81)	1.56 (0.83)	-0.67 (1973.59)	.505	-0.03 [-0.11; 0.06]	1.50 (0.78)	1.59 (0.85)	-2.30 (1731.29)	.021*	-0.11 [-0.20; -0.02]
- Users	1.46 (0.86)	1.55 (0.98)	-2.28 (1832.25)	.023*	-0.10 [-0.19; -0.02]	1.47 (0.87)	1.55 (0.97)	-1.83 (1717.64)	.068 ^t	-0.09 [-0.18; 0.01]
- Number/Users	1.14 (0.58)	1.11 (0.55)	1.21 (2041.07)	0.226	0.05 [-0.03; 0.14]	1.14 (0.58)	1.11 (0.54)	0.90 (1654.25)	.044	0.04 [-0.05; 0.14]
Mobile phone										
- Access	1237 (99.2%)	913 (98.9%)	0.66 (1809.13)	.507	0.03 [-0.06; 0.11]	944 (99.2%)	841 (98.9%)	0.48 (1712.12)	.634	0.02 [-0.07; 0.12]
- Number	3.24 (1.29)	3.25 (1.32)	-0.16 (1960.02)	.876	-0.01 [-0.09; 0.08]	3.24 (1.29)	3.28 (1.33)	-0.62 (1762.89)	.537	-0.03 [-0.12; 0.06]
- Users	2.05 (1.13)	1.97 (1.09)	1.63 (2030.58)	.104	0.07 [-0.02; 0.16]	2.03 (1.13)	2.01 (1.13)	0.39 (1775.79)	.698	0.02 [-0.07; 0.11]
- Number/Users	2.04 (1.42)	2.11 (1.47)	-1.21 (1950.68)	.225	-0.05 [-0.14; 0.03]	2.05 (1.43)	2.12 (1.48)	-1.06 (1580.97)	.288	-0.05 [-0.15; 0.04]
Access to IC	1225 (98.2%)	907 (98.3%)	-0.05 (1995.80)	.957	-0.00 [-0.09; 0.08]	938 (98.5%)	831 (97.8%)	1.19 (1638.91)	.232	0.06 [-0.04; 0.15]
Access to HSI	690 (55.3%)	529 (57.3%)	-0.92 (1991.99)	.358	-0.04 [-0.13; 0.05]	543 (57.0%)	486 (57.2%)	-0.06 (1777.26)	.953	-0.00 [-0.10; 0.09]

Social-class:Education										Social-class:Occupation			
Variables	Working-class	Middle/upper-class	<i>t(df)</i>	<i>p</i>	Cohen's <i>d</i> [95% CI]	Working-class	Middle/upper-class	<i>t(df)</i>	<i>p</i>	Cohen's <i>d</i> [95% CI]			
2. Material equipment													
Desk to study	1157 (92.8%)	877 (95.0%)	-2.18 (2132.94)	.029*	-0.09 [-0.18; -0.01]	882 (92.6%)	810 (95.3%)	-2.37 (1784.02)	.018*	-0.11 [-0.20; -0.02]			
Quiet place to study	998 (80.0%)	783 (84.8%)	-2.93 (2089.50)	.003**	-0.13 [-0.21; -0.04]	744 (78.2%)	736 (86.6%)	-4.74 (1788.94)	<.001***	-0.22 [-0.31; -0.13]			
3. Digital use													
<i>f</i> leisure activities	5.21 (1.58)	5.30 (1.55)	-1.31 (2011.21)	.190	-0.06 [-0.14; 0.03]	5.25 (1.58)	5.28 (1.56)	-0.37 (1781.47)	.711	-0.02 [-0.11; 0.08]			
<i>f</i> university work	6.32 (1.04)	6.40 (0.99)	-1.93 (2038.48)	.054 †	-0.08 [-0.17; 0.00]	6.30 (1.09)	6.38 (1.03)	-1.71 (1794.65)	.088 †	-0.08 [-0.17; 0.01]			
<i>f</i> information search	4.91 (1.78)	4.93 (1.81)	-0.23 (1966.74)	.815	-0.01 [-0.10; 0.07]	4.94 (1.77)	4.96 (1.81)	-0.21 (1766.88)	.836	-0.01 [-0.10; 0.08]			
<i>f</i> staying in contact	5.41 (1.63)	5.50 (1.57)	-1.31 (2027.76)	.190	-0.01 [-0.10; 0.07]	5.40 (1.61)	5.56 (1.50)	-2.09 (1797.11)	.037*	-0.10 [-0.19; -0.01]			
4. Self-construal													
Independence	5.61 (0.85)	5.73 (0.78)	-3.23 (2067.19)	.001**	-0.14 [-0.22; -0.05]	5.62 (0.83)	5.75 (0.77)	-3.13 (1799.94)	.002**	-0.15 [-0.24; -0.05]			
Interdependence	4.60 (1.35)	4.14 (1.36)	7.90 (1976.60)	<.001***	0.34 [0.26; 0.43]	4.67 (1.32)	4.19 (1.35)	7.60 (1762.85)	<.001***	0.36 [0.27; 0.45]			
5. Psychological factors													
Sense of belonging	4.56 (1.33)	4.63 (1.22)	-1.31 (2069.31)	.191	-0.06 [-0.14; 0.03]	4.57 (1.30)	4.66 (1.21)	-1.23 (1780.75)	.221	-0.06 [-0.15; 0.03]			
Self-efficacy	4.56 (1.34)	4.61 (1.36)	-0.76 (1972.52)	.448	-0.03 [-0.12; 0.05]	4.55 (1.35)	4.64 (1.38)	-1.59 (1758.40)	.113	-0.08 [-0.17; 0.02]			
Intention to drop-out	3.83 (1.83)	3.50 (1.71)	4.31 (2056.43)	<.001***	0.19 [0.10; 0.27]	3.86 (1.83)	3.43 (1.72)	6.08 (1792.80)	<.001***	0.29 [0.19; 0.38]			
6. Class attendance													
Attending online class	5.89 (1.68)	5.92 (1.64)	-0.43 (2007.05)	.669	-0.02 [-0.10; 0.07]	5.82 (1.74)	5.91 (1.71)	-1.16 (1783.31)	.246	-0.05 [-0.15; 0.04]			
Being late for online class	2.37 (1.67)	2.41 (1.68)	-0.57 (1977.11)	.572	-0.02 [-0.11; 0.06]	2.41 (1.69)	2.36 (1.65)	0.61 (1786.87)	.541	0.03 [-0.06; 0.12]			
Missing online class	2.68 (1.77)	2.67 (1.70)	0.05 (2030.15)	.960	0.00 [-0.08; 0.09]	2.69 (1.77)	2.64 (1.70)	0.64 (1790.24)	.525	0.03 [-0.06; 0.12]			
Attending on-campus class	2.44 (1.93)	2.54 (1.98)	-1.15 (1957.70)	.249	-0.05 [-0.14; 0.03]	2.45 (1.97)	2.49 (1.96)	-0.46 (1779.36)	.643	-0.02 [-0.11; 0.07]			

Variables	Social-class:Education				Social-class:Occupation					
	Working-class	Middle/upper-class	<i>t(df)</i>	<i>p</i>	Cohen's <i>d</i> [95% CI]	Working-class	Middle/upper-class	<i>t(df)</i>	<i>p</i>	Cohen's <i>d</i> [95% CI]
Being late for on-campus class	1.62 (1.31)	1.74 (1.41)	-2.00 (1900.97)	.045*	-0.09 [-0.17; -0.00]	1.65 (1.36)	1.76 (1.43)	-1.62 (1753.68)	.105	-0.08 [-0.17; 0.02]
Missing on-campus class	2.21 (1.98)	2.11 (1.95)	1.12 (2004.30)	.261	0.05 [-0.04; 0.13]	2.27 (2.07)	2.10 (1.91)	1.75 (1798.30)	.080 †	0.08 [-0.01; 0.17]
Out-of-class behaviors										
Individual homework	4.76 (1.79)	4.87 (1.87)	-1.29 (1938.48)	.197	-0.06 [-0.14; 0.03]	4.78 (1.83)	4.88 (1.84)	-1.14 (1776.81)	.256	-0.05 [-0.15; 0.04]
Group homework	3.00 (1.89)	2.92 (1.91)	0.99 (1974.71)	.323	0.04 [-0.04; 0.13]	2.96 (1.89)	2.98 (1.92)	-0.30 (1769.96)	.767	-0.01 [-0.11; 0.08]
Looking over class notes	3.39 (1.73)	3.30 (1.76)	1.20 (1967.91)	.231	0.05 [-0.03; 0.14]	3.38 (1.74)	3.35 (1.74)	0.43 (1776.88)	.668	0.02 [-0.07; 0.11]
Keeping up on readings	3.15 (1.75)	3.17 (1.76)	-0.24 (1978.61)	.808	-0.01 [-0.10; 0.07]	3.18 (1.75)	3.19 (1.78)	-0.17 (1769.34)	.864	-0.01 [-0.10; 0.08]
Independent and other in-class behaviors										
Asking questions	2.70 (1.69)	2.90 (1.70)	-2.70 (1980.12)	.007**	-0.12 [-0.20; -0.03]	2.71 (1.67)	2.93 (1.75)	-2.66 (1757.22)	.007**	-0.13 [-0.22; -0.03]
Participating in discussions	2.99 (1.78)	3.08 (1.78)	-1.23 (1982.74)	.220	-0.05 [-0.14; 0.03]	2.93 (1.75)	3.14 (1.81)	-2.45 (1763.16)	.015*	-0.12 [-0.21; -0.02]
Answering questions	3.28 (1.78)	3.48 (1.75)	-2.66 (2002.40)	.008**	-0.12 [-0.20; -0.03]	3.25 (1.76)	3.51 (1.78)	-3.15 (1772.08)	.002**	-0.15 [-0.24; -0.06]
Switching camera on	1.94 (1.46)	2.21 (1.58)	-4.11 (1897.94)	<.001***	-0.18 [-0.27; -0.10]	1.91 (1.41)	2.30 (1.65)	-5.26 (1680.03)	<.001***	-0.25 [-0.34; -0.16]
Non-related activities	4.27 (1.67)	4.36 (1.63)	-1.23 (2010.86)	.219	-0.05 [-0.14; 0.03]	4.27 (1.66)	4.36 (1.62)	-1.18 (1786.41)	.240	-0.06 [-0.15; 0.04]
Taking notes	4.99 (1.41)	4.93 (1.41)	-0.31 (1996.25)	.757	-0.01 [-0.10; 0.07]	5.00 (1.44)	4.94 (1.43)	0.17 (1787.14)	.861	0.01 [-0.08; 0.10]
Listening/reading carefully	5.73 (1.70)	5.76 (1.68)	1.03 (1989.26)	.302	0.04 [-0.04; 0.13]	5.76 (1.73)	5.74 (1.69)	0.97 (1778.65)	.334	0.05 [-0.05; 0.14]

Note. N_{res} (Percentages) for categorical variables, Means (Standard Deviations) for continuous variables. Statistical differences (using Welch's t-test, Delacre et al., 2017) within variables are highlighted as follows: [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. CI = confidence interval, IC = internet connection, HSI = high-speed internet, f = frequency.

Table 3
Correlations with confidence intervals for social-class^{Education} ($N = 2170$) and social-class^{Occupation} ($N = 1802$)

Variable	1	2	3	4	5	6	7
1. Social-class							
2. Independence	EDU	.07** [.03, .11]					
	OCC	.07** [.03, .12]					
3. Interdependence	EDU	-.17** [-.21, -.13]	.21** [.17, .25]				
	OCC	-.18** [-.22, -.13]	.21** [.17, .26]				
4. Sense of belonging	EDU	.03 [-.01, .07]	.17** [.12, .21]	.05* [.01, .09]			
	OCC	.03 [-.02, .07]	.16** [.11, .20]	.03 [-.01, .08]			
5. Self-efficacy	EDU	.02 [-.03, .06]	.12** [.08, .16]	.00 [-.04, .04]	.29** [.25, .33]		
	OCC	.04 [-.01, .08]	.10** [.05, .14]	.00 [-.04, .05]	.28** [.23, .32]		
6. Intention to drop-out	EDU	-.09** [-.13, -.05]	-.19** [-.23, -.15]	.01 [-.03, .05]	-.43** [-.47, -.40]	EDU [.25, .33]	
	OCC	-.14** [-.19, -.10]	-.17** [-.21, -.12]	.03 [-.02, .07]	-.43** [-.47, -.39]	OCC [.23, .32]	
7. Gender	EDU	-.01 [-.05, .03]	-.03 [-.07, .01]	-.03 [-.07, .02]	-.02 [-.06, .02]	EDU [.25, .33]	
	OCC	-.02 [-.06, .03]	-.04 [-.08, .01]	-.02 [-.07, .02]	-.02 [-.06, .03]	OCC [.23, .32]	
8. Year	EDU	-.02 [-.07, .02]	-.03 [-.07, .02]	-.03 [-.07, .01]	-.04 [-.08, .00]	EDU [.25, .33]	.01 [.03, .05]
	OCC	-.01 [-.06, .03]	-.01 [-.06, .03]	-.03 [-.07, .02]	-.05* [-.09, -.00]	OCC [.23, .32]	.00 [.03, .05]

Note. EDU and OCC are used to represent the samples for $N_{Education}$ and $N_{Occupation}$, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

Hypothesis 2: Structural Equation Model of Digital Divide, Cultural Mismatch, Psychological Factors and Learning Behaviors

Analysis strategy

The recommended minimum sample size for a minimum absolute anticipated effect size of 0.10, with power of 0.80, $\alpha = .05$, 12 latent variables and 43 observed variables, would be 2129 (Soper, 2021). Thus, the sample size for $N_{Education}$ is appropriate.

We fitted structural equation modelling with maximum likelihood estimation with robust (Huber-White) standard errors using the package “lavaan” (v0.6-8; Rosseel, 2012). No system missings occurred. Social-class as categorical variable was contrast-coded as described. First, we calculated a higher-order measurement model with digital divide as the higher-order factor composed of the following lower-order factors: internet access, digital access, material equipment (all three measured with categorical variables), and digital use. The inclusion of these categorical variables led to convergence problems; thus, we defined digital divide as real digital access, i.e., controlled by the number of its users. Accordingly, our final model consisted of lower-order measurement models with six latent factors: digital divide, independent and interdependent self-construal, sense of belonging, self-efficacy, and intention to drop-out, and one higher-order measurement model (i.e., learning behaviors) with five lower-order factors: class attendance online and on-campus, out-of-class behaviors, independent and other in-class behaviors. The following variables with small factor loadings ($<.40$) were excluded from the low factor models: desktop computers, homework with fellow students, class attendance for on-campus classes.

Structural equation model

We hypothesized that social-class differences in digital divide and cultural mismatch would predict differences in psychological factors (sense of belonging, self-efficacy, intentions to drop-out). In turn, these differences in students' psychological factors would predict differences in learning behaviors (e.g., attending class, asking questions). Three indices indicated that our model fit the data well: RMSEA = .04, 95% CI [.04, .04]; CFI = .90; TLI = .90.

Resulting path coefficients showed that social-class was positively associated with real digital access ($\beta = 0.07$, 95% CI = [0.02; 0.13], $SE = 0.03$, $p = .006$). Middle/upper-class students had more real digital access than working-class students. Considering our adjusted α -level of .01, having more real access was not associated with sense of belonging ($\beta = 0.06$, 95% CI = [-0.00; 0.11], $SE = 0.03$, $p = .063$), but positively associated with perceived self-efficacy ($\beta = 0.08$, 95% CI = [0.02; 0.14], $SE = 0.03$, $p = .007$), and negatively with the intentions to drop-out ($\beta = -0.08$, 95% CI = [-0.14; -0.02], $SE = 0.03$, $p = .006$).

Social-class was positively associated with independent self-construal ($\beta = 0.07$, 95% CI = [0.03; 0.12], $SE = 0.02$, $p = .001$). Middle/upper-class students endorsed more independent self-construal than did working-class students. The endorsement of independent self-construal was positively associated with sense of belonging ($\beta = 0.24$, 95% CI = [0.18; 0.30], $SE = 0.03$, $p < .001$), and with perceived self-efficacy ($\beta = 0.18$, 95% CI = [0.12; 0.23], $SE = 0.03$, $p < .001$), but negatively with the intentions to drop-out ($\beta = -0.25$, 95% CI = [-0.31; -0.20], $SE = 0.03$, $p < .001$). Those who endorsed independent self-construal more also reported higher sense of belonging and perceived self-efficacy, and less intentions to drop-out.

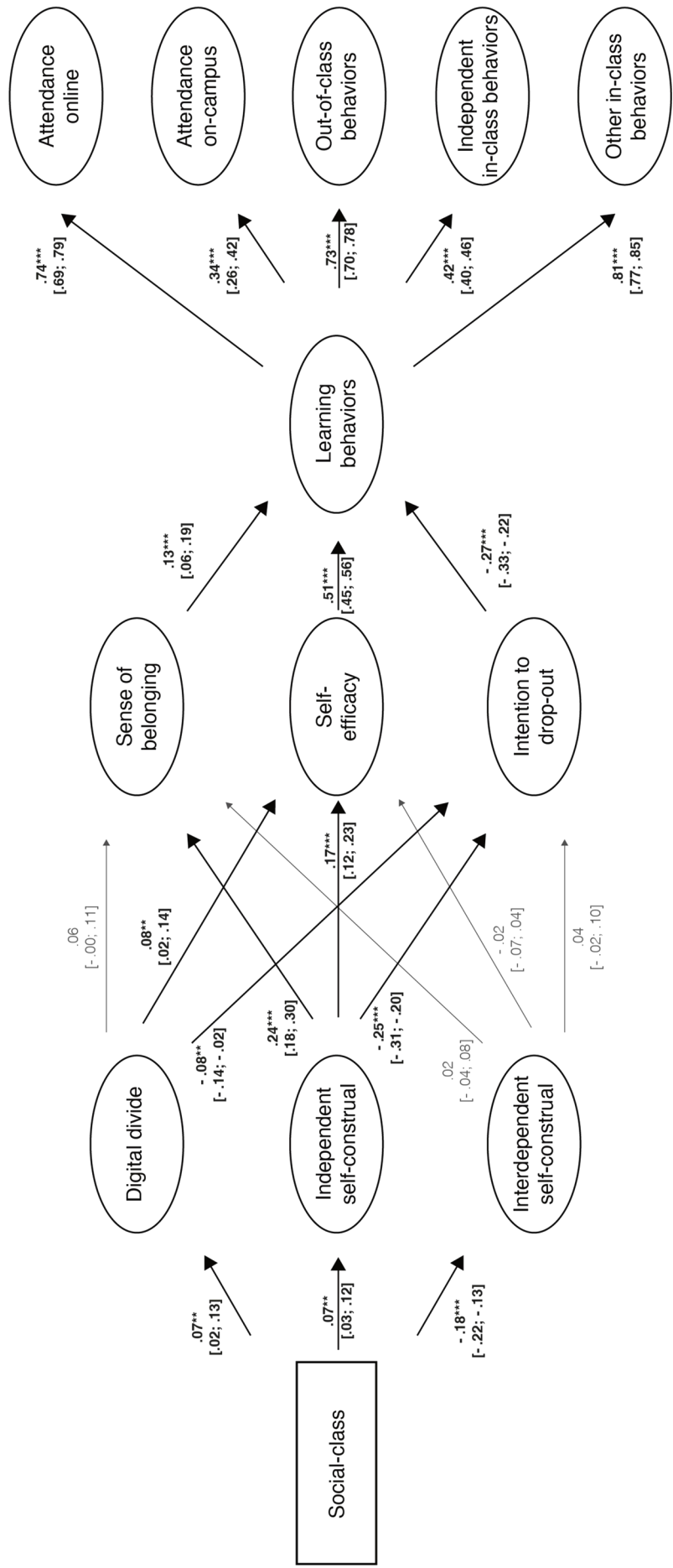
In addition, social-class was negatively associated with interdependent self-construal ($\beta = -0.18$, 95% CI = [-0.22; -0.13], $SE = 0.02$, $p < .001$). Working-class (vs. middle/upper-class) students endorsed more interdependent self-construal. The endorsement of interdependent self-construal was not associated with sense of belonging ($\beta = 0.02$, 95% CI = [-0.04; 0.08], $SE = 0.03$, $p = .462$), or with perceived self-efficacy ($\beta = -0.02$, 95% CI = [-0.07; 0.04], $SE = 0.03$, $p = .533$), or with the intentions to drop-out ($\beta = 0.04$, 95% CI = [-0.02; 0.10], $SE = 0.03$, $p = .147$). Thus, contrary to our hypothesis, those who endorsed interdependent self-construal more did not report lower sense of belonging, lower self-efficacy, or higher intentions to drop-out.

Furthermore, sense of belonging ($\beta = 0.13$, 95% CI = [0.06; 0.19], $SE = 0.03$, $p < .001$) and perceived self-efficacy ($\beta = 0.51$, 95% CI = [0.45; 0.56], $SE = 0.03$, $p < .001$) were both positively associated with students' learning behaviors, whereas the intentions to drop-out were negatively associated with students' learning behaviors ($\beta = -0.27$, 95% CI = [-0.33;

-0.22], $SE = 0.03$, $p < .001$). Those who reported higher sense of belonging and self-efficacy showed better learning behaviors, while those who reported more intentions to drop-out showed worse learning behaviors (see Figure 2).¹

¹ See SM for exploratory analyses on indirect effects and an alternative model with an equally good fit.

Figure 2
Structural equation model



Note. Standardized path coefficients and their confidence intervals in brackets. Significant statistical associations are highlighted in bold and indicated as follows: ** $p < .01$, *** $p < .001$.

Discussion

Pandemic-induced university closures and the resulting move towards distance learning were a challenge for both universities and students. In this study, we examined two factors that could affect working-class students' psychological experience and their adaptation to online classes: digital divide and cultural mismatch. Our results showed that minimizing digital divide alone (providing equipment for successful class participation such as laptops) is not sufficient. Cultural mismatch was also present during the pandemic. In fact, the pandemic may have been exacerbated cultural mismatch, given that online learning demands more independence and may therefore undermine the learning and performance of working-class students. Moreover, social-class gaps in sense of belonging, self-efficacy, and the intention to drop-out are likely to continue to fuel the social-class achievement gap.

Concerning the digital divide, French universities lend portable computers to students in need during university closures (MESRI, 2021). This should have reduced the digital divide, though we still found social-class differences in access to portable computers. Importantly, working-class students had less access to material resources necessary for optimal distance learning such as a dedicated and quiet place to study and to attend online classes (APA Task Force on Socioeconomic Status, 2007). Indeed, the lack of a dedicated and quiet place may impede students from turning on their camera and microphone that facilitate active participation in online classes (e.g., asking/answering questions). Thus, this digital divide was linked to independent learning behaviors, necessary in distance learning. Having fewer resources (portable computers, quiet place) could make it particularly difficult for working-class students to adapt successfully to online classes during the lockdown.

As in past studies, we found that working-class (vs. middle/upper-class) students endorsed more interdependent (vs. independent) self-construal (Stephens, Fryberg, et al., 2012). This study generalizes previous findings to other contexts beyond the U.S., notably to France. We also extend previous findings to a new, online learning context enforced by the global pandemic. We argued that online learning requires even more independence which may penalize working-class students more than on-site classes. Additionally, the home setting

during online classes likely primes interdependence for working-class students. This cultural mismatch was reflected in students' learning behaviors. Although working-class students were just as likely to attend online classes (and on-campus classes when they took place), or to do their homework, they were less likely to ask and answer questions during online classes and to switch on their cameras compared to their middle/upper-class peers. Thus, in line with Stephens, Fryberg, et al.'s (2012) findings, our results show that they are less likely to adopt independent behaviors that are important for academic achievement.

Finally, consistent with past findings prior the pandemic, working-class (vs. middle/upper-class) students stated more intentions to drop-out of a university (Jury et al., 2017). However, contrary to expectations, self-efficacy and sense of belonging to a university did not differ across social-class. This could indicate that the pandemic and the resulting distance learning decreased sense of belonging and self-efficacy among middle/upper-class students. It is also worth pondering if the sense of belonging to a home environment among working-class students might have affected their sense of belonging at a university.

In summary, this research highlights that students experienced distance learning during the pandemic in drastically different ways. Distance learning placed working-class students at even greater digital, material and cultural disadvantage, with significant implications for their learning behaviors and psychological experiences. Having more access to digital devices was associated with psychological factors (high self-efficacy and low intention to drop-out) that are essential for learning behaviors. Thus, though universities supplied computers to decrease the digital divide across social-classes, it remains a factor in academic success, in particular related to the conditions of access to digital equipment (i.e., a quiet room). The results regarding self-construal suggest new insights. The endorsement of independence was positively related to sense of belonging and self-efficacy, and negatively to the intention to drop-out, in line with our predictions. However, contrary to our expectation, interdependence was not related to these psychological factors. These results could have occurred by chance or highlights the uniqueness of this cohort compared to pre-pandemic cohorts. As the pandemic-induced distance learning settings required students to work mainly independently, interdependence may

not have been a factor in this specific online learning environment. Further, students' learning behavior was positively associated with the sense of belonging to university and self-efficacy, and negatively with the intention to drop-out. Thus, our results suggest that the endorsement of interdependent self-construal is unrelated to psychological factors that could be essential for online learning. By contrast, the endorsement of independent self-construal is associated with psychological factors (high sense of belonging to university, high self-efficacy, and low intention to drop-out) that facilitate essential learning behaviors.

Generalizability, Limitations, and Future Directions

Our study provides data of one country (i.e., France) which is a generalization from past studies conducted exclusively in the U.S. Further, it was conducted in a specific context (i.e., pandemic), that on one hand could explain some unexpected observation (e.g., no link between interdependence and psychological factors, or no difference between self-efficacy and sense of belonging across social-classes), but on the other emphasizes the robustness of factors that could explain social-class differences. That is, these factors remain important and even become more so in the specific context of the pandemic. It thus highlights the importance of providing pandemic-specific data. Pandemic-related university closures happened world-wide, and general similarity in the educational and cultural context can be observed in the so-called Global North (especially between France, Western European and North American countries; Mutukrishna et al., 2020). Thus, our findings support the generalizability of the previous findings to these countries (i.e., WEIRD nations).

The present research has limitations that should be addressed in future work. Though we recruited participants throughout France, our sample mostly included students in social sciences who may not be representative of all the student population. In addition, most of the participants self-identified as female (> 86% of working-class as well as middle/upper-class students). Although we did not find main effects of gender or interactive effects of gender and social-class on self-construal, this bias could have influenced the above-mentioned unexpected observations since past research has shown gender variations in self-construal (Markus & Kitayama, 2010). Future studies should therefore include more diverse and gender-

balanced student samples. Other design such as longitudinal studies could also further confirm our findings.

Even though universities tried to reduce digital disparities (e.g., by providing digital equipment or early reopening of libraries), these policies only partially address the structural psychological challenges experienced by working-class students and identified in this study. To fully address these challenges, universities should set up policies inspired by interventions that have proven to be effective. For instance, past research has identified interventions that target students' self-efficacy and sense of belonging to university: highlighting interdependent working methods (e.g., teamwork; Tibbetts et al., 2018), emphasizing the influence of students' background on university experiences (i.e., difference-education; Stephens, Hamedani, et al., 2014), and gearing towards continuous assessment (i.e., emphasizing learning- vs. performance-oriented goals; Smeding et al., 2013). Future studies should evaluate empirically their applicability and effectiveness on working-class students' learning in online settings.

Conclusion

Our research not only replicated previous findings in a European context during the pandemic, it also showed how the experience of cultural mismatch relates to students' learning behavior. Although our study does not examine differences between pandemic and ordinary times, our results are consistent with existing data showing that the COVID-19 pandemic exacerbated educational inequality across social-classes (Betthäuser et al., 2022). During university closures both digital divide and cultural mismatch persisted and the pandemic-driven distance learning in universities may have amplified the resulting social-class achievement gap. Digital disparities paired with pre-existing cultural mismatch could affect the psychological factors that impact students' learning in crisis-driven distant learning settings.

Author Contributions

F. Müller, S. Goudeau, and R. B. Sanitioso conceived and designed the study and contributed to the preregistration. F. Müller conducted the study, conceptualized, and conducted the analysis, prepared data, and documentation for OSF, and drafted the manuscript. C. Aelenei reviewed the analysis. All authors contributed critical revisions to the manuscript. All the authors approved the final manuscript for submission.

Acknowledgements

We are grateful to Marie-Pierre Fayant, Jörg-Henrik Heine and Anja Schiepe-Tiska for their assistance with statistical analysis, to Milena Berestko for proofreading, and to Martin Müller for his help in illustrating the figures.

GENERAL DISCUSSION

1. Summary of Key Findings

This thesis employs a range of research methodologies to investigate the complex and multifaceted experiences of working-class students in higher education. By using a combination of longitudinal studies (Chapter 1), experimental manipulations (Chapter 2), and correlational research (Chapter 3), these studies aim to deepen our understanding of the challenges and dynamics of cultural mismatch and acculturation that working-class students encounter. The ultimate goal is to contribute to the literature on the social-class achievement gap and to inform policy and practice by providing a more nuanced understanding of the factors that shape working-class students' experiences in higher education. By examining factors such as cultural mismatch, self-construal, and acculturation, this thesis seeks to shed light on the complex realities faced by working-class students.

1.1 Key Findings in Chapter 1

In Chapter 1, the focus was on exploring the concept of cultural mismatch and its consequences in the European context over time, particularly investigating whether prolonged exposure to the university environment leads to acculturation of working-class students to middle/upper-class norms. The research comprised three longitudinal studies conducted over a period of three years in various universities across France and Germany, examining students' self-construal, sense of belonging to university, and academic outcomes.

Consistent with previous research conducted at elite U.S. universities (Phillips, Stephens, et al., 2020), the findings indicated no social-class differences in both explicit and implicit independent self-construal among students in both countries. However, working-class students consistently endorsed more interdependence than their middle/upper-class peers throughout their studies until graduation, indicating a persistent experience of cultural mismatch.

The research also showed that working-class students exhibited a greater endorsement of hard independence (i.e., self-reliance), potentially limiting their ability to seek necessary help and reducing their chances of success at university (Chang et al., 2020; Covarrubias et al., 2019). There was a general decline in the sense of belonging to university over time for both working-class and middle/upper-class students. It should be noted that the COVID-19 pandemic may have contributed to this general decline, as the pandemic-related disruptions may have also impacted the sense of belonging of middle/upper-class students.

Persistent disparities in students' academic outcomes, such as their GPA and subjective experience of social-class, were found, which could have detrimental effects on working-class students' health, well-being, and future labor market outcomes. Further, a deeper analysis revealed that the experience of initial cultural mismatch due to a more interdependent self-construal within working-class students may have a direct impact on their academic outcomes three years later, challenging prior research (Phillips, Stephens, et al., 2020). This highlights the crucial role of cultural mismatch in perpetuating social-class achievement gaps throughout students' university experiences.

Working-class students may enter universities with a relatively more interdependent self-construal, reflecting their background, which clashes with the university's culture of independence shaped by those from middle/upper-class backgrounds. This cultural mismatch can lead to a lower sense of belonging, higher need for self-reliance, leading to less help from peers or institutions, and ultimately lower GPA and the subjective experience of social-class at graduation for working-class students. Thus, the findings suggest that prolonged exposure to the university environment does not result in acculturation of self-construal, and initial social-class differences persist.

1.2 Key Findings in Chapter 2

Building on the insights gained from Chapter 1, Chapter 2 investigates the acculturation processes of working-class students who succeed at university, focusing on whether they

acculturate their self-construal in response to the demands of university in a flexible way. The chapter addressed the question of whether high-performing working-class students integrated new and original social-class identities, resembling an integrative acculturation strategy (Berry, 1997; Sam & Berry, 2010), as the most beneficial form of acculturation.

Using experimental manipulations, the studies involved primings of self-construal as well as contextual variations where students completed questionnaires regarding their self-construal in both a home and university setting. Overall, working-class students endorsed similar independent self-construal like their middle/upper-class peers. However, high-performing working-class students showed more independence when primed with an independent self-construal compared to low-performing working-class students. They also exhibited more independence in specific contexts, i.e., these students were able to shift their self-construal towards higher independence when transitioning from a home to a university context, whereas they showed no differences from their low-performing peers when in a home context.

This indicated that high-performing working-class students acculturated in higher education institutions in a flexible way, allowing them to reduce the cultural mismatch and explaining their success. Furthermore, compared to their middle/upper-class peers, working-class students expressed higher self-reliance. This adherence to a different form of independence, namely hard independence, could indicate that they underutilized social support and partly explained the social-class achievement gap (Chang et al., 2020; Covarrubias et al., 2019).

To experience upward social mobility, working-class students need to develop an appropriate independent identity and integrate it into their selves (Haslam et al., 2021; Stephens, Markus, et al., 2014; Veldman et al., 2022). High-performing working-class students achieved this by flexibly construing their selves to the immediate situation, which facilitated upward social mobility. Their acculturation strategy could be considered as integrative, as they identified with both their current and past social-class identities. However, this identification was primarily observed in their objective measures of social-class, rather than in their subjective experience of class transitioning. This finding was consistent with previous literature (Phillips, Martin, et al., 2020; Phillips, Stephens, et al., 2020).

1.3 Key Findings in Chapter 3

Chapter 3 shifts the focus on the digital divide and cultural mismatch experienced by working-class students during the COVID-19 pandemic-induced online learning, providing valuable insights into their psychological experiences and learning behaviors in French universities. Despite French universities lending portable computers to students in need during university closures (MESRI, 2021), social-class differences in access to digital resources necessary for optimal distance learning persisted, making it particularly challenging for working-class students to adapt successfully to online classes during the lockdown.

Contrary to the first two chapters, but consistent with previous research (Stephens, Fryberg, et al., 2012), this study found that working-class students endorsed less independent self-construal. Additionally, as found in the previous chapters, the study also found that working-class students endorsed more interdependent self-construal compared to their middle/upper-class peers. The resulting cultural mismatch was reflected in their learning behaviors, as working-class students were less likely to adopt independent behaviors, such as asking and answering questions during online classes, compared to their middle/upper-class peers.

There were no significant differences in the sense of belonging to the university between working-class and middle/upper-class students. It is possible that the pandemic and distance learning decreased this factor among middle/upper-class students. However, a deeper analysis revealed that independent self-construal, which is more common among middle/upper-class students, was positively associated with their sense of belonging that predicted better learning behaviors. These findings contrast with Chapter 1 and prior research, where an association between the factors was found for interdependent self-construal, but not for independent self-construal (Phillips, Stephens, et al., 2020).

Overall, distance learning placed working-class students at a significant disadvantage in terms of digital access, resources, and cultural mismatch, which had a profound impact on their learning behaviors and psychological experiences. These results underscore the

importance of addressing the digital divide and cultural mismatch to ensure equal access and opportunities for all students.

In short, through the use of longitudinal studies, experimental manipulations, and correlational research, this thesis sheds light on the role of cultural mismatch, self-construal, and acculturation in perpetuating social-class achievement gaps throughout students' university experiences. The findings suggest that prolonged exposure to the university environment does not result in acculturation of self-construal, and initial social-class differences persist. However, the thesis also demonstrates that high-performing working-class students can acculturate in a flexible way, allowing them to reduce the experience of cultural mismatch and explaining their success. Additionally, the COVID-19 pandemic-induced distance learning appears to be associated with an increased digital divide and cultural mismatch experienced by working-class students, which is linked to significant impacts on their learning behaviors and psychological experiences.

2. Theoretical Contributions

2.1 Confirmation of Prior Research

This thesis confirms prior research in several ways. Firstly, Chapter 1 examined the effects of prolonged exposure to the university environment on working-class students' acculturation to middle/upper-class norms in diverse university populations across two European countries. While past research has primarily focused on elite university settings where the effects of independence may be more pronounced (Phillips, Stephens, et al., 2020), this study provides a more comprehensive understanding of the impact of social-class on university experiences and outcomes. The findings indicate that working-class students do not naturally adjust to the university environment or develop a sense of belonging that could facilitate their acculturation to these norms. Instead, their initial experience of cultural mismatch shapes their experiences and academic outcomes throughout their time at university, with significant consequences. Social-class achievement gaps in students' GPA and subjective experience of their social-class persisted over time, highlighting systemic barriers that working-class students may face in accessing opportunities and building relationships within university environments.

Secondly, Chapters 1 and 2 found that working-class students endorsed independent self-construal to the same degree as middle/upper-class students, as in recent research (Phillips, Stephens, et al., 2020). This contradicts the expectations and earlier research of cultural mismatch theory, which suggests that working-class students should endorse less independent self-construal (Stephens, Fryberg, et al., 2012). However, it is possible that the difference in independence between working-class and middle/upper-class students in the diverse European samples was so small that the sample sizes for Chapters 1 and 2 were not large enough to detect this effect. Using a larger sample with more statistical power in Chapter 3, where the sample size was almost twice as large, confirmed the initial research on cultural mismatch across national borders.

Thirdly, this thesis confirms prior findings on the negative effects of cultural mismatch, such as the negative impact on students' GPA and subjective experience of social-class in Chapter 1, or on their psychological experiences and learning behaviors essential for academic success in Chapter 3. This aligns with previous research by Chang et al. (2020), Matschke et al. (2022), Phillips, Stephens, et al. (2020), Stephens, Fryberg, et al. (2012), Vasquez-Salgado et al. (2015, 2021), and Veldman et al. (2022).

Lastly, the theoretical considerations of acculturation processes were confirmed, indicating that the integrative strategy of integrating both the new and origin social-class into one-self is the most beneficial one (Berry, 1997; Phillips, Martin, et al., 2020; Sam & Berry, 2010). Chapter 2 demonstrated that high-performing working-class students were able to acculturate their self-construal in response to the demands of university in a flexible way, shifting their self-construal towards higher independence when transitioning from a home to a university context. In contrast, these students showed no differences from their low-performing peers when in a home context.

2.2 Extension of Prior Research

This thesis extends prior research in several ways, including methodological advances, insights into the role of students' sense of belonging, and exploring the impact of cultural mismatch during times of crisis, such as the COVID-19 pandemic.

First, this thesis incorporated more nuanced measures of self-construal, allowing for a deeper exploration of the effects of self-construal on working-class students' acculturation to university environments. Previous studies suggested that differences in expressive and hard independence could negatively impact working-class students' experiences in university settings (Chang et al., 2020; Covarrubias et al., 2019; Covarrubias & Fryberg, 2015; Kusserow, 2012; Vignoles et al., 2016). While middle/upper-class environments prioritized expressive independence, emphasizing self-expression and uniqueness, working-class environments focused on hard independent dimensions of self-construal, such as self-reliance and emotional

control. Chapters 1 and 2 revealed that working-class students adhered to a distinct form of self-construal, self-reliance, which could create conflicts with university norms regarding self-expression and reduce help-seeking behavior essential for success at university. Consequently, this intensified experience of cultural mismatch hindered students' ability to acculturate to the university environment. By examining different forms of self-construal, this thesis highlighted these conflicts with university norms and their impact on students' acculturation.

Second, Chapter 1 employed an implicit measure of self-construal, offering a unique advantage over traditional self-report questionnaires typically used in cultural mismatch research. This measure does not rely on participants' self-awareness or willingness to report their self-construal; instead, it measures implicit associations that may not be under conscious control (Amodio & Devine, 2006; Greenwald et al., 1998). The results from Chapter 1 confirmed findings regarding explicit independence, showing that working-class students endorsed the same level of independence as their middle/upper-class peers. However, this finding could be due to the small sample size or influenced by contextual factors, such as online settings, which can introduce noise and impede effect detection (Greenwald et al., 2022; Jost, 2019). Nonetheless, incorporating an implicit measure of self-construal provides a more comprehensive understanding of cultural mismatch, capturing both conscious and unconscious aspects of self-construal.

Third, this thesis offers new insights into the specific role of students' sense of belonging to the university. Unlike previous research by Phillips, Stephens, et al. (2020), the findings in Chapter 1 showed that working-class students' initial interdependent self-construal didn't directly impact their sense of belonging three years later but instead affected their academic outcomes during that period. Sense of belonging to university decreased for all students over time, possibly due to the sudden shift to distance learning during the COVID-19 pandemic, which required universities to rapidly integrate online learning into their curriculums, potentially disadvantaging both working-class and middle/upper-class students. In Chapter 3, using a higher-powered sample size, we found differences in associations between students' self-construal and their sense of belonging. Contrary to the research by Phillips, Stephens, and

colleagues (2020), we found that endorsing independent self-construal was associated with a higher sense of belonging that facilitated learning behaviors, rather than endorsing interdependent self-construal. This finding suggests differences between samples, such as those from elite U.S. universities and those in Europe, and underscores the need for further research to better understand the complex relationship between self-construal and sense of belonging in university settings.

Fourth, this thesis expands on prior findings by showing that the detrimental effects of cultural mismatch persist during times of crisis, such as the COVID-19 pandemic. Chapter 3 explores the associations between cultural mismatch and working-class students' experiences in the context of online learning, an untested setting for this barrier. The study also uniquely merges cultural mismatch with another barrier, the digital divide, to examine their joint relationships with working-class students' psychological experiences, including their sense of belonging. The findings reveal that these barriers are related to the negative psychological experiences of working-class students, which may hinder their learning behavior and exacerbate the social-class achievement gap. In summary, the study emphasizes the ongoing and significant associations between cultural mismatch and student experiences, particularly during current challenges like the COVID-19 pandemic and online learning, and highlights the need to address the combined effects of multiple barriers on students' acculturation in university settings.

Fifth, this thesis underscores a key finding from prior research: despite working-class students attaining tertiary education, they may still fall behind in their subjective experience of social-class. In Chapter 1, working-class students reported lower social status compared to their middle/upper-class peers, even though they objectively moved up the social ladder by attending university. Chapter 2 examined the flexible acculturation of high-performing working-class students. The effect of flexible acculturation was only observed when social-class was operationalized using an objective measure of parents' education level, not when based on students' subjective class experience. This finding suggests that these students may lag in their subjective experience of class transitioning, either because they are slow to identify with the new context or fail to do so altogether. Previous research has shown that only with

adequate social support working-class students can achieve integrative experiences of their identities and genuinely experience upward social mobility (Destin & Debrosse, 2017; Herrmann & Varnum, 2018a, 2018b). Overall, this emphasizes the need for interventions that address the subjective experience of social-class among working-class students in higher education.

Lastly, this thesis not only expands the scope of cultural mismatch research but also offers insights into acculturation processes beyond the U.S. Conducted in European settings, including universities in France and Germany, this thesis broadens the applicability of previous findings to diverse contexts. Unlike earlier studies focused on elite universities, this research encompasses a wide range of institutions, facilitating a more comprehensive examination of cultural mismatch and acculturation experiences among working-class students. By exploring these topics across various contexts and university settings, this thesis deepens our understanding of cultural mismatch and its influence on the acculturation experiences of working-class students.

3. Limitations of the Current Work and Suggestions for Future Research

As previously mentioned, this research expands the scope of cultural mismatch by examining a diverse range of universities in two European countries. This extension is significant, as it highlights the generalizability of the research, particularly in countries with similar educational and cultural contexts in the Global North (Muthukrishna et al., 2020). However, it is essential to recognize that this study is limited to these specific contexts and cannot be considered a global approach. To better understand the acculturation processes of working-class students in higher education and the effects of cultural mismatch beyond these countries, further research is needed. Cultural norms and values promoted by universities can vary across different educational contexts, and cross-cultural psychology and self-construal research have demonstrated the impact of cultural differences on self-construal (Kitayama et al., 2009; Levine et al., 2003). It is crucial to consider the immense diversity of non-Western countries, which constitute a significant portion of the world's population (Henrich et al., 2010). Future studies should investigate the effects of cultural mismatch across a wide range of countries, avoiding an overly simplistic comparison between Western (usually North American) and non-Western (usually East-Asian) countries, as this approach can lead to marginalization of cultural contexts and the self in the scientific discourse (Vignoles et al., 2016; Yamaguchi et al., 2007).

Moreover, European countries, with their highly diverse cultures, practices, and identities, tend to emphasize independence primarily in more competitive university environments (Rienties & Tempelaar, 2013; Sommet et al., 2015). Hence, future research should investigate the effects of acculturation and cultural mismatch of working-class students within a single country by comparing more competitive universities to less competitive ones (e.g., in France, the *Grandes Écoles* versus other universities). To date, only one study has surveyed the general expectations of university administrators, and it was conducted exclusively in the U.S. (Stephens, Fryberg, et al., 2012). A systematic assessment is necessary to determine whether

European universities also prioritize independence over interdependence and to what extent this emphasis varies between institutions. Investigating the correlation between attendance and success rates of working-class students in institutions that prioritize independence compared to those valuing interdependence would be insightful. This approach could extend to various subject fields as well. For example, previous research in the U.S. found differences between study fields in terms of brilliance expectations and the proportion of women (Leslie et al., 2015). Similar research could explore the expectations of independence among working-class students across different study fields.

While this research aimed to be more representative of universities in two European countries, it is essential to recognize that our samples were biased. The studies predominantly included students from social sciences backgrounds (> 80%) and a high percentage of participants who identified as female (> 70%). Although the proportion of students identifying as female and the distribution of academic fields were similar between working-class and middle/upper-class students, this may limit the generalizability of our findings to other academic fields and populations. Previous research has suggested gender differences in self-construal (Markus & Kitayama, 2010), and future studies should, therefore, include more diverse and gender-balanced samples to better understand the effects of cultural mismatch across different student populations.

Additionally, throughout the studies, we did not examine the intersectionality of social-class with other marginalized identities, including but not limited to those who experience marginalization due to factors such as racism, ableism, or discrimination against LGBTQI+ individuals, except for Chapter 2. While we controlled for these factors, we did not have sufficient power to examine intersectional effects of social-class by gender or with other marginalized identities. Considering that individuals' self-identity is shaped by multiple social identities, it is important for future research to take an intersectional approach to explore how cultural mismatch and acculturation processes may vary across different marginalized identities (APA Task Force on Socioeconomic Status, 2007; Cole, 2009). Such an approach could also help to identify potential moderating effects of campus representation on the experiences of cultural

mismatch for students from diverse backgrounds (Fryberg et al., 2013; Harackiewicz et al., 2016; McGarrity, 2014) and inform the development of more targeted interventions and policies to support their success in higher education.

Though this thesis provides methodological advances, they also come with their respective limitations. Firstly, in Chapter 1, we employed an implicit assessment of students' self-construal, which may be less reliable than more explicit measures due to the influence of contextual factors such as the online setting (Greenwald et al., 2022; Jost, 2019). Furthermore, there have been debates regarding the utility of implicit measures (Jost, 2019; Van Dessel et al., 2020). However, these measures can still be valuable if used in conjunction with more explicit measures and employed cautiously (Greenwald et al., 2022; Van Dessel et al., 2020).

Secondly, Chapter 2 did not reveal context-dependent differences in various dimensions of self-construal, potentially due to the manipulation setup. Students may not have internalized the contexts since they didn't explicitly think and write about them when completing questionnaires. Writing about specific topics has been demonstrated to strengthen interventions (Walton & Cohen, 2007). Furthermore, considering the generally small effects observed in this study, the possibility of the sample size being underpowered to detect significant results cannot be ruled out. However, the pattern of slopes suggested that high-performing working-class students exhibited greater independence in an independent prime/university context. Though the significance levels were mixed across two experiments, this effect was found across both, implying that it may still represent a meaningful phenomenon. Future studies with larger sample sizes are necessary to confirm these results and increase confidence in the findings. It is important to note that even small effects can have meaningful practical implications, and thus, our findings should not be dismissed (Götz et al., 2022).

4. Implications for Policy and Practice

The findings of this thesis offer valuable insights for policy and practice in higher education. A crucial recommendation is for universities to be aware of the cultural norms and values they endorse and to comprehend how these may differ from the backgrounds of their students, particularly those from working-class backgrounds. As previous research has demonstrated that students are more productive and motivated when their behaviors align with their selves and when higher education is tailored to match students' identities and experiences, this can positively influence their academic engagement, motivation, and performance (Gutierrez & Rogoff, 2003; Oyserman, 2008; Oyserman & Destin, 2010; Taylor et al., 2003). Consequently, it is vital for universities to consider these factors and establish programs and policies that aim to create a more inclusive and supportive environment for working-class students.

Numerous policies and interventions have been developed to address cultural mismatch and tackle social-class disparities in higher education. Stephens et al. (2015) and Jury et al. (2017) summarized intervention programs such as self-affirmation, difference-education, and goal reframing interventions. These interventions aim to foster a sense of fit and empowerment among working-class students by connecting their self to the university environment, helping them feel valued, included, and focused on learning rather than competition. Actions include creating a more inclusive university culture, diversifying representations of the university experience, giving working-class students visibility and a voice, building close relationships, creating peer networks, and including families in the university experience. However, in light of the new contexts arising from the COVID-19 pandemic, such as online settings where students are more closely connected with their families, further research is needed to explore how these interventions can be adapted and optimized for online settings to better support working-class students in higher education.

Additionally, future research should aim to investigate the effects of cultural mismatch and acculturation processes of working-class students in higher education across a broader range of countries, encompassing non-Western nations, to enhance the understanding of the generalizability of the findings. It is also crucial to conduct such research within a single country, taking into account the diverse cultures of various universities that differ in their levels of competitiveness. This approach will help evaluate the degree to which different institutions and subject fields prioritize independence over interdependence and how this might influence the attendance and success rates of working-class students. Gaining insight into these nuances will enable the creation of targeted policies and interventions that can effectively support working-class students across diverse contexts.

Moreover, policies and interventions should be designed to better support students from diverse backgrounds by taking into account the potential moderating effects of campus representation on their experiences of cultural mismatch. A higher representation of specific identities, such as LGBTQI+ individuals, on campus might help to mitigate the effects of cultural mismatch for working-class students who also belong to those groups, fostering a more inclusive and supportive environment. It is crucial to acknowledge that individuals possess multiple social identities that can influence their experiences of cultural mismatch and acculturation. Consequently, interventions must be tailored to address the distinct needs of each group. Furthermore, future research should strive to include more diverse and gender-balanced samples to deepen our understanding of the effects of cultural mismatch across various academic fields and populations, while also considering the intersectionality of social-class with other marginalized identities.

Future research on acculturation and cultural mismatch should systematically employ and test various measures of self-construal, including multidimensional, behavioral, and implicit measures. Combining these different types of measures can enhance the reliability of results. However, caution is necessary when using implicit measures, as they can be prone to measurement error and biases. As such, future research should combine implicit measures

with more explicit ones to increase the accuracy and validity of findings concerning the effects of cultural mismatch on working-class students in higher education.

Lastly, it is crucial to note that past research has primarily used parents' educational attainment as a proxy for social-class, despite the fact that social-class is a multifaceted construct that can be assessed through different measures. This thesis employed proxies of parents' educational level and occupation, aligning with students' subjective experience of social-class. While Chapter 3 indicated that both educational level and occupation are suitable proxies for social-class in large tertiary education samples, this may not hold true for smaller samples, as demonstrated in Chapters 1 and 2. However, in situations where researchers have limited resources and constraints, considering the utility of parents' educational level and students' subjective social-class experience is advisable. Nevertheless, I strongly recommend the additional use of parents' occupation as a proxy for social-class, particularly in the fields of early childhood, primary, and secondary education, as it is crucial to consider the influence of financial resources on children's development. Parents' occupation may serve as a useful proxy for social-class in certain educational contexts, as it can be closely tied to cultural norms and expectations, which are particularly significant in providing resources for children, such as ensuring they attend adequately funded schools.

5. Conclusion

This thesis has provided a comprehensive examination of the experiences and challenges faced by working-class students in higher education and the ways in which they acculturate to the university environment. Through a combination of longitudinal studies, experimental manipulations, and correlational research, this thesis has shed light on the complex dynamics of cultural mismatch and acculturation that perpetuate social-class achievement gaps throughout students' university experiences.

The findings of this thesis underscore the unique challenges that working-class students face in succeeding in higher education compared to their more affluent peers. Despite prolonged exposure to the university environment, working-class students often struggle to navigate and acculturate to the middle/upper-class norms that dominate higher education institutions, and initial social-class differences persist. However, by examining the experiences of successful working-class students, investigating the impact of the COVID-19 pandemic, and identifying key factors that affect the acculturation of working-class students to middle/upper-class norms, this research provides insights into the strategies and resources that some students used to overcome barriers and achieve academic success. These key factors include integrating independent norms into their identity, flexibly acculturating to the demands of university life, and reducing cultural mismatch.

It is crucial to recognize that the responsibility for reducing social-class achievement gaps lies with the more powerful side of the university, rather than with individual students. Higher education institutions must create an environment that fits the needs of working-class students and provide targeted interventions, social support, and value interdependence more to ensure that students have access to important resources and opportunities essential to their academic success. This requires a systemic approach that takes into account the subjective experiences and perspectives of working-class students.

We must also acknowledge the resilience and determination of working-class students, like our example of Alex from the beginning of this thesis, who despite facing numerous obstacles, remain committed to their academic goals. By addressing social-class disparities in higher education, we can ensure that more students have the opportunity to pursue their dreams and achieve genuine upward social mobility. Ultimately, the success of working-class students in higher education is not only a matter of individual achievement but is also crucial for promoting social justice, economic equality, and the overall well-being of society.

RÉSUMÉ SUBSTANTIEL

1. Introduction

La réussite dans l'enseignement supérieur est cruciale pour accéder aux opportunités de vie et favoriser la mobilité sociale ascendante (Ridgeway & Fisk, 2012). Toutefois, l'influence de la classe sociale sur la capacité des étudiant·e·s à naviguer dans l'enseignement supérieur est indéniable. Les étudiant·e·s issu·e·s de milieux populaires rencontrent souvent des obstacles majeurs pour accéder et réussir à l'université, entraînant des écarts de réussite liés à la classe sociale (Jerrim et al., 2015 ; OCDE, 2018 ; Sirin, 2005). Ces écarts résultent de facteurs individuels et structurels, tels que les ressources financières et la préparation académique (Crozier & Reay, 2011 ; OCDE, 2012 ; Rubin & Wright, 2017 ; Towers et al., 2020).

Ces facteurs sont étroitement interconnectés. La préparation académique, considérée par exemple comme un facteur individuel, est influencée par des facteurs structurels tels que des écoles sous-financées qui ne préparent pas adéquatement les étudiant·e·s à l'université (OCDE, 2012). Cependant, aborder uniquement les facteurs individuels et structurels ne suffit pas pour réduire les écarts de réussite dans l'enseignement supérieur (Stephens et al., 2015). Même lorsque les étudiant·e·s possèdent les compétences et les ressources nécessaires, les écarts de réussite persistent. Ceci est en partie dû à l'influence unique des facteurs culturels au sein du monde de l'enseignement supérieur. Les facteurs culturels se distinguent généralement des facteurs structurels, tels que les ressources financières, car ils englobent les croyances, valeurs et normes partagées qui façonnent les interactions et les comportements sociaux dans un contexte particulier. Ainsi, la culture de l'enseignement supérieur peut jouer un rôle significatif dans la perpétuation des inégalités de classe sociale.

L'enseignement supérieur perpétue les inégalités sociales en étant structuré autour des normes culturelles des milieux favorisés, offrant un capital culturel avantageux pour ces étudiant·e·s (Bourdieu & Passeron, 1990 ; Lamont & Lareau, 1988). Les étudiant·e·s issu·e·s de milieux populaires, en revanche, font face à des obstacles pour accéder à ce capital culturel, influençant leur perception et leur réaction à leur environnement (Mishra, 2020 ; Stephens,

Markus, et al., 2014 ; Thiele et al., 2018). Ainsi, pour combler les écarts de réussite liés à la classe sociale dans l'enseignement supérieur, les universités doivent prendre en compte les expériences et les identités subjectives des étudiant·e·s et adapter leurs approches pédagogiques en conséquence (Markus & Kitayama, 2010 ; Markus & Nurius, 1986 ; Oyserman & Markus, 1993 ; Gutierrez & Rogoff, 2003 ; Oyserman, 2008 ; Oyserman & Destin, 2010 ; Taylor et al., 2003).

Pour aborder les disparités de classe sociale dans l'enseignement supérieur, il est essentiel d'examiner comment les étudiant·e·s issu·e·s de milieux populaires vivent et gèrent la culture de l'enseignement supérieur. La théorie du décalage culturel (Stephens, Fryberg, et al., 2012) offre un cadre pertinent pour étudier ces expériences et comprendre comment les différences entre les normes culturelles des institutions d'enseignement supérieur et celles des étudiant·e·s issu·e·s de milieux populaires contribuent aux écarts de réussite liés à la classe sociale. En examinant ces dynamiques complexes, cette thèse se concentre sur le processus d'acculturation des étudiant·e·s issu·e·s de milieux populaires dans l'enseignement supérieur et sur les défis qu'i·elles rencontrent en raison du décalage culturel.

1.1 Théorie du Décalage Culturel

Les normes culturelles d'indépendance, encouragées dans les contextes éducatifs, peuvent accentuer les écarts de réussite liés à la classe sociale. Ces normes incitent les étudiant·e·s à forger leur propre voie, exprimer leurs opinions et influencer le monde, plutôt que de respecter les opinions des autres ou les règles du groupe (Stephens et al., 2019 ; Tibbetts et al., 2018). Selon la théorie du décalage culturel (Stephens, Fryberg, et al., 2012), les étudiant·e·s issu·e·s de milieux populaires vivent un décalage entre les normes d'indépendance présentes dans l'enseignement supérieur et les normes d'interdépendance plus répandues dans les contextes de classe populaire (Phillips, Stephens, et al., 2020 ; Stephens, Fryberg, et al., 2012 ; Stephens, Markus, et al., 2014).

La construction de soi des étudiant·e·s est influencée par leur socialisation familiale qui varie selon les contextes de classe sociale. Cette construction de soi peut prendre des formes indépendantes ou interdépendantes, et l'origine sociale de l'étudiant·e influe sur la prédominance de l'une ou l'autre (Markus & Kitayama, 2010 ; Vignoles et al., 2016). Les contextes de classes populaires ont tendance à favoriser une construction de soi interdépendante, où l'individu se perçoit comme étant connecté aux autres et faisant partie d'une communauté (Stephens et al., 2007). En revanche, les contextes de classes favorisées privilégient une construction de soi indépendante, où l'individu se perçoit comme étant distinct des autres et de l'environnement social (Fryberg & Markus, 2007 ; Stephens, Fryberg, et al., 2012).

La construction de soi des étudiant·e·s et les normes associées peuvent être en adéquation ou en décalage avec la culture d'indépendance prédominante dans l'enseignement supérieur. Le contexte universitaire indépendant correspond davantage à la socialisation familiale des étudiant·e·s issu·e·s de milieux favorisés. Cependant, les normes interdépendantes courantes dans les milieux populaires sont en décalage avec la culture d'indépendance valorisée à l'université (Harackiewicz et al., 2014 ; Stephens, Fryberg, et al., 2012). Ce décalage culturel entre la construction de soi interdépendante des étudiant·e·s de milieux populaires et le contexte d'enseignement supérieur indépendant entraîne diverses conséquences négatives, telles que du stress, des émotions négatives, une diminution du sentiment d'appartenance et, finalement, une baisse de la réussite académique (Phillips, Stephens, et al., 2020 ; Stephens, Fryberg, et al., 2012 ; Stephens, Townsend, et al., 2012).

Pour mieux comprendre l'impact du décalage culturel sur les étudiant·e·s de classe populaire, il est essentiel d'examiner comment leur construction de soi est influencée par leur origine sociale et comment cela affecte leur processus d'acculturation à la culture d'indépendance prévalente dans l'enseignement supérieur.

1.2 Construction de Soi

La notion de construction de soi suggère que les individus peuvent développer leur identité de manière indépendante ou interdépendante (Markus & Kitayama, 1991). Les personnes ayant une construction de soi indépendante ont tendance à privilégier leurs objectifs et valeurs personnels, tandis que celles avec une construction de soi interdépendante favorisent les normes et valeurs sociales. Ce concept a eu un impact important sur la psychologie en mettant l'accent sur le rôle fondamental du soi dans le comportement, les émotions et les processus cognitifs. Chaque individu possède à la fois des aspects indépendants et interdépendants de sa construction de soi, dont l'équilibre relatif peut être influencé par divers facteurs, notamment la classe sociale (Stephens, Fryberg, et al., 2012). Ainsi, les personnes issues de milieux populaires ont tendance à avoir une construction de soi plus interdépendante, tandis que celles provenant de milieux favorisés sont généralement plus indépendantes.

Des études récentes ont proposé une perspective plus nuancée de la construction de soi en considérant plusieurs dimensions d'indépendance et d'interdépendance (Vignoles et al., 2016). Cette vision plus globale pourrait être bénéfique pour la théorie du décalage culturel. Par exemple, des recherches récentes ont différencié diverses formes d'indépendance, telles que l'indépendance expressive et l'indépendance dure (Chang et al., 2020 ; Covarrubias et al., 2019).

Les milieux favorisés peuvent favoriser l'indépendance expressive, qui met l'accent sur l'expression de soi et l'unicité des étudiant·e·s, tandis que l'indépendance dure, caractérisée par l'autonomie et le contrôle émotionnel, peut être plus courante dans les milieux populaires (Chang et al., 2020 ; Covarrubias et al., 2019 ; Kusserow, 2012). L'adhésion accrue à l'indépendance dure peut avoir des conséquences négatives supplémentaires : l'autonomie renforcée peut diminuer la recherche d'aide nécessaire pour réussir à l'université et engendrer des conflits avec les normes universitaires concernant l'expression de soi. Cela pourrait entraîner une expérience de décalage culturel plus marquée et freiner la capacité des étudiant·e·s à s'adapter à l'environnement universitaire. Ainsi, prendre en compte ces dimensions nuancées

de la construction de soi permet d'améliorer notre compréhension de l'expérience du décalage culturel et de son impact sur l'acculturation des étudiant·e·s dans le contexte universitaire. Une perspective multidimensionnelle permet une compréhension nuancée des complexités impliquées dans les processus d'acculturation en tenant compte des différents aspects de la construction de soi qui peuvent influencer l'adaptation culturelle d'un individu. Cela signifie qu'en reconnaissant que les défis et les conflits peuvent varier selon les aspects de l'identité, nous serons mieux équipés pour identifier et surmonter les obstacles auxquels les étudiant·e·s sont confronté·e·s dans le contexte universitaire.

1.3 Acculturation

L'acculturation est un processus de changement psychologique qui se produit lorsque des groupes distincts interagissent (Berry, 1997 ; Sam & Berry, 2010). Elle concerne la façon dont les individus assimilent et intègrent les aspects culturels de leur environnement actuel, en choisissant de préserver ou non les éléments culturels de leur contexte d'origine. Dans le domaine de l'enseignement supérieur, l'acculturation peut notamment s'appliquer au contexte de la transition de classe sociale, où les étudiant·e·s de classe populaire cherchent à surmonter les décalages culturels à l'université en adaptant progressivement leurs normes et valeurs pour devenir plus indépendant·e·s au fil du temps. Ce processus implique un changement psychologique résultant de la modification des normes et valeurs d'un individu suite au contact avec un groupe dominant, comme lors d'une transition de classe sociale.

Berry (1997) a distingué quatre stratégies d'acculturation : intégration, assimilation, séparation et marginalisation. Bien que ce concept ait été principalement utilisé dans le contexte de l'immigration nationale, il peut également être appliqué à la transition de classe sociale (Phillips, Martin, et al., 2020).

L'intégration est perçue comme la forme d'acculturation la plus bénéfique, où l'individu s'identifie à la fois au groupe d'origine et au nouveau groupe. Dans le contexte de la transition de classe sociale, cela signifie s'identifier en tant que membre de la classe sociale actuelle et

de la classe sociale passée. En revanche, l'assimilation consiste à s'identifier exclusivement au nouveau groupe, et dans ce cas, les personnes en transition de classe sociale cherchent à abandonner les normes et valeurs de leur ancienne classe sociale pour adopter pleinement celles de leur nouvelle classe sociale. La séparation implique de rejeter le nouveau groupe pour se maintenir au sein du groupe d'origine. Pour les personnes en transition de classe sociale, cela signifie ne pas adopter les normes et valeurs de la nouvelle classe sociale, mais plutôt rester fidèle à celles de leur ancienne classe sociale. La marginalisation, quant à elle, conduit à rejeter les deux groupes, c'est-à-dire la nouvelle classe sociale ainsi que la classe sociale d'origine.

L'acculturation, bien qu'initialement perçue comme un processus individuel, est également influencée par le contexte social plus large. En s'adaptant à leur nouvel environnement social, les étudiant·e·s issu·e·s des milieux populaires doivent ajuster leur construction de soi pour être en phase avec les attentes et les valeurs de la culture universitaire, qui privilégie généralement l'indépendance plutôt que l'interdépendance. Cela exige des étudiant·e·s qu'i·elles développent une identité adaptée qui s'intègre à leur soi préexistant (Haslam et al., 2021 ; Stephens, Markus, et al., 2014 ; Veldman et al., 2022). Ainsi, pour réussir dans l'enseignement supérieur, les étudiant·e·s issu·e·s des milieux populaires doivent acculturer leur construction de soi en se dirigeant vers une identité plus indépendante.

2. Lacunes et Questions de Recherche

La majorité des recherches sur le décalage culturel ont été réalisées dans des universités américaines d'élite, ce qui pourrait accentuer les effets de la classe sociale et de la norme culturelle d'indépendance (Stephens, Fryberg, et al., 2012 ; Phillips, Stephens, et al., 2020). Néanmoins, les universités situées en dehors des États-Unis, comme en France et en Allemagne, peuvent également favoriser les valeurs et les normes de la classe favorisée (Rienties & Tempelaar, 2013 ; Sommet et al., 2015), ce qui pourrait engendrer des conséquences négatives liées au décalage culturel.

Le chapitre 1 se concentre sur des étudiant·e·s divers·e·s issu·e·s d'universités françaises et allemandes. Il met en lumière la multidimensionnalité de la construction de soi et examine son impact sur les processus d'acculturation. La question de recherche guidant ce chapitre est : Dans quelle mesure une exposition prolongée à l'environnement universitaire conduit-elle les étudiant·e·s issu·e·s de milieux populaires à s'acculturer aux normes de la classe favorisée dans deux contextes universitaires européens (France et Allemagne) ? De plus, comment une analyse multidimensionnelle de la construction de soi des étudiant·e·s peut-elle apporter un éclairage approfondi sur la relation entre la classe sociale et les résultats universitaires ?

La transition vers l'université peut représenter un défi particulièrement important pour les étudiant·e·s de classe populaire, souvent associé à de plus faibles résultats académiques (Jury et al., 2017 ; Stephens et al., 2015). Cependant, certains étudiant·e·s de classe populaire affichent des performances académiques comparables à celles des étudiant·e·s issu·e·s de milieux favorisés. Cela suggère qu'i·elles sont capable·e·s de s'adapter avec succès à la construction de soi attendue dans un contexte universitaire. Une explication possible de ce phénomène est que ces étudiant·e·s performant·e·s de classe populaire disposent de ressources et de compétences spécifiques qui les aident à surmonter les défis de la vie universitaire, telles que la résilience face à l'adversité (OCDE, 2011). Néanmoins, le processus d'acculturation

propre aux étudiant·e·s performant·e·s de classe populaire demeure largement inexploré (Phillips, Martin, et al., 2020).

Pour combler cette lacune dans la littérature, le chapitre 2 de cette thèse se penche sur le processus d'acculturation des étudiant·e·s performant·e·s de classe populaire, en étudiant si ce processus est exclusif ou flexible. Plus précisément, il cherche à déterminer si les étudiant·e·s de classe populaire développent une construction de soi plus indépendante, qui se substitue progressivement à leur construction de soi interdépendante (exclusif). Alternativement, il examine si les étudiant·e·s développent des constructions de soi indépendantes et interdépendantes qui coexistent, avec le contexte immédiat dictant l'activation de la construction de soi appropriée (flexible), à l'instar de la stratégie d'acculturation intégrative.

La deuxième question de recherche abordée dans cette thèse est la suivante : Les étudiant·e·s performant·e·s de classe populaire acculturent-ils leur construction de soi en réponse aux exigences de l'université de manière flexible, en adoptant une approche similaire à la stratégie intégrative qui consiste à s'identifier à la fois à la nouvelle et à l'ancienne classe sociale, en tant que forme d'acculturation la plus bénéfique ?

Le chapitre 3 de cette thèse vise à étudier les relations entre la pandémie COVID-19 et les expériences d'apprentissage en ligne des étudiant·e·s de classe populaire dans les universités françaises. La pandémie a entraîné une transition vers l'apprentissage à distance, qui a potentiellement creusé l'écart de réussite entre les classes sociales. Ce phénomène pourrait être exacerbé par la fracture numérique et le décalage culturel, identifiés comme des obstacles dans la littérature (Betthäuser et al., 2023 ; Engzell et al., 2021 ; Goudeau et al., 2021). Ainsi, ce chapitre cherche à aborder cette problématique en apportant des données spécifiques à la période de la pandémie, servant de base pour les futures recherches sur le sujet.

La troisième question de recherche de cette thèse se concentre sur l'analyse des relations entre la fracture numérique, le décalage culturel et les vécus psychologiques des étudiant·e·s de classe populaire durant la période particulière d'apprentissage en ligne induite par la pandémie COVID-19, dans le contexte des universités françaises. Cette étude examine

également les obstacles rencontrés par les étudiant·e·s dans leurs comportements d'apprentissage essentiels, tels que poser et répondre à des questions pendant les cours en ligne.

Pour conclure, en explorant ces questions, l'objectif est de combler les lacunes de la recherche actuelle et d'approfondir la compréhension de l'impact du décalage culturel et de l'acculturation sur les étudiant·e·s issu·e·s de milieux populaires au sein de divers contextes universitaires européens.

3. Méthodologie

Cette thèse s'intéresse aux étudiant·e·s adultes de premier cycle au cours de leurs trois premières années d'études dans plusieurs universités en France et en Allemagne. La population cible comprend des étudiant·e·s sur le point d'obtenir leur premier diplôme d'enseignement supérieur, marquant objectivement leur transition vers la classe favorisée. Les tailles d'échantillon pour les études des chapitres 1, 2 et 3 étaient respectivement de $N = 1357$, $N = 1217$ et $N = 2275$. Les participant·e·s ont été classé·e·s en catégories de classe populaire ou de classe favorisée, selon le niveau d'éducation et la profession de leurs parents (OCDE, 2018 ; Rodríguez-Hernández et al., 2020). L'étude a également pris en compte des mesures subjectives de classe sociale, reflétant la perception individuelle de sa classe sociale par rapport aux autres (Adler et al., 2000 ; Kraus & Stephens, 2012).

Pour assurer la cohérence et la comparabilité, des instruments internationalement reconnus ont été utilisés pour mesurer la classe sociale, la construction de soi et le sentiment d'appartenance des étudiant·e·s dans toutes les études. Les mesures comprennent la Classification internationale type de l'éducation (CITE ; UNESCO Institute for Statistics, 2015), la Classification internationale type des professions (CITP-08 ; International Labour Organization, 2012) et l'échelle MacArthur (Adler et al., 2000). Des mesures cohérentes ont également été utilisées pour évaluer la construction de soi et le sentiment d'appartenance. Dans le chapitre 1, une mesure implicite utilisant une tâche d'association implicite (IAT) a été ajoutée pour approfondir l'évaluation de la construction de soi. Les pages web du cadre Open Science pour chaque chapitre incluent des codebooks avec toutes les échelles, mesures et traductions en français et en allemand.

La thèse adopte une combinaison d'approches de science lente et rapide (Frith, 2020) pour examiner l'inadéquation culturelle et les processus d'acculturation parmi les étudiant·e·s de classe populaire dans l'enseignement supérieur. Le chapitre 1 utilise trois études longitudinales sur trois ans pour explorer l'acculturation des étudiant·e·s de classe populaire à

l'environnement universitaire. Le chapitre 2 met en œuvre des manipulations expérimentales pour étudier les processus d'acculturation des étudiant·e·s performant·e·s de classe populaire. Le chapitre 3 adopte une approche corrélacionnelle pour examiner les relations entre la pandémie COVID-19, la fracture numérique et l'expérience du décalage culturel, ainsi que la manière dont ces obstacles sont liés aux barrières psychologiques contribuant aux inégalités académiques et entravant les comportements d'apprentissage essentiels à la réussite scolaire.

L'objectif ultime de cette thèse est d'améliorer notre compréhension des expériences et des défis rencontrés par les étudiant·e·s de classe populaire dans l'enseignement supérieur, en mettant l'accent sur leurs processus d'acculturation. Cette recherche vise à éclairer les politiques et les pratiques en fournissant des informations utiles pour le développement de programmes et d'interventions adaptés. Des initiatives adaptées pourraient soutenir la réussite académique des étudiant·e·s de classe populaire dans divers contextes, notamment en aidant à surmonter les obstacles tels que la fracture numérique et le décalage culturel.

4. Résumé des Principales Conclusions

Dans le chapitre 1, la thèse explore le concept de décalage culturel et ses conséquences dans le contexte européen, en étudiant spécifiquement si une exposition prolongée à l'environnement universitaire conduit à l'acculturation des étudiant·e·s de classe populaire aux normes de la classe favorisée. La recherche comprend trois études longitudinales menées sur trois ans dans diverses universités en France et en Allemagne. Les études se sont concentrées sur la construction de soi des étudiant·e·s, leur sentiment d'appartenance à l'université et leurs résultats académiques. Les résultats indiquent que les étudiant·e·s de classe populaire valorisaient constamment une plus grande interdépendance que leurs pairs de la classe favorisée, reflétant une expérience persistante de décalage culturel.

La recherche montre également que l'adhésion des étudiant·e·s de classe populaire à une indépendance dure, c'est-à-dire l'autonomie, pourrait limiter leur capacité à rechercher l'aide nécessaire et réduire leurs chances de réussite à l'université (Chang et al., 2020 ; Covarrubias et al., 2019). Le sentiment d'appartenance à l'université a généralement diminué avec le temps, ce qui pourrait avoir été exacerbé par la pandémie de COVID-19 pour les étudiant·e·s de classe populaire et de la classe favorisée. Cette baisse du sentiment d'appartenance pourrait potentiellement contribuer aux disparités existantes dans les résultats académiques, tels que la moyenne générale et l'expérience subjective de la classe sociale. Ces conclusions suggèrent qu'une exposition prolongée à l'environnement universitaire ne conduit pas à l'acculturation de la construction de soi, et les différences initiales de classe sociale persistent. De plus, une analyse approfondie révèle que l'expérience initiale de décalage culturel liée à une construction de soi plus interdépendante peut avoir un impact direct sur leurs résultats académiques trois ans plus tard. Ceci souligne le rôle crucial du décalage culturel dans la perpétuation des écarts de réussite entre les classes sociales tout au long de l'expérience universitaire des étudiant·e·s.

Le chapitre 2 s'appuie sur les conclusions du chapitre 1 et étudie les processus d'acculturation des étudiant·e·s de classe populaire qui réussissent à l'université. Le chapitre examine si ces étudiant·e·s acculturent leur construction de soi de manière flexible en réponse aux exigences de l'université, ce qui pourrait être comparé à une stratégie d'acculturation intégrative selon les concepts de Berry (1997) et Sam et Berry (2010). En utilisant des manipulations expérimentales, les études ont impliqué des amorçages de construction de soi ainsi que des variations contextuelles où les étudiant·e·s ont rempli des questionnaires concernant leur construction de soi à la fois dans un cadre familial et universitaire.

Les résultats révèlent que, globalement, les étudiant·e·s de classe populaire adoptent une construction de soi indépendante similaire à celle de leurs homologues issu·e·s de milieux favorisés. Toutefois, les étudiant·e·s performant·e·s de classe populaire montrent une plus grande indépendance lorsqu'i·elles sont incité·e·s à adopter une construction de soi indépendante et manifestent une plus grande indépendance dans les contextes universitaires, contrairement à ceux·elles de classe populaire ayant des performances moindres. Ceci suggère que les étudiant·e·s performant·e·s de classe populaire s'acculturent de manière flexible, leur permettant de réduire le décalage culturel et d'expliquer leur succès.

Par ailleurs, comparé·e·s à leurs pairs issu·e·s de milieux favorisés, les étudiant·e·s de classe populaire expriment une plus grande autonomie, ce qui pourrait en partie expliquer l'écart de réussite entre les classes sociales (Chang et al., 2020 ; Covarrubias et al., 2019). Afin d'accéder à une mobilité sociale ascendante, les étudiant·e·s de classe populaire doivent développer une identité indépendante appropriée et l'intégrer à leur construction de soi (Haslam et al., 2021 ; Stephens, Markus, et al., 2014 ; Veldman et al., 2022). Les étudiant·e·s performant·e·s de classe populaire y parviennent en adaptant de manière flexible leur construction de soi selon la situation, facilitant ainsi la mobilité sociale ascendante. Néanmoins, l'identification à la fois à leur classe sociale actuelle et passée était principalement observée dans leurs mesures objectives de la classe sociale, plutôt que dans leur expérience subjective du changement de classe, en accord avec les travaux antérieurs (Phillips, Martin, et al., 2020 ; Phillips, Stephens, et al., 2020).

Le chapitre 3 déplace l'accent sur les relations entre l'apprentissage en ligne induit par la pandémie de COVID-19 et les expériences et les comportements d'apprentissage des étudiant·e·s de classe populaire dans les universités françaises, en explorant spécifiquement la fracture numérique et le décalage culturel. Pendant la fermeture des universités, il y avait des différences entre les étudiant·e·s de classes sociales différentes en termes d'accès aux ressources numériques nécessaires pour un apprentissage à distance optimal. Cela a rendu particulièrement difficile pour les étudiant·e·s de classe populaire de s'adapter aux cours en ligne pendant le confinement.

De plus, cette étude a révélé que les étudiant·e·s de classe populaire adhéraient moins à une construction de soi indépendante et plus à une construction de soi interdépendante par rapport à leurs pairs de la classe favorisée, entraînant ainsi un décalage culturel (Stephens, Fryberg, et al., 2012). Ce décalage se reflétait dans leurs comportements d'apprentissage, car les étudiant·e·s de classe populaire étaient moins enclins à adopter des comportements indépendants, tels que poser et répondre à des questions pendant les cours en ligne. La pandémie et l'apprentissage à distance peuvent avoir diminué le sentiment d'appartenance à l'université parmi les étudiant·e·s, entraînant un faible sentiment d'appartenance général chez les étudiant·e·s de classe populaire et de la classe favorisée. Cependant, la construction de soi indépendante, plus courante parmi les étudiant·e·s de la classe favorisée, était positivement associée à leur sentiment d'appartenance, ce qui prédisait de meilleurs comportements d'apprentissage.

Dans l'ensemble, l'apprentissage à distance a placé les étudiant·e·s de classe populaire dans une situation de désavantage significatif en termes d'accès numérique, de ressources et de décalage culturel, ce qui a eu un impact profond sur leurs comportements d'apprentissage et leurs expériences psychologiques. Les résultats soulignent l'importance de s'attaquer à la fracture numérique et au décalage culturel afin d'assurer un accès égal et des opportunités pour tous les étudiant·e·s.

En bref, grâce à l'utilisation d'études longitudinales, de manipulations expérimentales et de recherches corrélationnelles, cette thèse met en lumière le rôle du décalage culturel, de la construction de soi et de l'acculturation dans la perpétuation des écarts de réussite entre les classes sociales tout au long des expériences universitaires des étudiant·e·s. Les résultats suggèrent que l'exposition prolongée à l'environnement universitaire ne se traduit pas par une acculturation de la construction de soi, et les différences initiales entre les classes sociales persistent. Cependant, la thèse montre également que les étudiant·e·s performant·e·s de classe populaire peuvent s'acculturer de manière flexible, ce qui leur permet de réduire le décalage culturel et d'expliquer leur succès. L'apprentissage à distance induit par la pandémie de COVID-19 exacerbe la fracture numérique et le décalage culturel vécus par les étudiant·e·s de classe populaire, avec des impacts profonds sur leurs comportements d'apprentissage et leurs expériences psychologiques.

5. Discussion

5.1 Contributions Théoriques

Cette thèse confirme l'existence d'un décalage culturel sur les étudiant·e·s de classe populaire dans d'autres contextes que celui des universités américaines prestigieuses, montrant que l'expérience initiale des étudiant·e·s de classe populaire façonne leurs expériences et résultats académiques tout au long de leur parcours universitaire (Phillips, Stephens, et al., 2020). Dans toutes les études, les étudiant·e·s de classe populaire ont adhéré à une construction de soi plus interdépendante, ce qui soutient la théorie du décalage culturel (Stephens, Fryberg, et al., 2012).

La thèse confirme également les effets négatifs du décalage culturel sur la réussite académique, l'expérience subjective de la classe sociale, les expériences psychologiques et les comportements d'apprentissage (par exemple, Chang et al., 2020 ; Phillips, Stephens, et al., 2020 ; Stephens, Fryberg, et al., 2012 ; Vasquez-Salgado et al., 2015, 2021). Elle souligne l'importance pour les étudiant·e·s de classe populaire de concilier leur classe sociale d'origine avec la nouvelle classe sociale à laquelle i·elles sont exposé·e·s, comme démontré par l'acculturation flexible des étudiant·e·s performant·e·s de classe populaire, qui contribue à leur réussite universitaire (Berry, 1997 ; Phillips, Martin, et al., 2020 ; Sam & Berry, 2010).

La thèse enrichit les recherches précédentes en intégrant des mesures nuancées de la construction de soi, montrant que les étudiant·e·s de classe populaire adhèrent à une forme d'autonomie différente, ce qui peut affecter leur acculturation à l'université. Elle apporte aussi de nouvelles perspectives sur le rôle du sentiment d'appartenance, mettant en lumière l'association entre la construction de soi indépendante et un fort sentiment d'appartenance facilitant les comportements d'apprentissage.

Les effets néfastes du décalage culturel persistent durant les crises, comme la pandémie de COVID-19, soulignant la nécessité de s'attaquer aux obstacles entravant l'acculturation

des étudiant·e·s. La thèse met l'accent sur l'expérience subjective de la classe sociale parmi les étudiant·e·s de classe populaire et sur la nécessité d'interventions ciblées. Enfin, elle examine le décalage culturel et les expériences d'acculturation parmi les étudiant·e·s de classe populaire dans divers contextes européens, contribuant à une meilleure compréhension de l'impact du décalage culturel sur leurs expériences d'acculturation.

5.2 Implications pour les Politiques et les Pratiques

Les conclusions de cette thèse ont des implications majeures pour les politiques et pratiques de l'enseignement supérieur, notamment en créant un environnement plus inclusif et favorable pour les étudiant·e·s de classe populaire. Il est essentiel que les universités reconnaissent et prennent en compte les normes et valeurs culturelles qu'elles véhiculent et comprennent comment elles peuvent diverger des contextes de leurs étudiant·e·s. Ainsi, elles pourront instaurer des programmes et politiques adaptés qui influencent positivement l'engagement, la motivation et les performances académiques des étudiant·e·s de classe populaire.

Plusieurs interventions visant à réduire les disparités de classe sociale dans l'enseignement supérieur ont été développées (par exemple, Stephens et al., 2015), telles que la promotion de l'adéquation et l'émancipation. Ces interventions cherchent à relier l'éducation à l'identité des étudiant·e·s et à les encourager à se sentir valorisé·e·s, reconnu·e·s et inclus·e·s dans la communauté. Les interventions d'affirmation de soi, qui impliquent une réflexion sur les valeurs personnelles, ont amélioré les performances académiques des étudiant·e·s issu·e·s de milieux populaires (Harackiewicz et al., 2014, 2016). Les interventions d'éducation différenciée renforcent l'émancipation en aidant ces étudiant·e·s à comprendre comment leurs origines influencent leurs expériences universitaires et l'utilisation des ressources disponibles (Hernandez et al., 2021 ; Stephens, Hamedani, et al., 2014 ; Stephens et al., 2015). Toutefois, la pandémie de COVID-19 ayant provoqué un basculement vers l'apprentissage en ligne, des études supplémentaires sont nécessaires pour examiner comment adapter et optimiser ces interventions pour soutenir les étudiant·e·s de classe populaire.

Les recherches futures devraient également étudier les effets du décalage culturel et de l'acculturation des étudiant·e·s de classe populaire dans un éventail plus large de pays et au sein d'un même pays, en prenant en compte les diverses cultures des différentes universités. Des politiques et interventions adaptées aux besoins spécifiques de chaque groupe devraient être élaborées pour mieux soutenir les étudiant·e·s de divers horizons.

Pour approfondir la compréhension de l'acculturation et du décalage culturel, les recherches futures doivent intégrer un large éventail de mesures de soi, y compris des mesures multidimensionnelles, comportementales et implicites. De plus, en raison de la complexité de la classe sociale, il est important d'aller au-delà de l'utilisation du niveau d'éducation des parents comme unique indicateur de la classe sociale. Les chercheur·euse·s devraient envisager d'inclure l'occupation des parents comme indicateur complémentaire, en cohérence avec l'expérience subjective de la classe sociale des étudiant·e·s. Une approche multifacette permettra une compréhension plus complète de l'impact de la classe sociale sur les résultats éducatifs.

5.3 Conclusion

En conclusion, cette thèse, en explorant les expériences et défis rencontrés par les étudiant·e·s de classe populaire dans l'enseignement supérieur, offre un éclairage nouveau sur les stratégies et ressources susceptibles de les aider à surmonter les obstacles et à réussir académiquement. Néanmoins, il est crucial de reconnaître que la responsabilité de réduire les écarts de réussite liés à la classe sociale repose sur les universités elles-mêmes, et que la mise en place d'un environnement plus inclusif et solidaire est essentielle pour promouvoir la justice sociale, l'égalité économique et le bien-être général de la société. En agissant de la sorte, nous pourrions assurer que davantage d'étudiant·e·s ont la possibilité de réaliser leurs rêves et d'atteindre une authentique mobilité sociale ascendante.

BIBLIOGRAPHY

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychology, 19*(6), 586–592. <https://doi.org/10.1037/0278-6133.19.6.586>
- Aelenei, C., Darnon, C., & Martinot, D. (2017). Boys, girls, and the school cultural environment: Teachers' judgment and students' values. *The Journal of Social Psychology, 157*(5), 556–570. <https://doi.org/10.1080/00224545.2016.1243514>
- Agasisti, T., & Longobardi, S. (2014). Educational institutions, resources, and students' resiliency: An empirical study about OECD countries. *Economics Bulletin, 34*(2), 1055–1067.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261–271. <https://doi.org/10.1037/0022-0663.84.3.261>
- Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: Evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology, 91*(4), 652–661. <https://doi.org/10.1037/0022-3514.91.4.652>
- Antonoplis, S. (2022). Studying socioeconomic status: Conceptual problems and an alternative path forward. *Perspectives on Psychological Science, 18*(2), 275–292. <https://doi.org/10.1177/17456916221093615>
- APA Task Force on Socioeconomic Status. (2007). *Report of the APA Task Force on socioeconomic status*. American Psychological Association. <https://doi.org/10.1037/e582962010-001>
- Arend, M. G., & Schäfer, T. (2019). Statistical power in two-level models: A tutorial based on Monte Carlo simulation. *Psychological Methods, 24*(1), 1–19. <https://doi.org/10.1037/met0000195>
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*(4), 596–612. <https://doi.org/10.1037/0022-3514.63.4.596>
- Atherton, M. C. (2014). Academic preparedness of first-generation college students: Different perspectives. *Journal of College Student Development, 55*(8), 824–829. <https://doi.org/10.1353/csd.2014.0081>

- Autin, F., Batruch, A., & Butera, F. (2015). Social justice in education: How the function of selection in educational institutions predicts support for (non)egalitarian assessment practices. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00707>
- Autin, K. L., Douglass, R. P., Duffy, R. D., England, J. W., & Allan, B. A. (2017). Subjective social status, work volition, and career adaptability: A longitudinal study. *Journal of Vocational Behavior*, 99, 1–10. <https://doi.org/10.1016/j.jvb.2016.11.007>
- Baayen, H., Bates, D., Kliegl, R., & Vasishth, S. (2015). *RePsychLing: Data sets from psychology and linguistics experiments* (R package version 0.0.4).
- Bailey, M. J., & Dynarski, S. M. (2011). Inequality in postsecondary education. In G. J. Duncan & R. J. Murnane (Eds.), *Whither Opportunity?* (pp. 117–132). Russell Sage Foundation; JSTOR. <http://www.jstor.org/stable/10.7758/9781610447515.11>
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, 67(3), 1206–1222. <https://doi.org/10.2307/1131888>
- Barone, C., & Assirelli, G. (2020). Gender segregation in higher education: An empirical test of seven explanations. *Higher Education*, 79(1), 55–78. <https://doi.org/10.1007/s10734-019-00396-2>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1). <https://doi.org/10.18637/jss.v067.i01>
- Bates, D., Maechler, M., & Bolker, B. (2012). *lme4: Linear mixed-effects models using Eigen and Eigen* (R Package Version 0.999999-0). <http://cran.r-project.org/web/packages/lme4/index.html>
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society. Series B (Methodological)*, 57(1), 289–300. <https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
- Bernstein, B. B. (1974). *Class, codes and control (vol. 1). Theoretical studies towards a sociology of language* (2nd ed). Routledge and Kegan Paul.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology*, 46(1), 5–34. <https://doi.org/10.1111/j.1464-0597.1997.tb01087.x>

- Bethhäuser, B. A., Bach-Mortensen, A., & Engzell, P. (2022). *A systematic review and meta-analysis of the impact of the COVID-19 pandemic on learning*. SocArXiv. <https://doi.org/10.31235/osf.io/g2wuy>
- Bethhäuser, B. A., Bach-Mortensen, A. M., & Engzell, P. (2023). A systematic review and meta-analysis of the evidence on learning during the COVID-19 pandemic. *Nature Human Behaviour*, 1–11. <https://doi.org/10.1038/s41562-022-01506-4>
- Birnbaum, H. J., Dittmann, A. G., Stephens, N. M., Reinhart, E. C., Carey, R. M., & Markus, H. R. (2023). Personal harm from the Covid-19 pandemic predicts advocacy for equality. *Journal of Experimental Social Psychology*, 104, 104400. <https://doi.org/10.1016/j.jesp.2022.104400>
- Bourdieu, P. (1979). *La distinction : Critique sociale du jugement [Distinction: A social critique of the judgement of taste]*. Éditions de Minuit.
- Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society, and culture* (2nd ed). Sage Publications, Inc.
- Bourdieu, P., & Wacquant, L. J. D. (1992). *An invitation to reflexive sociology*. University of Chicago Press.
- Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, 25(1), 49–59. [https://doi.org/10.1016/0005-7916\(94\)90063-9](https://doi.org/10.1016/0005-7916(94)90063-9)
- Brannon, T. N., Higginbotham, G. D., & Henderson, K. (2017). Class advantages and disadvantages are not so black and white: Intersectionality impacts rank and selves. *Current Opinion in Psychology*, 18, 117–122. <https://doi.org/10.1016/j.copsyc.2017.08.029>
- Brannon, T. N., Markus, H. R., & Taylor, V. J. (2015). “Two souls, two thoughts,” two self-schemas: Double consciousness can have positive academic consequences for African Americans. *Journal of Personality and Social Psychology*, 108(4), 586–609. <https://doi.org/10.1037/a0038992>
- Brewer, M. B., & Gardner, W. (1996). Who is this “we”? Levels of collective identity and self representations. *Journal of Personality and Social Psychology*, 71(1), 83–93. <https://doi.org/10.1037/0022-3514.71.1.83>

- Brookhart, S. M. (1997). A theoretical framework for the role of classroom assessment in motivating student effort and achievement. *Applied Measurement in Education*, 10, 161–180. https://doi.org/10.1207/s15324818ame1002_4
- Bruno, A., Toczec-Capelle, M.-C., & Darnon, C. (2020). Facing the risk of upward mobility: Performance-avoidance goals and social class among high-school students. *The Journal of Social Psychology*, 160(4), 496–508. <https://doi.org/10.1080/00224545.2019.1681353>
- Bukodi, E., Paskov, M., & Nolan, B. (2019). Intergenerational class mobility in Europe: A new account. *Social Forces*, 98(3), 941–972. <https://doi.org/10.1093/sf/soz026>
- Buuren, S. van, & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, 45(3). <https://doi.org/10.18637/jss.v045.i03>
- Calarco, J. M. (2011). “I need help!” Social class and children’s help-seeking in elementary school. *American Sociological Review*, 76(6), 862–882. <https://doi.org/10.1177/0003122411427177>
- Campus France. (2022). *Low cost of studies in France*. Campus France. <https://www.campusfrance.org/en/tuition-fees-France>
- Cassady, J. C. (2001). Self-reported GPA and SAT: A methodological note. *Practical Assessment, Research & Evaluation*, 7(12), 1–6. <https://doi.org/10.7275/5hym-y754>
- Chang, J., Wang, S., Mancini, C., McGrath-Mahrer, B., & Orama de Jesus, S. (2020). The complexity of cultural mismatch in higher education: Norms affecting first-generation college students’ coping and help-seeking behaviors. *Cultural Diversity and Ethnic Minority Psychology*, 26(3), 280–294. <https://doi.org/10.1037/cdp0000311>
- Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging: How stereotypical cues impact gender participation in computer science. *Journal of Personality and Social Psychology*, 97(6), 1045–1060. <https://doi.org/10.1037/a0016239>
- Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics*, 129(4), 1553–1623. <https://doi.org/10.1093/qje/qju022>
- Christopher, M. S., Norris, P., D’Souza, J. B., & Tiernan, K. A. (2012). A test of the multidimensionality of the self-construal scale in Thailand and the United States. *Journal of Cross-Cultural Psychology*, 43(5), 758–773. <https://doi.org/10.1177/0022022111406119>

- Cole, E. R. (2009). Intersectionality and research in psychology. *American Psychologist*, 64(3), 170–180. <https://doi.org/10.1037/a0014564>
- Collins, R. (2019). *The credential society: An historical sociology of education and stratification*. Columbia University Press.
- Covarrubias, R., & Fryberg, S. A. (2015). Movin’ on up (to college): First-generation college students’ experiences with family achievement guilt. *Cultural Diversity and Ethnic Minority Psychology*, 21(3), 420–429. <https://doi.org/10.1037/a0037844>
- Covarrubias, R., Valle, I., Laiduc, G., & Azmitia, M. (2019). “You never become fully independent”: Family roles and independence in first-generation college students. *Journal of Adolescent Research*, 34(4), 381–410. <https://doi.org/10.1177/0743558418788402>
- Cramer, A. O. J., van Ravenzwaaij, D., Matzke, D., Steingroever, H., Wetzels, R., Grasman, R. P. P. P., Waldorp, L. J., & Wagenmakers, E.-J. (2016). Hidden multiplicity in exploratory multiway ANOVA: Prevalence and remedies. *Psychonomic Bulletin & Review*, 23(2), 640–647. <https://doi.org/10.3758/s13423-015-0913-5>
- Croizet, J.-C., & Claire, T. (1998). Extending the concept of stereotype threat to social class: The intellectual underperformance of students from low socioeconomic backgrounds. *Personality and Social Psychology Bulletin*, 24(6), 588–594. <https://doi.org/10.1177/0146167298246003>
- Croizet, J.-C., Goudeau, S., Marot, M., & Millet, M. (2017). How do educational contexts contribute to the social class achievement gap: Documenting symbolic violence from a social psychological point of view. *Current Opinion in Psychology*, 18, 105–110. <https://doi.org/10.1016/j.copsyc.2017.08.025>
- Croizet, J.-C., & Millet, M. (2012). Social class and test performance: From stereotype threat to symbolic violence and vice versa. In *Stereotype threat: Theory, process, and application* (pp. 188–201). Oxford University Press.
- Cross, S. E., Hardin, E. E., & Gercek-Swing, B. (2011). The what, how, why, and where of self-construal. *Personality and Social Psychology Review*, 15(2), 142–179. <https://doi.org/10.1177/1088868310373752>
- Crouzevialle, M., & Darnon, C. (2019). On the academic disadvantage of low social class individuals: Pursuing performance goals fosters the emergence of the achievement gap. *Journal of Educational Psychology*, 111(7), 1261–1272. <https://doi.org/10.1037/edu0000349>

- Crozier, G., & Reay, D. (2011). Capital accumulation: Working-class students learning how to learn in HE. *Teaching in Higher Education*, 16(2), 145–155. <https://doi.org/10.1080/13562517.2010.515021>
- Dabla-Norris, E., Kochhar, K., Ricka, F., & Tsounta, E. (2015). *Causes and consequences of income inequality: A global perspective*. International Monetary Fund.
- Davidai, S. (2018). Why do Americans believe in economic mobility? Economic inequality, external attributions of wealth and poverty, and the belief in economic mobility. *Journal of Experimental Social Psychology*, 79, 138–148. <https://doi.org/10.1016/j.jesp.2018.07.012>
- Delacre, M., Lakens, D., & Leys, C. (2017). Why psychologists should by default use Welch’s t-test instead of Student’s t-test. *International Review of Social Psychology*, 30(1), 92. <https://doi.org/10.5334/irsp.82>
- Destin, M., & Debrosse, R. (2017). Upward social mobility and identity. *Current Opinion in Psychology*, 18, 99–104. <https://doi.org/10.1016/j.copsyc.2017.08.006>
- Destin, M., Rheinschmidt-Same, M., & Richeson, J. A. (2017). Status-based identity: A conceptual approach integrating the social psychological study of socioeconomic status and identity. *Perspectives on Psychological Science*, 12(2), 270–289. <https://doi.org/10.1177/1745691616664424>
- Diemer, M. A., Mistry, R. S., Wadsworth, M. E., López, I., & Reimers, F. (2013). Best practices in conceptualizing and measuring social class in psychological research: Social class measurement. *Analyses of Social Issues and Public Policy*, 13(1), 77–113. <https://doi.org/10.1111/asap.12001>
- Drabowicz, T. (2017). Social theory of internet use: Corroboration or rejection among the digital natives? Correspondence analysis of adolescents in two societies. *Computers & Education*, 105, 57–67. <https://doi.org/10.1016/j.compedu.2016.10.004>
- Edwards, J. R. (2008). Person–environment fit in organizations: An assessment of theoretical progress. *The Academy of Management Annals*, 2, 167–230. <https://doi.org/10.1080/19416520802211503>
- Edwards, J. R., Cable, D. M., Williamson, I. O., Lambert, L. S., & Shipp, A. J. (2006). The phenomenology of fit: Linking the person and environment to the subjective experience of person-environment fit. *Journal of Applied Psychology*, 91, 802–827. <https://doi.org/10.1037/0021-9010.91.4.802>

- Enders, C. K. (2022). *Applied missing data analysis* (2nd ed.). The Guilford Press.
- Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, 118(17). <https://doi.org/10.1073/pnas.2022376118>
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82(6), 878–902. <https://doi.org/10.1037/0022-3514.82.6.878>
- Frith, U. (2020). Fast lane to slow science. *Trends in Cognitive Sciences*, 24(1), 1–2. <https://doi.org/10.1016/j.tics.2019.10.007>
- Fryberg, S. A., & Markus, H. R. (2007). Cultural models of education in American Indian, Asian American and European American contexts. *Social Psychology of Education*, 10(2), 213–246. <https://doi.org/10.1007/s11218-007-9017-z>
- Fryberg, S. A., Troop-Gordon, W., D’Arrisio, A., Flores, H., Ponizovskiy, V., Ranney, J. D., Mandour, T., Tootoosis, C., Robinson, S., Russo, N., & Burack, J. A. (2013). Cultural mismatch and the education of Aboriginal youths: The interplay of cultural identities and teacher ratings. *Developmental Psychology*, 49(1), 72–79. <https://doi.org/10.1037/a0029056>
- Gallucci, M. (2019). *GAMLj: General analyses for linear models* (2.2.6) [Jamovi module]. <https://gamlj.github.io/>
- Gana, K., & Broc, G. (2019). *Structural equation modeling with lavaan*. ISTE Ltd; John Wiley & Sons, Inc.
- Gardner, W. L., Gabriel, S., & Lee, A. Y. (1999). “I” value freedom, but “we” value relationships: Self-construal priming mirrors cultural differences in judgment. *Psychological Science*, 10(4), 321–326. <https://doi.org/10.1111/1467-9280.00162>
- González-Betancor, S. M., López-Puig, A. J., & Cardenal, M. E. (2021). Digital inequality at home. The school as compensatory agent. *Computers & Education*, 168, 104195. <https://doi.org/10.1016/j.compedu.2021.104195>
- Götz, F. M., Gosling, S. D., & Rentfrow, P. J. (2022). Small effects: The indispensable foundation for a cumulative psychological science. *Perspectives on Psychological Science*, 17(1), 205–215. <https://doi.org/10.1177/1745691620984483>

- Goudeau, S., Autin, F., & Croizet, J.-C. (2017). Étudier, mesurer et manipuler la classe sociale en psychologie sociale : Approches économiques, symboliques et culturelles [Studying, measuring and manipulating social class in social psychology: Economic, symbolic and cultural approaches]. *International Review of Social Psychology*, 30(1), 1. <https://doi.org/10.5334/irsp.52>
- Goudeau, S., & Croizet, J.-C. (2017). Hidden advantages and disadvantages of social class: How classroom settings reproduce social inequality by staging unfair comparison. *Psychological Science*, 28(2), 162–170. <https://doi.org/10.1177/0956797616676600>
- Goudeau, S., Sanrey, C., Stanczak, A., Manstead, A., & Darnon, C. (2021). Why lockdown and distance learning during the COVID-19 pandemic are likely to increase the social class achievement gap. *Nature Human Behaviour*, 5, 1273–1281. <https://doi.org/10.1038/s41562-021-01212-7>
- Gray, B., & Kish-Gephart, J. J. (2013). Encountering social class differences at work: How “class work” perpetuates inequality. *The Academy of Management Review*, 38, 670–699. <https://doi.org/10.5465/amr.2012.0143>
- Greenwald, A. G., Brendl, M., Cai, H., Cvencek, D., Dovidio, J. F., Frieze, M., Hahn, A., Hehman, E., Hofmann, W., Hughes, S., Hussey, I., Jordan, C., Kirby, T. A., Lai, C. K., Lang, J. W. B., Lindgren, K. P., Maison, D., Ostafin, B. D., Rae, J. R., ... Wiers, R. W. (2022). Best research practices for using the implicit association test. *Behavior Research Methods*, 54(3), 1161–1180. <https://doi.org/10.3758/s13428-021-01624-3>
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, 74(6), 1464–1480. <https://doi.org/10.1037//0022-3514.74.6.1464>
- Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). “Understanding and using the implicit association test: I. An improved scoring algorithm”: Correction to Greenwald et al. (2003). *Journal of Personality and Social Psychology*, 85(3), 481–481. <https://doi.org/10.1037/h0087889>
- Grujters, S. L. K. (2022). Making inferential leaps: Manipulation checks and the road towards strong inference. *Journal of Experimental Social Psychology*, 98, 104251. <https://doi.org/10.1016/j.jesp.2021.104251>

- Guo, X., Schwartz, S. J., & McCabe, B. E. (2008). Aging, gender, and self: Dimensionality and measurement invariance analysis on self-construal. *Self and Identity*, 7(1), 1–24. <https://doi.org/10.1080/15298860600926873>
- Gutierrez, K. D., & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32(5), 19–25. <https://doi.org/10.3102/0013189X032005019>
- Hand in Hand. (2020). *Student questionnaire for Hand in Hand—Pretest*. https://2017-20.handinhand.si/wp-content/uploads/2020/02/Q_Students_Pretest_EN.pdf
- Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Giffen, C. J., Blair, S. S., Rouse, D. I., & Hyde, J. S. (2014). Closing the social class achievement gap for first-generation students in undergraduate biology. *Journal of Educational Psychology*, 106(2), 375–389. <https://doi.org/10.1037/a0034679>
- Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Priniski, S. J., & Hyde, J. S. (2016). Closing achievement gaps with a utility-value intervention: Disentangling race and social class. *Journal of Personality and Social Psychology*, 111(5), 745–765. <https://doi.org/10.1037/pspp0000075>
- Harb, C., & Smith, P. B. (2008). Self-construals across cultures: Beyond independence - interdependence. *Journal of Cross-Cultural Psychology*, 39(2), 178–197. <https://doi.org/10.1177/0022022107313861>
- Hardin, E. E. (2006). Convergent evidence for the multidimensionality of self-construal. *Journal of Cross-Cultural Psychology*, 37(5), 516–521. <https://doi.org/10.1177/0022022106290475>
- Harris, C., Straker, L., & Pollock, C. (2017). A socioeconomic related “digital divide” exists in how, not if, young people use computers. *PLoS ONE*, 12(3), e0175011. <https://doi.org/10.1371/journal.pone.0175011>
- Haslam, C., Haslam, S. A., Jetten, J., Cruwys, T., & Steffens, N. K. (2021). Life change, social identity, and health. *Annual Review of Psychology*, 72(1), 635–661. <https://doi.org/10.1146/annurev-psych-060120-111721>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2–3), 61–83. <https://doi.org/10.1017/S0140525X0999152X>

- Hernandez, I. A., Silverman, D. M., & Destin, M. (2021). From deficit to benefit: Highlighting lower-SES students' background-specific strengths reinforces their academic persistence. *Journal of Experimental Social Psychology*, 92, 104080. <https://doi.org/10.1016/j.jesp.2020.104080>
- Herrmann, S. D., & Varnum, M. E. W. (2018a). Integrated social class identities improve academic performance, well-being, and workplace satisfaction. *Journal of Cross-Cultural Psychology*, 49(4), 635–663. <https://doi.org/10.1177/0022022118761107>
- Herrmann, S. D., & Varnum, M. E. W. (2018b). Utilizing social class bicultural identity integration to improve outcomes for first-generation college students. *Translational Issues in Psychological Science*, 4(2), 165–175. <https://doi.org/10.1037/tps0000159>
- Herrmann, S. D., Varnum, M. E. W., Straka, B. C., & Gaither, S. E. (2021). Social Class identity integration and success for first-generation college students: Antecedents, mechanisms, and generalizability. *Self and Identity*, 1–35. <https://doi.org/10.1080/15298868.2021.1924251>
- International Labour Organization. (2012). *International standard classification of occupations: ISCO-08*. ILO.
- Inzlicht, M., & Schmader, T. (Eds.). (2012). *Stereotype threat: Theory, process, and application*. Oxford University Press.
- Ishitani, T. T. (2003). A longitudinal approach to assessing attrition behavior among first-generation students: Time-varying effects of pre-college characteristics. *Research in Higher Education*, 44(4), 433–449. <https://www.jstor.org/stable/40197314>
- Jack, A. A. (2016). (No) harm in asking: Class, acquired cultural capital, and academic engagement at an elite university. *Sociology of Education*, 89, 1–19. <https://doi.org/10.1177/0038040715614913>
- Jerrim, J., Chmielewski, A. K., & Parker, P. (2015). Socioeconomic inequality in access to high-status colleges: A cross-country comparison. *Research in Social Stratification and Mobility*, 42, 20–32. <https://doi.org/10.1016/j.rssm.2015.06.003>
- Johnson, S. E., Richeson, J. A., & Finkel, E. J. (2011). Middle class and marginal? Socioeconomic status, stigma, and self-regulation at an elite university. *Journal of Personality and Social Psychology*, 100(5), 838–852. <https://doi.org/10.1037/a0021956>
- Jones, E. B., & Jackson, J. D. (1990). College grades and labor market rewards. *The Journal of Human Resources*, 25(2), 253. <https://doi.org/10.2307/145756>

- Jost, J. T. (2019). The IAT Is dead, long live the IAT: Context-sensitive measures of implicit attitudes are indispensable to social and political psychology. *Current Directions in Psychological Science*, 28(1), 10–19. <https://doi.org/10.1177/0963721418797309>
- Jury, M., Aelenei, C., Chen, C., Darnon, C., & Elliot, A. J. (2019). Examining the role of perceived prestige in the link between students' subjective socioeconomic status and sense of belonging. *Group Processes & Intergroup Relations*, 22(3), 356–370. <https://doi.org/10.1177/1368430219827361>
- Jury, M., Smeding, A., & Darnon, C. (2015). First-generation students' underperformance at university: The impact of the function of selection. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00710>
- Jury, M., Smeding, A., Stephens, N. M., Nelson, J. E., Aelenei, C., & Darnon, C. (2017). The experience of low-SES students in higher education: Psychological barriers to success and interventions to reduce social-class inequality. *Journal of Social Issues*, 73(1), 23–41. <https://doi.org/10.1111/josi.12202>
- Karpinski, A., & Steinman, R. B. (2006). The single category implicit association test as a measure of implicit social cognition. *Journal of Personality and Social Psychology*, 91, 16–32. <https://doi.org/10.1037/0022-3514.91.1.16>
- Kim, H. S. (2002). We talk, therefore we think? A cultural analysis of the effect of talking on thinking. *Journal of Personality and Social Psychology*, 83(4), 828–842. <https://doi.org/10.1037/0022-3514.83.4.828>
- Kitayama, S., Park, H., Sevincer, A. T., Karasawa, M., & Uskul, A. K. (2009). A cultural task analysis of implicit independence: Comparing North America, Western Europe, and East Asia. *Journal of Personality and Social Psychology*, 97(2), 236–255. <https://doi.org/10.1037/a0015999>
- Kitayama, S., & Uskul, A. K. (2011). Culture, mind, and the brain: Current evidence and future directions. *Annual Review of Psychology*, 62(1), 419–449. <https://doi.org/10.1146/annurev-psych-120709-145357>
- Kraus, M. W., Côté, S., & Keltner, D. (2010). Social class, contextualism, and empathic accuracy. *Psychological Science*, 21(11), 1716–1723. <https://doi.org/10.1177/0956797610387613>

- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, 97(6), 992–1004.
<https://doi.org/10.1037/a0016357>
- Kraus, M. W., & Stephens, N. M. (2012). A road map for an emerging psychology of social class: Psychology of social class. *Social and Personality Psychology Compass*, 6(9), 642–656.
<https://doi.org/10.1111/j.1751-9004.2012.00453.x>
- Kraus, M. W., & Tan, J. J. X. (2015). Americans overestimate social class mobility. *Journal of Experimental Social Psychology*, 58, 101–111.
<https://doi.org/10.1016/j.jesp.2015.01.005>
- Kraus, M. W., Tan, J. J. X., & Tannenbaum, M. B. (2013). The social ladder: A rank-based perspective on social class. *Psychological Inquiry*, 24(2), 81–96.
<https://doi.org/10.1080/1047840X.2013.778803>
- Kraus, M. W., Torrez, B., Park, J. W., & Ghayebi, F. (2019). Evidence for the reproduction of social class in brief speech. *Proceedings of the National Academy of Sciences*, 116(46), 22998–23003. <https://doi.org/10.1073/pnas.1900500116>
- Kuppens, T., Spears, R., Manstead, A. S. R., Spruyt, B., & Easterbrook, M. J. (2018). Educationism and the irony of meritocracy: Negative attitudes of higher educated people towards the less educated. *Journal of Experimental Social Psychology*, 76, 429–447.
<https://doi.org/10.1016/j.jesp.2017.11.001>
- Kusserow, A. (1999). De-homogenizing American individualism: Socializing hard and soft individualism in Manhattan and Queens. *Ethos*, 27(2), 210–234.
<https://www.jstor.org/stable/640657>
- Kusserow, A. (2004). *American individualisms: Child rearing and social class in three neighborhoods*. Palgrave Macmillan. <http://public.eblib.com/choice/publicfullrecord.aspx?p=307591>
- Kusserow, A. (2012). When hard and soft clash: Class-based individualisms in Manhattan and Queens. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 195–215). Russell Sage Foundation.
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest package: Tests in linear mixed effects models. *Journal of Statistical Software*, 82(13).
<https://doi.org/10.18637/jss.v082.i13>
- Lahire, B. (Ed.). (2019). *Enfances de classe : De l'inégalité parmi les enfants*. Éditions du Seuil.

- Lamont, M. (2000). *The dignity of working men: Morality and the boundaries of race, class, and immigration*. Russell Sage Foundation. <https://doi.org/10.2307/j.ctvk12rpt>
- Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps and glissandos in recent theoretical developments. *Sociological Theory*, 6(2), 153. <https://doi.org/10.2307/202113>
- Lareau, A. (2003). *Unequal childhoods: Class, race, and family life*. University of California Press.
- Lareau, A. (2015). Cultural knowledge and social inequality. *American Sociological Review*, 80(1), 1–27. <https://doi.org/10.1177/0003122414565814>
- Lareau, A., & Calarco, J. M. (2012). Class, cultural capital, and institutions: The case of families and schools. In *Facing social class: How societal rank influences interaction* (pp. 61–86). Russell Sage Foundation.
- Lareau, A., & Weininger, E. B. (2003). Cultural capital in educational research: A critical assessment. *Theory and Society*, 32(5/6), 567–606. <https://doi.org/10.1023/B:RYSO.0000004951.04408.b0>
- Laurin, K., Fitzsimons, G. M., & Kay, A. C. (2011). Social disadvantage and the self-regulatory function of justice beliefs. *Journal of Personality and Social Psychology*, 100(1), 149–171. <https://doi.org/10.1037/a0021343>
- Leslie, S.-J., Cimpian, A., Meyer, M., & Freeland, E. (2015). Expectations of brilliance underlie gender distributions across academic disciplines. *Science*, 347(6219), 262–265. <https://doi.org/10.1126/science.1261375>
- Levine, T. R., Bresnahan, M. J., Park, H. S., Lapinski, M. K., Wittenbaum, G. M., Shearman, S. M., Lee, S. Y., Chung, D., & Ohashi, R. (2003). Self-construal scales lack validity. *Human Communication Research*, 29(2), 210–252. <https://doi.org/10.1111/j.1468-2958.2003.tb00837.x>
- Maechler, M., Rousseeuw, P., Croux, C., Todorov, V., Ruckstuhl, A., Salibián-Barrera, M., Verbeke, T., Koller, M., Conceicao, E. L., & Anna di Palma, M. (2021). *robustbase: Basic robust statistics* (R package version 0.93-8). <http://robustbase.r-forge.r-project.org/>
- Markus, H. R. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology*, 35(2), 63–78. <https://doi.org/10.1037/0022-3514.35.2.63>

- Markus, H. R. (2008). Pride, prejudice, and ambivalence: Toward a unified theory of race and ethnicity. *American Psychologist*, 63(8), 651–670. <https://doi.org/10.1037/0003-066X.63.8.651>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224–253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Markus, H. R., & Kitayama, S. (2003). Culture, self, and the reality of the social. *Psychological Inquiry*, 14(3–4), 277–283. <https://doi.org/10.1080/1047840X.2003.9682893>
- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5(4), 420–430. <https://doi.org/10.1177/1745691610375557>
- Markus, H. R., & Kunda, Z. (1986). Stability and malleability of the self-concept. *Journal of Personality and Social Psychology*, 51(4), 858–866. <https://doi.org/10.1037/0022-3514.51.4.858>
- Markus, H. R., & Nurius, P. (1986). Possible selves. *American Psychologist*, 41, 954–969. <https://doi.org/10.1037/0003-066X.41.9.954>
- Markus, H. R., Ryff, C. D., Curhan, K. B., & Palmersheim, K. A. (2004). In their own words: Well-being at midlife among high school-educated and college-educated adults. In O. G. Brim, C. D. Ryff, & R. C. Kessler (Eds.), *The John D. and Catherine T. MacArthur foundation series on mental health and development. Studies on successful midlife development. How healthy are we?: A national study of well-being at midlife* (pp. 273–319). The University of Chicago Press.
- Martin, S. R., & Côté, S. (2019). Social class transitioners: Their cultural abilities and organizational importance. *The Academy of Management Review*, 44, 618–642. <https://doi.org/10.5465/amr.2017.0065>
- Matschke, C., de Vreeze, J., & Cress, U. (2022). Social identities and the achievement gap: Incompatibility between social class background and student identity increases student disidentification, which decreases performance and leads to higher dropout rates. *British Journal of Social Psychology*, bjso.12563. <https://doi.org/10.1111/bjso.12563>
- Matsumoto, D. (1999). Culture and self: An empirical assessment of Markus and Kitayama's theory of independent and interdependent self-construals. *Asian Journal of Social Psychology*, 2(3), 289–310. <https://doi.org/10.1111/1467-839X.00042>

- McGarritty, L. A. (2014). Socioeconomic status as context for minority stress and health disparities among lesbian, gay, and bisexual individuals. *Psychology of Sexual Orientation and Gender Diversity*, 1(4), 383–397. <https://doi.org/10.1037/sgd0000067>
- Mena, J. A., & Stevenson, J. R. (2022). The promise of labor-based grading contracts for the teaching of psychology and neuroscience. *Teaching of Psychology*, 009862832211197. <https://doi.org/10.1177/00986283221119783>
- Midgley, C., Kaplan, A., Middleton, M., Maehr, M. L., Urdan, T., Anderman, L. H., Anderman, E., & Roeser, R. (2013). *Patterns of adaptive learning scales*. American Psychological Association. <https://doi.org/10.1037/t19870-000>
- Miller, P. J., Cho, G. E., & Bracey, J. R. (2005). Working-class children’s experience through the prism of personal storytelling. *Human Development*, 48(3), 115–135. <https://doi.org/10.1159/000085515>
- Miller, P. J., & Sperry, D. E. (2012). Déjà vu: The continuing misrecognition of low-income children’s verbal abilities. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 109–130). Russell Sage Foundation.
- Miller, P. J., & Sperry, L. L. (1987). The socialization of anger and aggression. *Merrill-Palmer Quarterly*, 33(1), 1–31.
- Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation (MESRI). (2021). *Covid-19: L’enseignement supérieur français mobilisé*. enseignementsup-recherche.gouv.fr. <https://www.enseignementsup-recherche.gouv.fr/fr/covid-19-l-enseignement-superieur-francais-mobilise-50240>
- Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation (MESRI). (2022). *L’état de l’enseignement supérieur, de la recherche et de l’innovation en France n°15*. <https://publication.enseignementsup-recherche.gouv.fr/eesr/15/FR/>
- Mishra, S. (2020). Social networks, social capital, social support and academic success in higher education: A systematic review with a special focus on ‘underrepresented’ students. *Educational Research Review*, 29, 100307. <https://doi.org/10.1016/j.edurev.2019.100307>
- Müller, F., Goudeau, S., Stephens, N. M., Aelenei, C., & Sanitioso, R. B. (in press). Social-class inequalities in distance learning during the COVID-19 pandemic: Digital divide, cultural mismatch, and psychological barriers. *International Review of Social Psychology*.

- Muthukrishna, M., Bell, A. V., Henrich, J., Curtin, C. M., Gedranovich, A., McInerney, J., & Thue, B. (2020). Beyond Western, Educated, Industrial, Rich, and Democratic (WEIRD) psychology: Measuring and mapping scales of cultural and psychological distance. *Psychological Science*, 31(6), 678–701. <https://doi.org/10.1177/0956797620916782>
- National Academies of Sciences, Engineering, and Medicine. (2022). *Measuring sex, gender identity, and sexual orientation*. National Academies Press. <https://doi.org/10.17226/26424>
- Nguyen, B. M. D., & Nguyen, M. H. (2020). Extending cultural mismatch theory: In consideration of race/ethnicity. *International Studies in Sociology of Education*, 1–26. <https://doi.org/10.1080/09620214.2020.1755881>
- Nieuwenhuis, R., Grotenhuis, M., te, & Pelzer, B. (2012). influence.ME: Tools for detecting influential data in mixed effects models. *The R Journal*, 4(2), 38. <https://doi.org/10.32614/RJ-2012-011>
- Nissen, J., Donatello, R., & Van Dusen, B. (2019). Missing data and bias in physics education research: A case for using multiple imputation. *Physical Review Physics Education Research*, 15(2), 020106. <https://doi.org/10.1103/PhysRevPhysEducRes.15.020106>
- Oakes, J. M., & Rossi, P. H. (2003). The measurement of SES in health research: Current practice and steps toward a new approach. *Social Science & Medicine*, 56(4), 769–784. [https://doi.org/10.1016/S0277-9536\(02\)00073-4](https://doi.org/10.1016/S0277-9536(02)00073-4)
- OECD. (2011). *Against the odds: Disadvantaged students who succeed in school*. OECD. <https://doi.org/10.1787/9789264090873-en>
- OECD. (2012). *Equity and quality in education: Supporting disadvantaged students and schools*. OECD. <https://doi.org/10.1787/9789264130852-en>
- OECD. (2018). *A broken social elevator? How to promote social mobility*. OECD. <https://doi.org/10.1787/9789264301085-en>
- OECD. (2022). *Education at a glance 2022: OECD indicators*. OECD. <https://doi.org/10.1787/3197152b-en>
- O’Shea, S. (2020). Crossing boundaries: Rethinking the ways that first-in-family students navigate ‘barriers’ to higher education. *British Journal of Sociology of Education*, 41(1), 95–110. <https://doi.org/10.1080/01425692.2019.1668746>

- Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *Review of Higher Education: Journal of the Association for the Study of Higher Education*, 30, 363–389. <https://doi.org/10.1353/rhe.2007.0028>
- Oyserman, D. (2008). Identity-based motivation and school success. In H. W. Marsh, R. G. Craven, & D. M. McInerney (Eds.), *Self-processes, learning, and enabling human potential: Dynamic new approaches* (pp. 269–288). Information Age Pub.
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128(1), 3–72. <https://doi.org/10.1037/0033-2909.128.1.3>
- Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. *The Counseling Psychologist*, 38, 1001–1043. <https://doi.org/10.1177/0011000010374775>
- Oyserman, D., Fryberg, S. A., & Yoder, N. (2007). Identity-based motivation and health. *Journal of Personality and Social Psychology*, 93(6), 1011–1027. <https://doi.org/10.1037/0022-3514.93.6.1011>
- Oyserman, D., & Lee, S. W. S. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin*, 134(2), 311–342. <https://doi.org/10.1037/0033-2909.134.2.311>
- Oyserman, D., & Markus, H. R. (1993). The sociocultural self. In J. M. Suls (Ed.), *The self in social perspective* (pp. 187–220). Lawrence Erlbaum Associates, Inc.
- Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education*, 75(3), 249–284. <https://doi.org/10.1353/jhe.2004.0016>
- Pasterny, L. (2016). *DO ASK, DO TELL: Capturing data on sexual orientation and gender identity globally* (K. Sanders, Ed.). Stonewall. https://www.stonewall.org.uk/sites/default/files/do_ask_do_tell_guide_2016.pdf
- Phillips, L. T., Martin, S. R., & Belmi, P. (2020). Social class transitions: Three guiding questions for moving the study of class to a dynamic perspective. *Social and Personality Psychology Compass*, 14(9). <https://doi.org/10.1111/spc3.12560>

- Phillips, L. T., Stephens, N. M., Townsend, S. S. M., & Goudeau, S. (2020). Access is not enough: Cultural mismatch persists to limit first-generation students' opportunities for achievement throughout college. *Journal of Personality and Social Psychology*, 119(5), 1112–1131. <https://doi.org/10.1037/pspi0000234>
- Phillips, M. (2011). Parenting, time use, and disparities in academic outcomes. In G. J. Duncan & R. J. Murnane (Eds.), *Whither opportunity? Rising inequality, schools, and children's life chances* (pp. 207–228). Russell Sage Foundation; Spencer Foundation.
- Revelle, W. (2022). *psych: Procedures for psychological, psychometric, and personality research* (2.2.9). <https://CRAN.R-project.org/package=psych>
- Ric, F., Alexopoulos, T., Muller, D., & Aubé, B. (2013). Emotional norms for 524 French personality trait words. *Behavior Research Methods*, 45(2), 414–421. <https://doi.org/10.3758/s13428-012-0276-z>
- Richard, F. D., Bond, C. F., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, 7(4), 331–363. <https://doi.org/10.1037/1089-2680.7.4.331>
- Ridgeway, C. L., & Fisk, S. R. (2012). Class rules, status dynamics, and “gateway” interactions. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 131–151). Russell Sage Foundation.
- Rienties, B., & Tempelaar, D. (2013). The role of cultural dimensions of international and Dutch students on academic and social integration and academic performance in the Netherlands. *International Journal of Intercultural Relations*, 37(2), 188–201. <https://doi.org/10.1016/j.ijintrel.2012.11.004>
- Rivera, L. A., & Tilcsik, A. (2016). Class advantage, commitment penalty: The gendered effect of social class signals in an elite labor market. *American Sociological Review*, 81(6), 1097–1131. <https://doi.org/10.1177/0003122416668154>
- Robinson, L., Schulz, J., Blank, G., Ragnedda, M., Ono, H., Hogan, B., Mesch, G. S., Cotten, S. R., Kretchmer, S. B., Hale, T. M., Drabowicz, T., Yan, P., Wellman, B., Harper, M.-G., Quan-Haase, A., Dunn, H. S., Casilli, A. A., Tubaro, P., Carvath, R., ... Khilnani, A. (2020). Digital inequalities 2.0: Legacy inequalities in the information age. *First Monday*, 25(7). <https://doi.org/10.5210/fm.v25i7.10842>

- Rodríguez-Hernández, C. F., Cascallar, E., & Kyndt, E. (2020). Socio-economic status and academic performance in higher education: A systematic review. *Educational Research Review*, 29, 100305. <https://doi.org/10.1016/j.edurev.2019.100305>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(1), Article 1. <https://doi.org/10.18637/jss.v048.i02>
- Rothermund, K., Teige-Mocigemba, S., Gast, A., & Wentura, D. (2009). Minimizing the influence of recoding in the implicit association test: The recoding-free implicit association test (IAT-RF). *The Quarterly Journal of Experimental Psychology*, 62, 84–98. <https://doi.org/10.1080/17470210701822975>
- Rubin, M., Denson, N., Kilpatrick, S., Matthews, K. E., Stehlik, T., & Zyngier, D. (2014). “I am working-class”: Subjective self-definition as a missing measure of social class and socioeconomic status in higher education research. *Educational Researcher*, 43(4), 196–200. <https://doi.org/10.3102/0013189X14528373>
- Rubin, M., & Wright, C. L. (2017). Time and money explain social class differences in students’ social integration at university. *Studies in Higher Education*, 42(2), 315–330. <https://doi.org/10.1080/03075079.2015.1045481>
- Rump, M., Esdar, W., & Wild, E. (2017). Individual differences in the effects of academic motivation on higher education students’ intention to drop out. *European Journal of Higher Education*, 7(4), 341–355. <https://doi.org/10.1080/21568235.2017.1357481>
- Rutkowski, L., & Svetina, D. (2014). Assessing the hypothesis of measurement invariance in the context of large-scale international surveys. *Educational and Psychological Measurement*, 74(1), 31–57. <https://doi.org/10.1177/0013164413498257>
- Sam, D. L., & Berry, J. W. (2010). Acculturation: When individuals and groups of different cultural backgrounds meet. *Perspectives on Psychological Science*, 5(4), 472–481. <https://doi.org/10.1177/1745691610373075>
- Schmader, T., & Sedikides, C. (2018). State authenticity as fit to environment: The implications of social identity for fit, authenticity, and self-segregation. *Personality and Social Psychology Review*, 22(3), 228–259. <https://doi.org/10.1177/1088868317734080>
- Selker, R., Love, J., Dropmann, D., & Moreno, V. (2022). *jmv: The “jamovi” analyses* (2.3.4). <https://CRAN.R-project.org/package=jmv>

- Shariff, A. F., Wiwad, D., & Aknin, L. B. (2016). Income mobility breeds tolerance for income inequality: Cross-national and experimental evidence. *Perspectives on Psychological Science*, 11(3), 373–380. <https://doi.org/10.1177/1745691616635596>
- Sharps, D. L., & Anderson, C. (2021). Social class background, disjoint agency, and hiring decisions. *Organizational Behavior and Human Decision Processes*, 167, 129–143. <https://doi.org/10.1016/j.obhdp.2021.08.003>
- Silverman, D. M., Hernandez, I. A., & Destin, M. (2023). Educators’ beliefs about students’ socioeconomic backgrounds as a pathway for supporting motivation. *Personality and Social Psychology Bulletin*, 49(2), 215–232. <https://doi.org/10.1177/01461672211061945>
- Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 20(5), 580–591. <https://doi.org/10.1177/0146167294205014>
- Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine*, 56(6), 1321–1333. [https://doi.org/10.1016/S0277-9536\(02\)00131-4](https://doi.org/10.1016/S0277-9536(02)00131-4)
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417–453. <https://doi.org/10.3102/00346543075003417>
- Smeding, A., Darnon, C., Souchal, C., Toczec-Capelle, M.-C., & Butera, F. (2013). Reducing the socio-economic status achievement gap at university by promoting mastery-oriented assessment. *PLoS ONE*, 8(8), e71678. <https://doi.org/10.1371/journal.pone.0071678>
- Smith, P. B., Fischer, R., Vignoles, V. L., & Bond, M. H. (2013). *Understanding social psychology across cultures: Engaging with others in a changing world* (2nd ed.). SAGE.
- Sommet, N., Quiamzade, A., Jury, M., & Mugny, G. (2015). The student-institution fit at university: Interactive effects of academic competition and social class on achievement goals. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00769>
- Song, X., Massey, C. G., Rolf, K. A., Ferrie, J. P., Rothbaum, J. L., & Xie, Y. (2020). Long-term decline in intergenerational mobility in the United States since the 1850s. *Proceedings of the National Academy of Sciences*, 117(1), 251–258. <https://doi.org/10.1073/pnas.1905094116>

- Soper, D. S. (2021). *A-priori sample size calculator for structural equation models*.
<https://www.danielsoper.com/statcalc>
- Stanford University. (2022). *2022-2023 Undergraduate tuition rates | Student services*.
<https://studentservices.stanford.edu/my-finances/tuition-fees/tuition-rates/2022-2023-undergraduate-tuition-rates>
- Steele, C. M. (2011). *Whistling Vivaldi: How stereotypes affect us and what we can do*. W. W. Norton & Company.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797–811.
<https://doi.org/10.1037/0022-3514.69.5.797>
- Stephens, N. M., Brannon, T. N., Markus, H. R., & Nelson, J. E. (2015). Feeling at home in college: Fortifying school-relevant selves to reduce social class disparities in higher education. *Social Issues and Policy Review*, 9(1), 1–24.
<https://doi.org/10.1111/sipr.12008>
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities’ focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178–1197. <https://doi.org/10.1037/a0027143>
- Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students’ academic performance and all students’ college transition. *Psychological Science*, 25(4), 943–953. <https://doi.org/10.1177/0956797613518349>
- Stephens, N. M., Markus, H. R., & Phillips, L. T. (2014). Social class culture cycles: How three gateway contexts shape selves and fuel inequality. *Annual Review of Psychology*, 65(1), 611–634. <https://doi.org/10.1146/annurev-psych-010213-115143>
- Stephens, N. M., Markus, H. R., & Townsend, S. S. M. (2007). Choice as an act of meaning: The case of social class. *Journal of Personality and Social Psychology*, 93(5), 814–830.
<https://doi.org/10.1037/0022-3514.93.5.814>
- Stephens, N. M., & Townsend, S. S. M. (2015). The norms that drive behavior: Implications for cultural mismatch theory. *Journal of Cross-Cultural Psychology*, 46(10), 1304–1306.
<https://doi.org/10.1177/0022022115600264>

- Stephens, N. M., Townsend, S. S. M., & Dittmann, A. G. (2019). Social-class disparities in higher education and professional workplaces: The role of cultural mismatch. *Current Directions in Psychological Science*, 28(1), 67–73. <https://doi.org/10.1177/0963721418806506>
- Stephens, N. M., Townsend, S. S. M., Markus, H. R., & Phillips, L. T. (2012). A cultural mismatch: Independent cultural norms produce greater increases in cortisol and more negative emotions among first-generation college students. *Journal of Experimental Social Psychology*, 48(6), 1389–1393. <https://doi.org/10.1016/j.jesp.2012.07.008>
- Stirratt, M. J., Meyer, I. H., Ouellette, S. C., & Gara, M. A. (2008). Measuring identity multiplicity and intersectionality: Hierarchical classes analysis (HICLAS) of sexual, racial, and gender identities. *Self and Identity*, 7, 89–111. <https://doi.org/10.1080/15298860701252203>
- Stoet, G. (2010). PsyToolkit: A software package for programming psychological experiments using Linux. *Behavior Research Methods*, 42(4), 1096–1104. <https://doi.org/10.3758/BRM.42.4.1096>
- Stoet, G. (2017). PsyToolkit: A novel web-based method for running online questionnaires and reaction-time experiments. *Teaching of Psychology*, 44(1), 24–31. <https://doi.org/10.1177/0098628316677643>
- Tan, J. J. X., Kraus, M. W., Carpenter, N. C., & Adler, N. E. (2020). The association between objective and subjective socioeconomic status and subjective well-being: A meta-analytic review. *Psychological Bulletin*, 146(11), 970–1020. <https://doi.org/10.1037/bul0000258>
- Taylor, S. E., Lerner, J. S., Sherman, D. K., Sage, R. M., & McDowell, N. K. (2003). Are self-enhancing cognitions associated with healthy or unhealthy biological profiles? *Journal of Personality and Social Psychology*, 85, 605–615. <https://doi.org/10.1037/0022-3514.85.4.605>
- Thiele, L., Sauer, N. C., & Kauffeld, S. (2018). Why extraversion is not enough: The mediating role of initial peer network centrality linking personality to long-term academic performance. *Higher Education*, 76(5), 789–805. <https://doi.org/10.1007/s10734-018-0242-5>

- Tibbetts, Y., Harackiewicz, J. M., Canning, E. A., Boston, J. S., Priniski, S. J., & Hyde, J. S. (2016). Affirming independence: Exploring mechanisms underlying a values affirmation intervention for first-generation students. *Journal of Personality and Social Psychology*, 110(5), 635–659. <https://doi.org/10.1037/pspa0000049>
- Tibbetts, Y., Priniski, S. J., Hecht, C. A., Borman, G. D., & Harackiewicz, J. M. (2018). Different institutions and different values: Exploring first-generation student fit at 2-year colleges. *Frontiers in Psychology*, 9, 502. <https://doi.org/10.3389/fpsyg.2018.00502>
- Towers, G. W., Poulsen, J. R., Carr, D. L., & Zoeller, A. N. (2020). Mentoring for faculty from working-class backgrounds. *Journal of Working-Class Studies*, 5(1), 101–118. <https://doi.org/10.13001/jwcs.v5i1.6255>
- Trawalter, S., Hoffman, K., & Palmer, L. (2020). Out of place: Socioeconomic status, use of public space, and belonging in higher education. *Journal of Personality and Social Psychology*, 120(1), 131–144. <https://doi.org/10.1037/pspi0000248>
- Tsai, J. L., & Chentsova-Dutton, Y. (2002). Models of cultural orientation: Differences between American-born and Overseas-born Asians. In K. S. Kurasaki, S. Okazaki, & S. Sue (Eds.), *Asian American Mental Health* (pp. 95–106). Springer US. https://doi.org/10.1007/978-1-4615-0735-2_7
- UNESCO. (2020). *Education: From disruption to recovery*. <https://en.unesco.org/covid19/educationresponse>
- UNESCO Institute for Statistics. (2015). *International Standard Classification of Education: Fields of education and training 2013 (ISCED-F 2013) Detailed field descriptions*. UNESCO Institute for Statistics. <https://doi.org/10.15220/978-92-9189-179-5-en>
- UNESCO, & UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALC). (2020). *Towards universal access to higher education: International trends*. <https://unesdoc.unesco.org/ark:/48223/pf0000375686>
- Van Dessel, P., Cummins, J., Hughes, S., Kasran, S., Cathelyn, F., & Moran, T. (2020). Reflecting on 25 years of research using implicit measures: Recommendations for their future use. *Social Cognition*, 38(Supplement), s223–s242. <https://doi.org/10.1521/soco.2020.38.supp.s223>

- Vasquez-Salgado, Y., Greenfield, P. M., & Burgos-Cienfuegos, R. (2015). Exploring home-school value conflicts: Implications for academic achievement and well-being among Latino first-generation college students. *Journal of Adolescent Research*, 30(3), 271–305. <https://doi.org/10.1177/0743558414561297>
- Vasquez-Salgado, Y., Greenfield, P. M., & Guan, S.-S. A. (2021). Home-school cultural value mismatch: Antecedents and consequences in a multi-ethnic sample transitioning to college. *Frontiers in Psychology*, 12. <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.618479>
- Veldman, J., Meeussen, L., & van Laar, C. (2022). Social background concealment among first-generation students: The role of social belonging and academic achievement concerns. *Group Processes & Intergroup Relations*, 0(0). <https://doi.org/10.1177/13684302221089116>
- Vignoles, V. L., Owe, E., Becker, M., Smith, P. B., Easterbrook, M. J., Brown, R., González, R., Didier, N., Carrasco, D., Cadena, M. P., Lay, S., Schwartz, S. J., Des Rosiers, S. E., Villamar, J. A., Gavreliuc, A., Zinkeng, M., Kreuzbauer, R., Baguma, P., Martin, M., ... Bond, M. H. (2016). Beyond the ‘east–west’ dichotomy: Global variation in cultural models of selfhood. *Journal of Experimental Psychology: General*, 145(8), 966–1000. <https://doi.org/10.1037/xge0000175>
- Vincent, C., & Ball, S. J. (2007). ‘Making up’ the middle-class child: Families, activities and class dispositions. *Sociology*, 41(6), 1061–1077. <https://doi.org/10.1177/0038038507082315>
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96. <https://doi.org/10.1037/0022-3514.92.1.82>
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. <https://doi.org/10.1126/science.1198364>
- Ward, C., & Kennedy, A. (2001). Coping with cross-cultural transition. *Journal of Cross-Cultural Psychology*, 32(5), 636–642. <https://doi.org/10.1177/0022022101032005007>
- Warner, L. R. (2008). A best practices guide to intersectional approaches in psychological research. *Sex Roles*, 59, 454–463. <https://doi.org/10.1007/s11199-008-9504-5>

- Wiederkehr, V., Darnon, C., Chazal, S., Guimond, S., & Martinot, D. (2015). From social class to self-efficacy: Internalization of low social status pupils' school performance. *Social Psychology of Education*, 18(4), 769–784. <https://doi.org/10.1007/s11218-015-9308-8>
- Wiley, A. R., Rose, A. J., Burger, L. K., & Miller, P. J. (1998). Constructing autonomous selves through narrative practices: A comparative study of working-class and middle-class families. *Child Development*, 69(3), 833–847. <https://doi.org/10.1111/j.1467-8624.1998.00833.x>
- Wong, B., & Chiu, Y.-L. T. (2019). 'Swallow your pride and fear': The educational strategies of high-achieving non-traditional university students. *British Journal of Sociology of Education*, 40(7), 868–882. <https://doi.org/10.1080/01425692.2019.1604209>
- World Bank, World Development Indicators. (2019). *Individuals using the Internet (% of population) | Data*. <https://data.worldbank.org/indicator/IT.NET.USER.ZS>
- Yamaguchi, S., Greenwald, A. G., Banaji, M. R., Murakami, F., Chen, D., Shiomura, K., Kobayashi, C., Cai, H., & Krendl, A. (2007). Apparent universality of positive implicit self-esteem. *Psychological Science*, 18(6), 498–500. <https://doi.org/10.1111/j.1467-9280.2007.01928.x>
- Yang, S. (2017). *Multidimensional self-construals: Testing the model and refining measurement*. Doctoral Dissertation. University of Sussex. <http://sro.sussex.ac.uk/id/eprint/75716/1/Yang,%20Shengyu.pdf>
- Zeileis, A. (2004). Econometric computing with HC and HAC covariance matrix estimators. *Journal of Statistical Software*, 11(10). <https://doi.org/10.18637/jss.v011.i10>
- Zeileis, A., Köll, S., & Graham, N. (2020). Various versatile variances: An object-oriented implementation of clustered covariances in R. *Journal of Statistical Software*, 95(1). <https://doi.org/10.18637/jss.v095.i01>

Sources for opening quotes:

Édouard Louis (2014). *En finir avec Eddy Bellegueule*. Éditions du Seuil.

Hermann Hesse (1927). *Der Steppenwolf*. S. Fischer Verlag.

Édouard Louis (2021). *Changer : méthode*. Éditions du Seuil.

LINKS TO ONLINE APPENDICES

Open Science Framework webpage for this thesis:

Including all materials, data, syntax for analyses, and supplemental material:

https://osf.io/pz2sg/?view_only=da87c9779739414f868a4902bf124d00

Chapter 1:

Preregistration, French sample, Study 1:

https://osf.io/v9zm8?view_only=638c680ead6f44c1ade2a3f7e538adea

Preregistration, French sample, Study 2:

https://osf.io/gr2yh?view_only=c284f0dd1ab849948ee66115dc25ee77

Preregistration, German sample, Study 1:

https://osf.io/q97h?view_only=e809a365fdc84e39b84d8c88ff0dc183

Preregistration, German sample, Study 2:

https://osf.io/4gzu7?view_only=eb6988dc931c4da7952177479e9f9edb

Chapter 2:

Preregistration, French sample, Experiment 2:

https://osf.io/txyv4?view_only=82b51491fbf341c187c86e270138299f

Preregistration, French sample, Experiment 3:

https://osf.io/rupgk?view_only=c0a20cd7618049dc822a69156c3d2b18

Preregistration, German sample, Experiment 2:

https://osf.io/sgpyk?view_only=c8250be81c284bd1a3fc8fea2c0e1c95

Preregistration, German sample, Experiment 3:

https://osf.io/vu4wt?view_only=b4f30cd0217d444984e2fd5d12e25e33

Chapter 3:

Open Science Framework webpage:

https://osf.io/qvk4n/?view_only=a264bfc041ff4c889dfff8772b38630e

Preregistration:

https://osf.io/r5qh4?view_only=3579cb0265a841b595674cdb40bd0af5