From Campus to Career: A Diary Study on Emotional Challenges and Psychological Need Satisfaction in Postgraduate First-Generation Students' Workforce Entry

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Abstract

First-generation students (FGS)—those whose parents did not complete a university degree—often face disadvantages in higher education, including limited career guidance and professional networks. These challenges may persist as they enter the workforce. This study examines how postgraduate FGS and continuing-generation students (CGS; those with at least one parent holding a university degree) experience workforce entry, focusing on negative emotions, emotional variability, and the fulfilment of autonomy, competence, and relatedness.

A weekly diary study was conducted with Dutch master's students completing internships. Participants rated their weekly experiences regarding negative emotions and psychological need fulfilment. Linear regression and multilevel modelling were used to analyse both between-person differences and within-person fluctuations.

FGS reported lower competence at the end of their internships compared to CGS, but no differences in autonomy or relatedness. Higher average negative emotions predicted lower need fulfilment at the end of the internship for all students, but emotional variability had differing effects: CGS with fluctuating emotions experienced lower competence and relatedness, whereas, for FGS, variability was linked to increased autonomy. Throughout the internship, CGS showed a stronger decline in need fulfilment when experiencing persistent negative emotions, while FGS appeared less affected. At the within-person level, temporary increases in negative emotions were associated with lower need fulfilment for both groups, but no significant differences between FGS and CGS emerged.

The findings suggest that postgraduate FGS may have developed adaptive strategies that help them maintain autonomy despite emotional challenges, whereas CGS may be more vulnerable to setbacks in professional environments. This highlights the importance of targeted career support and mentoring programs that address the specific challenges of each group, ensuring a more equitable transition into the workforce.

Key Terms: First-Generation Students, Continuous-Generation Students, Internship Experiences, Negative Experiences, Emotional Variability, Autonomy, Confidence, Relatedness

1. Introduction

Higher education is often regarded as a key driver of upward mobility, offering financial stability and expanded career opportunities. For *first-generation students (FGS)*—those who are the first in their families to attend college—this promise holds particular significance. Many FGS pursue higher education with the hope of securing fulfilling employment, improving their socioeconomic standing, and creating opportunities beyond those available to their parents (Olson, 2016). However, while their motivations may be strong, their journey is often shaped by distinct challenges. Without parental guidance in navigating academic institutions, FGS frequently face financial strain, a lack of professional networks, and heightened pressure to succeed (London, 1989; Olson, 2016). These obstacles can take a toll: in the U.S., FGS are significantly more likely to withdraw from college, with Ishitani (2003) reporting that they are 71% more likely to leave within their first year compared to *continuing-generation students (CGS)*—students with at least one parent who earned a bachelor's degree. In Europe, however, large-scale studies specifically examining FGS dropout rates remain scarce. Research suggests that European students from non-academic backgrounds are more likely to take alternative pathways into higher education, enrol in shorter-degree programs, or experience delayed transitions, all of which may contribute to differences in academic persistence and completion rates (Hauschildt et al., 2018). These educational disparities raise important questions about the long-term impact of being an FGS—not only during their time at university but also beyond graduation.

While extensive research has explored FGS experiences in accessing and persisting through higher education (Pratt et al., 2019; Yeager et al., 2016), as well as their evolving sense of academic and professional identity (Jensen & Jetten, 2015) and the academic and familial pressures they navigate (Barkley, 2022; Glass, 2023; London, 1989; Olson, 2016; Spiegler & Bednarek, 2013; Wildhagen, 2021), far less is known about what happens post-graduation. How do FGS manage their transition into the workforce? Do the challenges persist in professional contexts? Olson (2014) suggests that challenges like financial constraints and limited career guidance may extend beyond higher education, affecting FGS's career confidence, job prospects, and ability to adapt to professional settings. Given that this transition is critical for long-term career success and socioeconomic mobility, understanding the experiences of FGS in the workforce is essential. However, research on this topic remains scarce, particularly in

postgraduate education and outside the U.S. Therefore, this study examines how postgraduate FGS, compared to CGS, navigates workforce entry in a European context, where different education systems and university cultures shape access to higher education and career paths.

Before examining the differences between FGS and CGS in their transition into the workforce, it is essential to consider the structural and relational factors shaping these disparities long before graduation. Access to higher education varies significantly across countries, influencing students' academic trajectories and career opportunities. In the U.S., flexible pathways make higher education more accessible for FGS, as all students earn a high school diploma, and college admission is determined by GPA, standardized test scores, and course selection. Those who do not meet direct university entry requirements can begin their education at community colleges and may also access financial aid through scholarships (Handel & Williams, 2012). In contrast, the Netherlands follows a rigidly tiered secondary education system that tracks students early into academic or vocational paths. Only those completing the highest track (VWO) gain direct university entry, while HAVO and MBO graduates must take longer, less direct routes, such as an HBO degree and a bridging program before gaining access to research universities (Deutscher Akademischer Austauschdienst [DAAD], n.d.; for more details on the Dutch education system see Section 2.1.1). This early tracking system reinforces social stratification, making upward mobility particularly difficult for disadvantaged students.

Beyond structural barriers, relational factors also contribute to educational inequalities. Van den Bergh et al. (2010) found that Dutch teachers' implicit biases often involve negative stereotypes about the academic abilities and behaviour of students from non-Western migrant backgrounds, leading to lower expectations and influencing secondary education track recommendations. These social dynamics reinforce structural discrimination, as lower expectations can shape teachers' track recommendations, restricting access to higher education and hindering upward mobility (Scheerens et al., 2019). As a result, students from disadvantaged backgrounds face greater barriers to higher education than their U.S. counterparts. However, research on Dutch FGS remains limited, highlighting the need for further investigation.

When examining the demographic profile of FGS in the Netherlands, distinct patterns emerge that highlight systemic inequalities in higher education access. A cross-national study by Hauschildt et al. (2018) found that FGS in the Netherlands are more likely to come from lower-income backgrounds and enter university through non-traditional routes, such as

vocational pathways. According to their findings, at least 20% more FGS take these alternative routes compared to CGS, often due to being tracked into vocational secondary education, which limits direct access to research universities and frequently necessitates detours through universities of applied sciences. As a result, FGS tend to enter higher education later, with an average age difference of 1.7 years and are overrepresented among students aged 30 and older (Hauschildt et al., 2018). Compared to CGS, FGS are less likely to pursue a master's degree and are more inclined to enrol in short-cycle programs while relying on paid employment to finance their studies (Hauschildt et al., 2018). Gender and migration background also play a role, as FGS in the Netherlands, like in Austria and France, are more frequently female and disproportionately come from non-Western migrant backgrounds (Hauschildt et al., 2018). These demographic trends reflect broader structural inequalities that shape not only FGS access to higher education but also their academic experiences and career trajectories.

The challenges FGS face extend beyond access to higher education and continue to shape their academic experiences. Financial constraints frequently require FGS to work part-time, limiting their participation in extracurricular activities that foster a sense of belonging in the academic community and the development of key competencies (Cooke et al., 2004). Additionally, FGS are more likely to experience academic difficulties, lower grades, repeated course withdrawals, feelings of isolation, and struggles in balancing work and study commitments, sometimes linked to lower levels of motivation (Orlantha & Gutierrez Keeton, 2020). In contrast, CGS benefit from stronger familial and educational support, allowing them to dedicate more time to activities that enhance their resumes and professional networks (Barkley, 2022; Engle & Tinto, 2008). These disparities underscore the structural and social barriers that influence FGSs not only during their time in higher education but also as they prepare for their transition into the workforce.

Another critical distinction between CGS and FGS is that FGS often lack the academic-related knowledge and guidance that CGS receive from their families. This absence of support further complicates efforts to secure internships, build networks, and define career goals (Olson, 2014; Spiegler & Bednarek, 2013). Studies highlight how *social capital*—access to resources through social connections (Jensen & Jetten, 2015)—is tied to family background and significantly influences academic success and career preparation (Bourdieu, 1986; Rendón et al., 2000). Without this social capital, FGS struggle with university preparation, persistence, and

developing both academic and professional identities (Stebleton & Soria, 2012; Collier & Morgan, 2008). These disadvantages are particularly pronounced for FGS from immigrant backgrounds, as they often face additional structural barriers such as language difficulties, discrimination, and limited professional networks (Rüdel & Steinmann, 2024). In a recent study on labour market integration in Germany, Rüdel and Steinmann (2024) found that the socioeconomic status of first-generation migrants' social networks has a greater impact on their employment prospects and career success than the ethnic composition of these networks. The study demonstrates that individuals with connections in higher socioeconomic positions have better employment prospects and job quality, regardless of their ethnicity. Since FGS often lack these connections due to their parents' limited educational and professional experiences in the host country, they may face even greater obstacles when transitioning from university to the workforce (Rüdel & Steinmann, 2024). As a result, their career opportunities and long-term professional mobility may be significantly restricted, reinforcing existing socioeconomic inequalities.

Since career preparation is closely tied to academic and professional identity development, the challenges FGS face in securing internships and building networks can also hinder their sense of belonging and readiness for future careers. It has been shown that successfully forming an academic identity helps students adapt to higher education and is linked to improved performance and well-being (Allen et al., 2021; Pascarella & Terenzini, 2005). Developing a professional identity, in turn, involves aligning values, responsibilities, and skills with career goals, enhancing autonomy and competence (Bruss & Kopala, 1993; Öhlén & Segesten, 1998). However, FGS often face considerable challenges in this regard due to a cultural mismatch between their backgrounds and the norms of academic and professional settings. Many come from working-class backgrounds that emphasize interdependence, familial obligations, and collective success, which can be at odds with the individualistic values often promoted in higher education (Stephens et al., 2012). This misalignment can create tension between students' personal and academic lives, making it difficult for them to fully integrate into university environments and develop a stable sense of academic and professional identity.

While much of the existing literature focuses on undergraduate students, these challenges persist beyond graduation. At the postgraduate level, FGS must navigate increasingly specialized academic environments and competitive job markets, often without the social capital or

professional networks that benefit their continuing-generation peers (Posselt & Grodsky, 2017). As they transition into the workforce, postgraduate FGS may struggle with imposter feelings, self-doubt, and uncertainty about professional norms, particularly in fields where mentorship and informal networking play a crucial role in career advancement (Gardner, 2013; Levin et al., 2013).

However, university cultures are not uniform across countries. In the Netherlands, many universities prioritize project-based learning, interdisciplinary collaboration, and partnerships with companies over individual achievement (e.g., University of Groningen, n.d.-a). Compared to the more individualistic academic models common in the U.S., this collaborative approach may be more compatible with the interdependent values of many FGS. Nonetheless, research on this potential alignment remains limited, and many postgraduate FGS may still struggle to reconcile academic and professional expectations with personal and familial obligations. As Phillips et al. (2020) argue, FGSs have a strong sense of duty toward family, often requiring them to take on additional responsibilities outside of their studies, creating conflicts with the demands of postgraduate education and career preparation. This ongoing negotiation, described as "multidimensional identity negotiation" (Orbe, 2008, p. 81), can be both emotionally and cognitively demanding, leading to feelings of alienation, low self-efficacy, and psychological distress (Stebleton et al., 2014; Strayhorn, 2018). However, since these findings are largely based on U.S. research, it is uncertain whether cultural mismatch and identity negotiation have the same impact in the Dutch context.

These differences in academic culture may shape the emotional and cognitive demands on FGS, as well as how they respond to challenges and setbacks. Compared to CGS, FGS in the U.S. have been found to face more challenges and setbacks during university, making them more susceptible to negative emotions that can undermine their mental health and academic engagement (Goldman et al., 2021). While previous research has primarily examined the overall frequency of academic setbacks (Goldman et al., 2022), less attention has been given to how fluctuations in these setbacks and their associated emotional responses influence well-being. *Emotional variability*—the extent to which emotions fluctuate from their average levels—has been identified as a key predictor of psychological well-being (Houben et al., 2015; Kuppens et al., 2012; van de Leemput et al., 2014). Specifically, greater fluctuations in negative emotions are linked to increased stress, reduced psychological resilience, and a higher risk of depression

(Houben et al., 2015; Kuppens et al., 2012). Since FGS often experience greater uncertainty in academic and professional environments (Totonchi et al., 2023), they may also exhibit higher emotional variability compared to CGS, potentially amplifying their vulnerability to mental health difficulties. However, given the differences between the U.S. and Dutch higher education systems, it remains uncertain whether these patterns also hold in a Dutch context.

Identity struggles and emotional challenges may shape the workforce transition for Dutch postgraduate FGS, a crucial period for psychological need fulfilment. According to Self-Determination Theory (SDT), well-being and motivation depend on the fulfilment of three basic psychological needs: *relatedness* (a sense of belonging and connection), *competence* (feeling capable and effective), and *autonomy* (having control and alignment with personal values; Ryan & Deci, 2017). When these needs remain unmet, individuals experience lower motivation, well-being, and adaptability in new environments (Ryan & Deci, 2017).

Since FGS face additional barriers in academic and professional settings, fulfilling these needs becomes more challenging, as structural discrimination often reinforces uncertainty and self-doubt (Phillips et al., 2020; Stephens et al., 2012). These disadvantages may hinder their ability to develop a stable sense of competence, belonging, and autonomy, ultimately complicating their adjustment to the workforce. Additionally, emotional variability may further exacerbate these difficulties. Since frequent fluctuations in negative emotions have been linked to lower well-being (Houben et al., 2015; Kuppens et al., 2012), they may potentially disrupt FGS' ability to manage professional expectations. Without adequate resources to buffer emotional distress, FGS may be more vulnerable to the negative effects of emotional variability. As a result, the relationship between negative emotional experiences, their fluctuations, and need fulfilment may be particularly pronounced for FGS, with higher levels and greater variability of negative emotions being associated with lower need fulfilment (Houben et al., 2015). This heightened variability could make their workforce transition more challenging than for CGS. Given these challenges, examining factors that may support FGS in adjusting to the workforce can provide valuable insights.

One potential factor is internships, which connect academic learning with professional experience by fostering the development of a professional identity and supporting psychological needs. As part of the academic curriculum, internships can ease the transition into the workforce by offering practical experience, skill-building opportunities, and exposure to workplace

dynamics while also supporting professional identity development by fostering competence, promoting autonomy through meaningful responsibilities, and aligning students with workplace values (Jackson, 2012; McManus & Feinstein, 2008). Moreover, internships can foster a sense of relatedness by providing mentorship and peer connections, which may help alleviate the feelings of isolation often experienced by FGS (Lippincott & German, 2007). By shaping students' perceptions of their professional roles and environments, internships can serve as a powerful tool in addressing the challenges FGS face, enabling them to navigate their transitions into the workforce with greater confidence and support (Willis et al., 2019). Hence, this research will focus on postgraduate students from the Dutch University of Groningen, who are in the final phase of their Master's and completing a three-to-five-month internship. By exploring how internship experiences impact the psychological needs of FGS and CGS, this study offers valuable insights into how internships can support FGS' professional and emotional development during their transition into the workforce.

The goal of the present research study is to close the gap in understanding how negative emotions and their fluctuations during internship experiences affect the fulfilment of basic psychological needs—belonging, autonomy, and competence—by examining differences between FGS and CGS. Specifically, this study aims to shed light on how postgraduate FGS in the Netherlands, within the context of the Dutch school system and its structural discrimination as well as its collaborative university culture, navigate the challenges of transitioning into the workforce. By examining the relationship between emotional variability, need fulfilment, and academic background, this study will offer deeper insights into how FGS navigate early work experiences and their impact on psychological well-being.

Based on the existing literature, it is expected that FGS will report lower need fulfilment than CGS at the end of their internships (H1), reflecting the additional challenges they may face in the professional environment. Furthermore, a higher average level of negative emotions (H2) and greater negative emotional variability (H3) are anticipated to be negatively related to need fulfilment at the end of the internship for all participants. Additionally, this study examines whether these effects are stronger for FGS compared to CGS. It is expected that the negative relationship between average negative emotions and need fulfilment will be more pronounced for FGS (H4), as they may have fewer resources to buffer the impact of negative experiences. Similarly, the negative effect of emotional variability on need fulfilment is expected to be

stronger for FGS than for CGS (H5), as frequent emotional shifts may further disrupt their sense of competence, autonomy, and belonging.

Lastly, this study considers both between-person and within-person effects, proposing that individuals with higher overall negative emotions will report lower need fulfillment throughout the internship and that fluctuations in negative emotions relative to one's average will also predict lower need fulfillment (H6). This effect is expected to be more pronounced within individuals who are FGS, as they are more likely to experience stronger decreases in need fulfillment in response to negative emotions (H7). By explicitly examining these relationships, this research aims to provide a clearer understanding of how emotional patterns influence students' ability to thrive in professional environments, with a particular focus on FGS during their transition to the workforce. By doing so, it also seeks to offer insights into how experiences during internships may predict and shape the transition from a master's program into employment, highlighting potential challenges and support mechanisms needed for long-term career adaptation. The model of the study, outlining the expected relationships and key variables of interest, can be found in Figure 1.

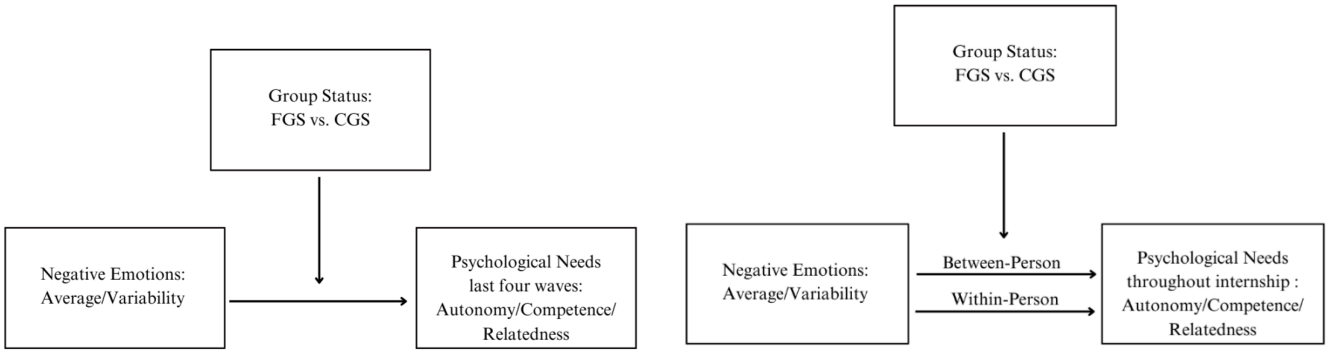
To answer the research question—*How do weekly reported (negative) feelings about internship experiences and variations in these feelings predict the fulfilment of psychological needs (belonging, autonomy, and competence) among FGS and CGS, and how do these relationships vary between and within these groups throughout the internship?*—the study employs a diary study design using the Experience Sampling Method (ESM; Csikszentmihalyi & Larson, 2010) to capture real-time emotional and experiential data. By collecting weekly data throughout the internship period, the study provides a nuanced understanding of how variations in emotional experiences influence psychological needs, revealing patterns and interactions that are often overlooked in cross-sectional research.

The findings aim to inform the development of targeted support systems and interventions that specifically address the needs of FGS to make universities and internships more inclusive. By identifying the mechanisms that foster or hinder the fulfilment of belonging, autonomy, and competence, this study provides actionable insights for educators, internship supervisors, and policymakers. Such insights can help create more inclusive and supportive environments that promote the well-being and professional growth of FGS, ensuring equitable pathways from education to the workforce. Moreover, this research contributes to a broader

understanding of how early work experiences shape students' emotional resilience, motivation, and satisfaction of psychological needs. By highlighting the role of emotional variability and need fulfillment, the study underscores the importance of internships as critical developmental experiences, offering valuable implications for enhancing both individual outcomes and institutional practices.

Figure 1

Moderation of the Relationship Between Negative Emotions and Psychological Need Fulfillment by Generational Status, Including Within-Person and Between-Person Effects



Note. CGS = Continuing-Generation Student; FGS = First-Generation Student. The model on the left addresses H1 to H5, focusing on psychological needs during the last four waves of measurement. The figure on the right examines H6 and H7, considering both between- and within-person differences throughout the entire internship period.

2. Methods

2.1 Research Design

A weekly diary study utilizing ESM was employed, which allows for the collection of real-time data about participants' experiences and feelings in their natural environments over several weeks. ESM is particularly valuable in psychological research as it minimizes recall bias, enhances ecological validity by capturing immediate responses to daily experiences, and allows for the analysis of both immediate and lagged effects (Myin-Germeys & Kuppens, 2022; Hamaker et al., 2015; Ohly et al., 2010). Participants in this study were asked to provide weekly diary entries throughout their internship period, enabling the monitoring of fluctuations in their experiences and emotions. This approach not only facilitates an understanding of individual differences but also allows for a comparative analysis between FGS and CGS in the context of

their internship experiences. The research was approved by the ethics committee of the participating institution (Researchnr.: ppo-016-003, approved on 29-08-2016), confirming that all ethical standards were adhered to during the study.

2.2 Participants

2.2.1 Dutch Education System

In the Netherlands, university entry is shaped by a tiered secondary education system that tracks students into different pathways based on academic performance and standardized assessments (European Commission., n.d.). At the end of primary school, teachers provide a school recommendation (*schooladvies*) and students perform a national test (*Cito-toets* or equivalent) which determines placement in one of three tracks: *Voorbereidend Wetenschappelijk Onderwijs* (VWO, pre-university), *Hoger Beroepsonderwijs* (HBO, higher professional education), or *Middelbaar Beroepsonderwijs* (MBO, vocational education). Access to research universities requires completing the six-year VWO track or an HBO degree with a bridging program (*schakelprogramma;* European Commission., n.d.). FGS are more often placed in lower tracks due to differences in parental education, limited academic support, and biases in school recommendations (Van den Bergh et al., 2010).

2.2.2 Study Sample

This study utilized a convenience sample of 87 master's students from the Dutch-taught Clinical Psychology program at the University of Groningen, a leading research university in the North of the Netherlands known for its emphasis on interdisciplinary collaboration and research-driven education (University of Groningen. (n.d.-a). In the Netherlands, students select their field of study, such as psychology, before starting university. They complete a three-year bachelor's degree in that field before choosing a specialized master's track, such as clinical psychology, neuropsychology, or forensic psychology. The Clinical Psychology master's at Groningen is a one-year program that includes coursework, clinical training, and a mandatory internship. Admission is competitive, requiring prior psychology education and proof of Dutch proficiency (University of Groningen. (n.d.-b).

The clinical internship serves as the final phase of training before professional practice.

While most participants entered the master's program directly after completing their bachelor's, some gained prior work experience in related fields before enrolling, such as child or elder care (Kunnen, 2023). However, information on whether these participants were FGS or CGS was not available. This study focuses on students who completed their internships between 2016 and 2018, before the COVID-19 pandemic.

The sample was predominantly female (76.1%), with male participants comprising 23.9%. Regarding educational background, 77.91% (n = 68) were CGS, having at least one parent with a university degree, while 22.09% (n = 19) were FGS. Most participants were between 19 and 23 years old (52.9%), with no clear pattern regarding FGS or CGS status. The majority were from the Netherlands or other European countries (94.3%), while 5.7% (n = 4) identified as ethnic minorities in the Netherlands, two of whom were also FGS.

Participants completed unpaid internships lasting approximately five months (19-32 weeks), working three to five days per week in clinical settings, including neuropsychology, developmental psychology, and forensic psychology. These internships, undertaken in the final semester of the program, provided hands-on experience to prepare students for the workforce. Initially, students observed intake interviews, assessments, and treatments before gradually taking on more responsibilities, eventually working independently as trainee psychologists.

A sensitivity analysis was conducted using G*Power to determine the smallest effect size that could be detected with the given sample size. With a power of .80, an alpha level of .01, and three tested predictors in a linear regression model, the analysis indicated that the minimum detectable effect size (f^2) is .1475. This corresponds to a moderate effect according to Cohen's (1988) guidelines. However, this means that the study is sufficiently powered to detect moderate-to-large effects, but smaller effects ($f^2 < .10$) may not be reliably identified. Therefore, any non-significant findings will be interpreted with caution, as they may be due to limited power rather than the absence of an effect. Furthermore, the sample contained a disproportionately lower number of FGS compared to CGS, complicating group difference analyses. Findings will be interpreted cautiously, and the implications of the unequal group representation will be discussed.

2.3 Procedure

The data collection process began with an introductory meeting where the study was presented to potential participants, outlining the objectives and expectations. Interested students were invited to express their willingness to participate by sending an email, at which point they received additional information. Anonymity was ensured, with the assurance that the internship supervisors would not have access to any identifying information regarding the participants.
At the onset of the internship, participants completed an initial questionnaire administered through Qualtrics, asking for informed consent (see Appendix A), and gathering demographic information, including age, gender, ethnicity, and educational background. This included specific questions about their parents' highest level of education to categorize participants as FGS or CGS.

Following the initial survey, participants were prompted to complete weekly diary entries. Each week, a link to Qualtrics was emailed to the participants, directing them to a diary report where they reflected on their most significant experience related to their internship from the previous week. The diary reports included open-ended questions prompting students to describe these experiences, followed by closed-ended questions assessing i.g. their emotional appraisal, psychological needs etc. Participants received a financial incentive for their involvement, specifically 40 euros after completing the first part of the study and an additional 20 euros for completing the follow-up questionnaires. Throughout the study, non-responders were contacted via email to encourage participation and ensure their well-being, reinforcing engagement and commitment to the research process.

2.4 Measures

This study focused on several key constructs, including generational status, positively and negatively rated feelings about internship experiences, and basic need fulfilment encompassing autonomy, relatedness, and competence.

2.4.1 Generational Status

Participants' generational status was determined once using a question that asked about their parents' highest level of education in the starting questionnaire. They were not asked about

their siblings or other relatives. Participants got two questions: “What is the highest level of education your mother achieved?” and “What is the highest level of education your father achieved?” The response categories ranged from “Primary school” (the lowest level of education) to “PhD” (the highest level of education). Additional options included “I don’t know” and “I don’t have a mother/father or a person I perceive to be my mother/father.”

Based on the responses, participants were classified into two groups. FGS were defined as those whose parents did not attain a university degree, while CGS were defined as those with at least one parent who obtained a university degree.

2.4.2 Emotionally Rated Internship Experiences

To assess emotionally rated internship experiences, participants were asked to reflect on one significant experience per week related to their internship through a two-step process, ultimately resulting in a total of max. 32-rated internship experiences throughout the study. First, participants were asked to describe an important event from the past week. To guide their responses, they were prompted with questions such as: "What was the experience? In what situation did it occur? What were your thoughts about it? How does it affect how you experience your internship?" This qualitative component encouraged participants to freely express their emotions and thoughts about the described experience.

Following this, participants rated their emotional responses to the described experience on two 11-point scales: one assessing positive feelings (0 = not at all positive feelings, 100 = very much positive feelings) and the other assessing negative feelings (0 = not at all negative feelings, 100 = very much negative feelings). The quantitative data collected through these closed-ended questions provided standardized measures of emotional responses.

Although the first part of the process collected qualitative insights, the current study focused primarily on the quantitative data derived from the closed-ended questions regarding negative feelings. This focus allowed for a more systematic comparison of emotional responses across participants.

2.4.3 Basic Need Fulfillment

The fulfilment of the psychological needs of autonomy, competence, and relatedness was measured weekly, resulting in a max of 32 measurement points in total. The items were based on

definitions from self-determination theory (Ryan & Deci, 2017). Participants rated each need on a 9-point Likert scale, with higher scores reflecting greater fulfillment of the respective need.

Participants were instructed to base their ratings on the selected significant experience from the past week. Autonomy was measured with the statement: “I felt pressured” (1) to “I felt free to make my own choices” (9). Competence was assessed using the statement: “I felt incompetent” (1) to “I felt competent” (9). Relatedness was evaluated with the statement: “I felt alone” (1) to “I felt connected to others” (9).

2.5 Data Analysis Plan

The data were analyzed using R-Studio (version 2024.09.0+375). Independent samples *t*-tests, correlation analyses, linear regression analyses, and multilevel modelling (MLM) were conducted. The complete R-Script can be found in Appendix C.

Prior to analysis, data preprocessing steps were undertaken to ensure data quality. No consent was given, no answers,and anomalies such as unusually fast response times and patterns indicating inattentiveness were examined. Six participants (three of them were FGS) were excluded based on these criteria, resulting in a final sample size of 81 participants. For linear regression analyses, only participants who completed at least 19 valid responses were included, leading to a sample size of 64. This approach ensured that the regression models were based on a complete dataset, reducing the risk of biased parameter estimates and improving statistical power. For MLM, the full sample of 86 was utilized, as MLM accounted for the nested structure of data with missing data points at the within-person level (Snijders, 1996).

Descriptive statistics, including means, standard deviations, and correlations, were computed for all key variables, such as negative weekly experiences, basic need fulfillment (autonomy, competence, and relatedness) at the end of the internship (last four measurement points), and FGS status. Independent samples *t*-tests were conducted to compare FGS and CGS on these variables. Following this, correlation analyses were performed to examine the relationships between key variables.

Linear regression analyses were conducted to examine the relationships between the average level and variability of negative emotions (predictor variables) and basic need fulfillment towards the end of the internship (outcome variable). Interaction terms (mean-centred negative emotions average/variability × student group) were included to test for moderation

effects. For significant interaction terms, simple slope analyses were performed to explore the nature of the moderation.

Before conducting the MLM, the intra-class correlation coefficients (ICCs) were calculated to assess the proportion of variance in autonomy, competence, relatedness, and negative emotions that can be attributed to between-person differences. The ICC values indicated sufficient within-person variability, justifying the use of a multilevel modelling approach to account for the nested structure of the data. MLM with an autoregressive (AR1) structure was employed to analyze between-person and within-person relationships between weekly negative emotions and basic need fulfillment throughout the whole internship period. The fixed effects included mean-centred weekly negative emotions and group status, with random intercepts and slopes to account for individual differences in baseline levels and variability in the effects of weekly negative emotions. Additionally, person-mean centring was applied to weekly negative emotions to capture within-person deviations from each participant's average level of negative emotions, allowing for a clearer understanding of how fluctuations in emotions related to changes in need fulfillment over time.

Assumptions for linear regression—including linearity, independence, homoscedasticity, and normality of residuals—were tested and met (see Appendix B). Shapiro-Wilk tests confirmed the normality of all variables. Multicollinearity was assessed using Variance Inflation Factors (VIF), with values ranging from 1.16 to 1.69, indicating no significant multicollinearity concerns, as VIF values below 10 are considered acceptable. For MLM, assumption checks for normality and homoscedasticity revealed that the residuals of the models significantly deviated from normality (Shapiro-Wilk test: $p < 0.05$) and exhibited heteroscedasticity (Breusch-Pagan test: $p < 0.05$). To account for these violations, maximum likelihood estimation with robust standard errors was used, ensuring that standard errors remain valid despite deviations from model assumptions. Data visualizations, such as scatterplots and line plots, were used to illustrate the relationships between negative emotions, basic need fulfillment and group status at both the between-person and within-person levels.

3. Results

To gain an initial impression of the dataset, descriptive statistics are presented in Table 1. In line with H1, FGS report lower levels of competence in the final month of the internship.

However, no significant differences between CGs and FGS were found for autonomy and relatedness. Therefore, H1 can be partially accepted.

Table 1

Means, Standard Deviation, and Confidence Intervals of Average and Variability in Negative Emotions and Psychological Need Fulfilment at End of Internship by Group Status (N = 81)

	CGS			FGS			
	M	*SD*	*CI*	*M*	*SD*	*CI*	*p*-Value
Negative Emotions Average	30.30	13.48	[30.20 to 30.41]	27.78	9.76	[27.62 to 27.93]	.483
Negative Emotions Variability	25.44	7.65	[25.38 to 25.50]	26.67	6.57	[26.56 to 26.77]	.560
Autonomy***	6.32	1.52	[6.30 to 6.33]	6.03	2.00	[6.00 to 6.06]	.570
Competence***	6.28	1.21	[6.27 to 6.29]	**5.43**	1.84	[5.40 to 5.46]	**.042**
Relatedness***	6.16	1.42	[6.15 to 6.17]	6.19	1.55	[6.16 to 6.22]	.945

Note. CGS = Continuous-Generation-Student; FGS = First-Generation-Student; *M* = Mean; *SD* = Standard Deviation; *CI* = 95% Confidence Interval. Negative emotions are measured on a scale from 0 to 100, while psychological need fulfilment (Autonomy, Competence, and Relatedness) is measured on a scale from 1 to 9. *P*-values refer to independent samples *t*-tests comparing CGS and FGS. Significant differences are highlighted in bold. $p < .05$; *** = Average of collected data from the last four waves; Negative emotions average and negative emotions variability scores were averaged across the full internship (19 to 32 weeks).

Table 2 presents the correlation matrix for the key study variables. Autonomy, competence, and relatedness, measured in the final month of the internship, show strong to very strong positive correlations ($r = .66$ to $.72$, $p < .001$), indicating a high degree of interrelation. Average negative emotional experiences are significantly negatively correlated with all three needs, ranging from weak to moderate in strength. In contrast, variability in negative emotions is only weakly and significantly negatively correlated with competence. Additionally, FGS status has a weak but significant negative correlation with competence.

Table 2

Correlation Matrix of Average and Variability in Negative Emotions, Psychological Need Fulfilment at End of Internship and Group Status (N=81)

	Negative Emotions Average	Negative Emotions Variability	Autonomy	Competence	Relatedness	FGS
Negative Emotions Average	1					
Negative Emotions Variability	.43**	1				
Autonomy***	-.38*	-.18	1			
Competence***	-.45**	-.24*	.66**	1		
Relatedness***	-.42**	-.14	.72**	.68**	1	
FGS	-.08	.07	-.07	-.25*	.01	1

Note. FGS = First-Generation-Student; ** p <.001, * p <.05; *** = Average of collected data from the last four waves; Negative emotions average and variability were averaged across the full internship (19 to 32 weeks).

The results of the regression analyses are presented in Table 3. We first added the direct effects (FGS, emotion average, emotion variability) to the regression models. In line with H2, higher average levels of negative emotions significantly predict lower autonomy, competence, and relatedness at the end of the internship. Contrary to H3, emotional variability does not significantly predict autonomy, competence, or relatedness towards the end of the internship.

Table 3

Linear Regression Analysis of Direct and Indirect Effects between Average and Variability in Negative Emotions and Group Status on Psychological Need Fulfilment at End of Internship (N = 64)

Direct effects on…	Coefficient	Lower 95% CI	Higher 95% CI	*p*-Value
…Autonomy***				
Negative Emotions Average	-0.06	-0.10	-0.02	**.004**
Negative Emotions Variability	0.01	-0.05	0.07	.736
FGS	-0.49	-1.43	0.44	.298
…Competence***				
Negative Emotions Average	-0.06	-0.09	-0.03	**>.001**
Negative Emotions Variability	0.01	-0.04	-0.06	.711
FGS	-1.07	-1.81	-0.34	**.004**
…Relatedness***				
Negative Emotions Average	-0.06	-0.10	-0.03	**>.001**
Negative Emotions Variability	0.02	-0.03	0.07	.387
FGS	-0.20	-1.01	0.62	.628
Indirect effects on…				
…Autonomy***				
Negative Emotions Average x FGS	-0.12	-0.24	0.01	**.061**
Negative Emotions Variability x FGS	0.20	0.04	0.36	**.013**
…Competence***				
Negative Emotions Average x FGS	-0.06	-0.15	0.04	.252
Negative EmotionsVariability x FGS	0.14	0.01	0.37	**.030**
…Relatedness***				
Negative EmotionsAverage x FGS	-0.05	-0.16	0.06	.351
Negative Emotions Variability x FGS	0.14	-0.00	0.28	**.056**

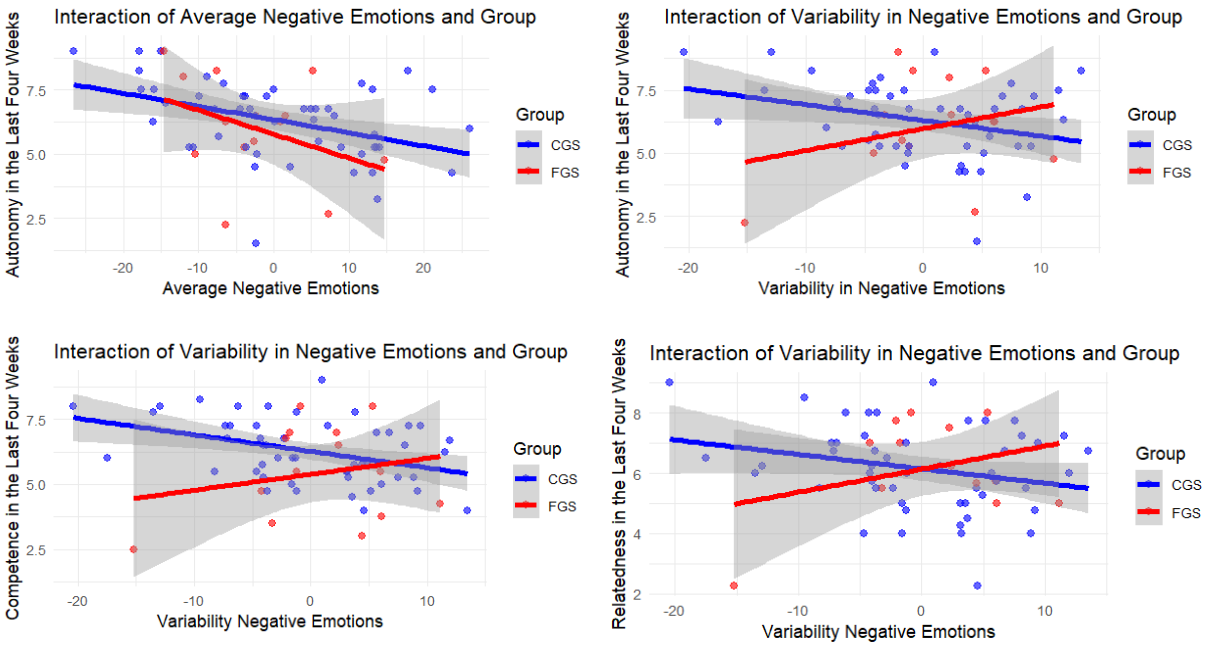
Note. FGS = First-Generation-Student; p <.10 = significant; *CI* = 95% Confidence Interval. Significant differences are highlighted in bold, p < .10; *** = Average of collected data from the last four waves; Negative emotions average and negative emotions variability scores were averaged across the full internship (19 to 32 weeks).

Next, we add the indirect effects (FGS x average emotions; FGS x variability in emotions) to the regression models and look at the psychological need satisfaction towards the end of the internship. H4 receives partial support, specifically, there is a significant interaction between group status and average negative emotions for autonomy, while the interaction effects for competence and relatedness are not significant. In line with H4, a simple slope analysis indicates that the relationship between average negative emotions and autonomy is significantly negative for both FGS (b = -0.16, p = .035) and CGS (b = -0.04, p = .034), with a steeper decline for FGS compared to CGS (see Figure 3).

Additionally, all interaction effects between group status and emotional variability in predicting need fulfillment are significant. When taking a closer look, simple slope analyses reveal that there is a positive significant relationship between emotional variability and autonomy for FGS (b = .18, p = .055) (see Figure 3). For competence, a simple slope analysis indicates a significant negative relationship of emotional variability for CGS (b = -0.06, p = .005). Similarly, the simple slope analysis for relatedness reveals a significant negative relationship for CGS (b = -0.05, p = .077; see Figure 3). Thus, H5 must be rejected despite the significant moderation effects of group status on the relationship between all needs and negative emotional variability.

Figure 3

Scatter plots of Significant Interaction Effects between Average and Variability in Negative Emotions and Group Status on Psychological Need Fulfilment at End of Internship (N= 64)



Note. CGS = Continuous-Generation-Student; FGS = First-Generation-Student; X-axis = average negative emotions or variability in negative emotions; Y-axis = psychological need, from the last four waves of measurement; Negative emotions average and negative emotions variability scores were averaged across the full internship (19 to 32 weeks). Each dot represents an individual's average score; Blue and red dashed lines represent the overall regression slopes for each group.

We computed the ICC for our variables of interest (autonomy, competence, relatedness throughout the internship period, and negative emotions) to assess the proportion of variance attributable to between- and within-person differences. The ICC for autonomy was 28.8%, indicating that stable individual differences account for this proportion of the variance, while the remaining 71.2% reflects within-person fluctuations over time. Similarly, for competence, 18.4% of the variance is between individuals, whereas 81.6% is within individuals. The relatively low ICC for negative emotions (12.5%) suggests that negative emotions exhibit the highest fluctuations, with most variance occurring within individuals rather than between them. Importantly, for all dependent variables, the largest proportion of variance is within individuals, indicating substantial within-person fluctuations over time. This justifies the use of a multilevel

modelling approach to account for the nested structure of the data. Additionally, the ICC values suggest sufficient within-person variance to examine how weekly experiences influence changes in psychological need fulfilment and emotional states.

Table 4

Multilevel Analysis for Between-Person and Within-Person Differences in Negative Emotions on Psychological Need Fulfillment Throughout Internship (N = 81)

	Estimate (95% CI)	Std. Estimate (95% CI)	*t*(df)	*p*-Value
Autonomy…				
…Negative Feelings PM (between-person)	-0.05 (-0.08 to -0.03)	-0.70 (-0.96 to -0.44)	-4.43 (76)	**<.001**
…Negative Feelings PMC (within-person)	-0.03 (-0.03 to -0.03)	-0.77 (-0.90 to -0.64)	-25.32 (1367)	**<.001**
…FGS	-2.56 (-4.96 to -0.80)	-0.14 (-0.93 to -0.66)	-2.76 (76)	**.018**
…Time	-0.01 (-0.02 to 0.02)	0.01 (-0.18 to 0.16)	-0.13 (1367)	.898
…Negative Feelings PM x FGS (between-person)	0.08 (0.02 to 0.17)	1.03 (-0.13 to 2.20)	2.66 (76)	**.030**
…Negative Feelings PMC x FGS (within-person)	-0.01 (-0.01 to 0.01)	-0.02 (-0.45 to 0.42)	-0.09 (1367)	.927
Competence…				
…Negative Feelings PM (between-person)	-0.05 (-0.07 to -0.04)	-0.32 (-0.39 to -0.24)	-6.88 (76)	**<.001**
…Negative Feelings PMC (within-person)	-0.05 (-0.05 to -0.05)	-0.56 (-0.63 to -0.48)	-15.79 (1367)	**<.001**
…FGS	-1.63 (-3.14 to-0.16)	-0.17 (-0.46 to 0.11)	-2.29 (76)	**.025**
…Time	0.05 (6.12 to 7.20)	0.22 (0.16 to 0.28)	8.26 (1367)	**<.001**
…Negative Feelings PM x FGS (between-person)	0.04 (-0.01 to 0.01)	0.24 (-0.01 to 0.57)	1.69 (76)	**.094**
…Negative Feelings PMC x FGS (within-person)	0.01 (-0.01 to 0.02)	0.04 (-0.01 to 0.17)	0.47 (1367)	.637
Relatedness…				
…Negative Feelings PM (between-person)	-0.06 (-0.08 to -0.4)	-0.33 (-0.43 to -0.23)	-5.64 (76)	**<.001**

…Negative Feelings PMC (within-person)	-0.03 (-0.03 to -0.03)	-0.38 (-0.40 to -0.35)	-27.43(1367)	**<.001**
…FGS	-2.03 (-3.85 to -0.21)	-0.02 (-0.30 to 0.26)	-2.23 (76)	**.030**
…Time	0.02 (0.01 to 0.03)	0.08 (0.02 to 0.16)	2.66 (1367)	**.007**
…Negative Feelings PM x FGS (between-person)	0.07 (0.01 to 0.13)	0.35 (-0.01 to 0.70)	2.20 (76)	**.031**
…Negative Feelings PMC x FGS (within-person)	-0.01 (-0.02 to 0.01)	-0.08 (-0.25 to 0.10)	-0.93 (1367)	.354

Note. FGS = First-Generation Student; *PM* = Person-mean; *PMC* = Person-mean-centered; *CI* = Confidence Interval; *t* = *t*-Value*; df* = Degrees of freedom. Need scores from the full internship (19 to 32 weeks); Time captures the whole internship period; Significant differences are highlighted in bold, $p < .10$ = significant:

In line with H6, multilevel analyses reveal that negative emotions predict psychological need fulfillment throughout the internship at both between-person and within-person levels (see Table 4). Participants with higher average negative emotion scores (between-person) report strongly lower autonomy and moderately lower competence and relatedness scores. Furthermore, when individuals experience higher negative emotions than their average (within-person), this is strongly associated with lower autonomy and competence scores and moderately lower relatedness scores at that time. When controlling for the effect of time on need fulfilment, we observe that competence and relatedness show significant changes throughout the internship, exhibiting a rather weak association.

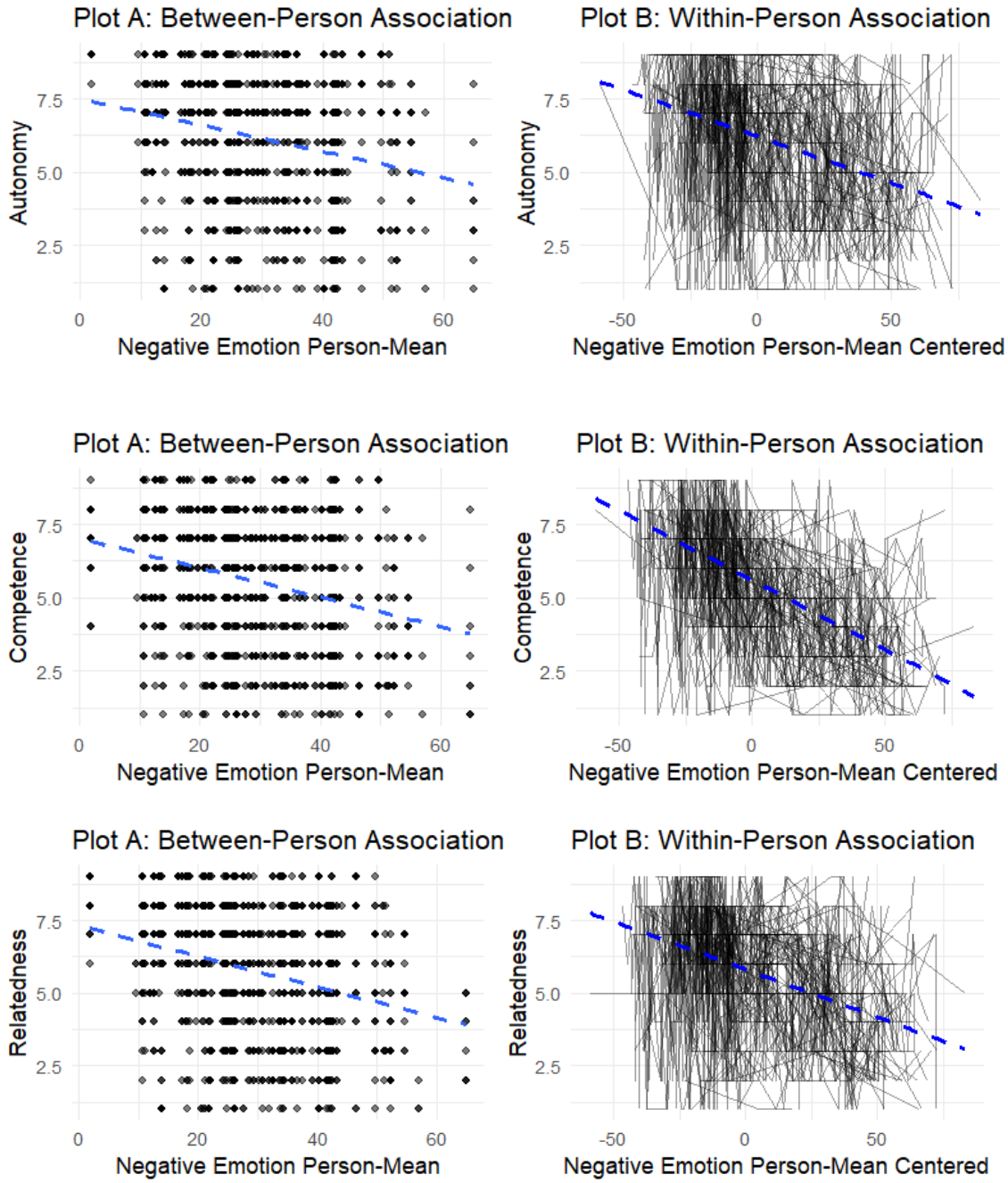
When testing H7, we found moderate, significant cross-level interaction effects between group status and between-person negative emotions for all three basic psychological needs throughout the internship. However, a closer examination of the results revealed inconsistencies. While the interaction effect between negative emotions and group status on autonomy was statistically significant, the confidence interval of the standardized coefficient crossed zero (*CI* = [-0.128, 2.201]). This suggests that the true effect could range from slightly negative to strongly positive, making the direction of the effect uncertain. Notably, simple slope analyses showed no significant effects for FGS on any of the three psychological needs, indicating that higher average negative emotions did not significantly predict changes in need fulfillment for this group. In contrast, for CGS, higher person-mean negative emotions were significantly associated with lower need fulfillment across all three needs. Greater negative emotions predicted lower

autonomy (b = -0.0549, p < .0001), competence (b = -0.0549, p < .0001), and relatedness (b = -0.0583, p < .0001), indicating that CGS experienced a decline in need fulfillment when reporting higher negative emotions on average. At the within-person level, no significant cross-level interaction was found between momentary fluctuations in negative emotions and psychological need fulfillment for either group. This means that temporary increases in negative emotions did not significantly predict changes in need fulfilment for FGS or CGS at a given moment in time. Given these findings, H7 was rejected, as within-person negative emotions did not significantly affect need fulfilment when controlling for group status. However, at the between-person level, CGS experienced a significant decline in need fulfillment in response to higher average negative emotions, whereas no such effect was found for FGS.

Figure 4 visualizes the associations between psychological needs and negative emotions both between and within individuals. While the group-level models show similar magnitudes for between-person and within-person effects, panel B of the figures reveals significant variability among individuals. Most individual slopes indicate a negative relationship but some even a positive one, with some individuals showing a stronger or weaker association than the overall trend. This suggests that although the relationship between psychological need fulfillment and person-mean-centred negative emotions is generally consistent, it varies across individuals.

Figure 4

Between-Person (Plot A) and Within-Person (Plot B) Association between Psychological Need Fulfillment throughout Internship and Negative Emotions (N=81)



Note. CGS = Continuous-Generation-Student; FGS = First-Generation-Student; X-axis = negative emotions person-mean (Plot A) or negative emotion person-mean-centred (Plot B); Y-axis = psychological need, across the full internship (19 to 32 weeks); Each black dot in Plot A represents an individual's average scores across the study

period; Each black line in Plot B represent individual trajectories; Blue dashed lines represent the overall regression slopes in both plots.

4. Discussion

This study aimed to explore how FGS experience the transition from university to the workforce and whether their experiences differ from those of CGS. While existing research predominantly focuses on the challenges FGS face in higher education, especially in the U.S., this study broadens the perspective by examining postgraduate workforce transition in a European context. Using a weekly diary study over a three- to five-month internship period, we investigated how negative emotional experiences and their fluctuations influenced the fulfilment of psychological needs (autonomy, competence, and relatedness) in a Dutch student sample.

Our findings provided partial support for H1, as FGS reported lower competence at the end of their internships compared to CGS, but no significant differences were found in autonomy and relatedness. In line with H2, higher average negative emotions predicted lower autonomy, competence, and relatedness towards the end of the internship. However, contrary to H3, emotional variability did not predict need fulfillment at the end of the internship. The moderation effects (H4 and H5) showed that negative emotions had a stronger negative effect on autonomy for FGS than for CGS, while emotional variability was negatively related to competence and relatedness for CGS but positively associated with autonomy for FGS. Finally, between-person and within-person analyses supported H6, as higher average negative emotions were linked to lower need fulfillment. However, when examining group differences, H7 was rejected, as within-person negative emotions did not significantly predict need fulfilment for either group when controlling for group status. In contrast, at the between-person level, CGS exhibited a significant decline in need fulfillment in response to higher average negative emotions, whereas no such effect was observed for FGS.

As previous research suggests, FGS face more challenges in university than CGS (Yeager et al., 2016), leading to the expectation that they would also struggle more in the workplace. However, our findings present a more nuanced picture. While FGS reported lower competence toward the end of their internship than CGS, they did not differ in autonomy or relatedness. The lower competence score suggests an ongoing struggle with self-doubt, which research links to structural discrimination, exclusion, and limited access to academic and professional role models

(Goldman et al., 2021; Totonchi et al., 2023). In the Netherlands, these inequalities begin early due to the tracking system in secondary education, which channels students into academic or vocational pathways based on teacher recommendations and standardized assessments (Van den Bergh et al., 2010). Research shows that FGS are disproportionately placed in vocational tracks, limiting their access to research universities, delaying their educational advancement, and reducing opportunities to develop academic self-efficacy (Hauschildt et al., 2018; Scheerens et al., 2019). These early disadvantages may persist into their professional careers, shaping their confidence and perceptions of competence in the workplace.

Social identity threat (Steele et al., 2002) may further reinforce these challenges, as FGS are frequently confronted with negative stereotypes about their abilities, undermining their confidence and performance (Spiegler & Bednarek, 2013). Easterbrook et al. (2022) argue that students from lower social-class backgrounds often feel like "outsiders" in academic settings due to institutional norms, stereotypes linking academic success to higher SES, implicit biases, and a lack of representation, all of which reinforce uncertainty about their competence and widen socioeconomic disparities. Consequently, by the time they enter the workforce, FGS may still carry the effects of these systemic disadvantages, contributing to their lower competence perceptions in professional settings.

However, contrary to expectations, FGS did not experience lower autonomy or relatedness at the end of the internship compared to CGS. One possible explanation is that, by the time they reach their master's program, FGS may have already undergone *habitus adaptation* (Ivemark & Ambrose, 2021), a process in which individuals gradually internalize the dominant norms and behaviours of their social environment. Ivemark's study highlights how FGS adapt to the middle-class culture of higher education over time, shifting their ways of thinking, acting, and interacting to fit institutional expectations. This prolonged exposure to academic and professional settings may have helped FGS adjust socially and professionally, minimizing differences between them and CGS. Additionally, *educational resilience*—the belief in one's ability to overcome challenges, utilize resources, and advance professionally (Wang & Gordon, 1994)—likely plays a key role. Azmitia et al. (2018) found that FGS who developed educational resilience through supportive relationships and adaptive coping strategies were more likely to persist in college and achieve their career goals. This resilience may have helped postgraduate FGS navigate professional challenges, as those who lacked it may have already dropped out

earlier in their academic journey. Consequently, those who persisted had likely developed the skills needed to integrate into internships as effectively as CGS, despite the structural barriers they faced along the way. Furthermore, as discussed in the introduction, FGS are more likely to have prior work experience (Cooke et al., 2004; Hauschildt et al., 2018), which would align with the information about our student sample (Kunnen, 2023). These experiences may have provided them with an advantage in internship settings as internships reward professional maturity, work ethic, and adaptability—qualities that FGS, due to their more frequent engagement in paid work alongside their studies, may have developed earlier than CGS. Their familiarity with workplace environments may have made it easier for them to form professional relationships and integrate into internship settings.

Consistent with the Self-Determination Theory (SDT; Ryan & Deci, 2017), which posits that psychological well-being and motivation depend on the fulfilment of autonomy, competence, and relatedness, our findings confirm that negative emotions undermine all three needs. This aligns with previous research linking emotional distress to decreased motivation and workplace adaptation (Deci & Ryan, 2000; Houben et al., 2015). Specifically, higher average levels of negative emotions were significantly associated with lower autonomy, competence, and relatedness at the end of the internship for all participants. These results highlight how persistent negative emotional experiences can erode psychological need fulfilment over time, fostering feelings of helplessness, disengagement, and social disconnection.

When controlling for group status, the relationship between negative emotions and need satisfaction yielded mixed results. As expected, both groups exhibited a significant negative association between negative emotions and autonomy at the end of the internship, with this effect being stronger for FGS than for CGS. These findings align with previous research, which suggests that FGSs often have fewer institutional and social resources to buffer against negative experiences, making them more vulnerable to experiencing lower well-being (Goldman et al., 2021). While Dutch universities emphasize collaborative learning and teamwork, which may align with FGS' interdependent values, the professional environment in Dutch psychological clinics presents different expectations. Therapists are required to maintain clear professional boundaries, guiding clients toward independent recovery rather than taking direct control of their progress (Nederlands Instituut van Psychologen, 2024). Clients are expected to take an active role in therapy, setting goals and completing assignments independently. For FGS, this transition

from a supportive academic environment to a workplace culture that prioritizes autonomy and professional detachment may be particularly challenging. Moreover, Dutch psychological ethics require therapists to reinforce client autonomy (Nederlands Instituut van Psychologen, 2024), placing additional demands on FGS, who may still be dealing with their sense of autonomy. Thus, while Dutch universities may help FGS integrate socially, the workplace shift toward independence and structured client engagement may intensify autonomy-related challenges, explaining the stronger negative impact of emotional distress on autonomy for FGS compared to CGS.

However, other than for CGS, no moderation effect of FGS was found on the relationship between negative emotions and competence or relatedness at the end of the internship. One possible explanation is that these needs are less susceptible to emotional distress or that other factors buffer against its effects. Our results indicate that FGS reported lower confidence levels at the end of their internships compared to CGS, suggesting they may have entered these experiences with a more cautious self-assessment of their abilities. Rather than negative emotions significantly altering their perceived competence, their initial expectations may have already been more tempered. Additionally, FGS' familiarity with work settings—due to greater prior work experience (Cooke et al., 2004; Hauschildt et al., 2018)—may have given them a more realistic understanding of workplace dynamics. Unlike CGS, who may have entered internships with higher but less tested expectations, FGS may have been better prepared for the challenges of professional environments, making them less susceptible to fluctuations in competence perceptions.

A similar pattern may explain the lack of moderation for relatedness. If FGS already expect certain social and professional challenges in workplace settings, temporary negative emotions may not further diminish their sense of belonging. Their prior exposure to work environments may foster pragmatic expectations, helping them interpret momentary difficulties as typical workplace experiences rather than as personal failures. Additionally, family support may help buffer FGS against feelings of not belonging in the workplace. Research suggests that FGS often maintain strong family ties and receive emotional or motivational support from relatives, even if their families lack direct knowledge of higher education or professional careers (LeBouef & Dworkin, 2021). This emotional support system may provide FGS with a sense of stability and resilience, reinforcing their ability to navigate difficulties in professional

environments. Future research could explore whether prior work experience, family support networks, and realistic expectations about workplace culture shape how FGS respond to emotional challenges during internships.

Contrary to expectations, emotional variability did not have a significant direct effect on autonomy, competence, or relatedness at the end of the internship. However, group differences emerged in how emotional variability impacts need fulfillment. For CGS, greater fluctuations in negative emotions were significantly associated with lower competence and relatedness, aligning with previous research showing that emotional instability is linked to reduced well-being (Houben et al., 2015; Kuppens et al., 2012). This may be due to CGS having faced fewer persistent challenges in academic or work environments, resulting in less developed coping mechanisms for managing emotional fluctuations. Unlike FGS, CGS were less likely to experience structural discrimination within the Dutch school system (Van den Bergh et al., 2010). Additionally, CGS are less likely to have worked alongside their studies to support themselves financially (Hauschildt et al., 2018), allowing them to focus more on academic achievement without the added pressure of employment. As a result, they may have had fewer opportunities to develop resilience to setbacks and fluctuations in emotional experiences, making them more vulnerable to the destabilizing effects of emotional variability in professional settings.

In contrast, no such effect was found for FGS' competence or relatedness, suggesting that they may be less affected by emotional variability due to their greater familiarity with adversity and more tempered expectations of professional challenges. Having navigated structural barriers in education and the workplace, FGS may have developed greater resilience and adaptive coping strategies, enabling them to maintain a stable sense of competence and relatedness despite emotional fluctuations. Research suggests that psychologically resilient individuals employ adaptive emotional regulation strategies when faced with challenges, such as cognitive reappraisal, which allows them to view setbacks as opportunities for growth rather than threats to their self-worth (Tugade & Fredrickson, 2004).In the context of internships, FGS who have developed resilience through their academic and professional experiences may be more inclined to view setbacks or performance feedback as opportunities for growth rather than as discouraging failures. Having reached postgraduate education, this group represents a subset of FGS who have successfully navigated systemic barriers, further reinforcing their ability to adapt and manage challenges effectively. Furthermore, resilience has been linked to active social

support-seeking behaviours, which help individuals reinforce relational bonds rather than withdraw in response to negative emotions (Kumpfer, 2002). This ability to reframe challenges and maintain strong connections may explain why fluctuations in negative emotions did not significantly impact competence or relatedness for FGS. Future research should explore the protective role of resilience more explicitly, examining whether FGS with higher resilience levels are better equipped to maintain competence and relatedness despite emotional variability. Longitudinal studies could also investigate which specific coping strategies, such as cognitive reappraisal or social support-seeking, are most effective in buffering against the negative effects of emotional fluctuations in professional settings.

Interestingly, despite the previously observed negative impact of negative emotions on autonomy for FGS, emotional variability was positively associated with their autonomy. This contradicts the expectation that greater emotional fluctuations would undermine autonomy and rather suggests that experiencing a range of emotions may enhance their sense of agency. One possible explanation is that FGS have repeatedly faced uncertainty throughout their academic and professional journeys, requiring them to develop adaptive strategies to manage instability. Balancing academic responsibilities with financial and social obligations has likely strengthened their flexibility and self-reliance, making emotional fluctuations feel like a natural part of adaptation rather than a disruption. Instead of perceiving these fluctuations as destabilizing, FGS may interpret them as part of the learning process, reinforcing their autonomy and ability to handle challenges independently.

Additionally, resilience is closely linked to emotional regulation and positive reframing, which enable individuals to maintain engagement despite adversity (Kumpfer, 2002; Werner & Smith, 1992). This may be particularly relevant for postgraduate FGS, who—having already persisted through systemic barriers—are more likely to see professional challenges as expected rather than overwhelming. In this sense, emotional variability may not be a threat to their self-efficacy, but rather a sign of active engagement with their environment. Future research should further explore the role of positive emotions and adaptive coping mechanisms during internships for FGS, as resilience is often associated with an open and proactive mindset that may help sustain autonomy despite emotional fluctuations. Examining specific strategies such as cognitive reappraisal and problem-solving could provide deeper insights into the mechanisms that allow FGS to thrive in professional settings despite emotional variability.

Throughout the internship, negative emotions consistently predicted psychological need fulfillment, both at the between-person level and within individuals over time, as expected. This finding supports prior research grounded in Self-Determination Theory (SDT), which emphasizes the detrimental impact of negative affect on motivation and well-being (Deci & Ryan, 2000; Houben et al., 2015). Individuals who experienced higher average levels of negative emotions throughout their internship reported lower autonomy, competence, and relatedness, reinforcing the idea that persistent emotional distress can undermine psychological need fulfillment over time.

However, this effect was not uniform across groups. At the between-person level, CGS showed a significant decline in need fulfillment in response to higher average negative emotions throughout the internship, while no such effect was found for FGS. This suggests that CGS' psychological needs may be more vulnerable to prolonged exposure to negative emotions, whereas FGS may have strategies in place that help them sustain their sense of autonomy, competence, and relatedness despite experiencing distress.

Looking at within-person effects—which capture how fluctuations in an individual's negative emotions across different time points predict changes in need fulfillment—no significant interaction between group status and negative emotions was found. This indicates that the relationship between temporary increases in negative emotions and changes in need fulfilment did not differ between FGS and CGS, meaning group status was not a determining factor in this effect, suggesting postgraduate FGS and CGS may have been equally effective in maintaining their sense of autonomy, competence, and relatedness despite momentary negative emotions. However, the observed variability in individual slopes suggests that the strength of this relationship may differ across individuals, indicating that personal differences in coping strategies or workplace environments may influence the extent to which negative emotions affect need fulfillment over time. Future research should investigate the factors that help sustain psychological need fulfilment, particularly workplace support, individual resilience, and coping strategies. Additionally, longitudinal studies should examine when and for whom negative emotions have the greatest impact on need fulfillment, taking into account personality traits, workplace climate, mentoring relationships, and individual differences in emotional regulation.

Strengths and Limitations

This study offers several notable strengths, particularly in addressing gaps in research on

FGS transition into the workforce. One key strength is the longitudinal design using ESM, which enhances ecological validity by tracking emotional experiences as they unfold in real-world settings. Retrospective self-reports often suffer from recall bias, whereas ESM's repeated assessments provide a more accurate and nuanced picture of how emotional variability influences professional adjustment over time (Csikszentmihalyi & Larson, 2010; Hamaker et al., 2015; Ohly et al., 2010; Weermeijer et al., 2022). Unlike single-time point studies, this approach captures the dynamic nature of psychological need fulfilment, revealing patterns that might otherwise remain undetected.

This study's combination of between-person and within-person analyses provides a more detailed understanding of how FGS navigate their internship experience. While between-person comparisons show overall differences in need fulfilment between FGS and CGS, within-person analyses highlight how these needs fluctuate in response to emotional experiences over time. This distinction emphasizes that not all FGS experiences need fulfilment in the same way, reinforcing the importance of tailored support strategies. By capturing both stable patterns and momentary emotional shifts, this study extends previous research beyond academic challenges or long-term career outcomes, offering a more dynamic perspective on how postgraduate FGS adapt in daily workplace settings. Future research should further investigate the factors that shape these within-person fluctuations, such as coping strategies or workplace support, to better understand how FGS manage emotional challenges during their transition into the workforce.

A methodological strength of this study is the thorough assessment and handling of statistical assumptions. Assumptions for linear regression, including linearity, independence, homoscedasticity, and normality of residuals, were tested and met. For MLM, assumption checks revealed deviations from normality and heteroscedasticity. To address these issues, maximum likelihood estimation with robust standard errors was applied, ensuring the validity of standard errors despite assumption violations. This rigorous approach enhances the reliability of the findings by accounting for potential biases in model estimates.

Despite its contributions, this study has several limitations that should be acknowledged. One key limitation is the reliance on only self-reported data, which introduces the potential for biases related to subjective interpretation and recall. While the ESM helps minimize recall bias by capturing experiences closer to their occurrence, the weekly reporting format does not fully eliminate this issue. Since participants reflected on events from the past week rather than

providing real-time data, their emotional experiences may not have been entirely replicated, leading to potential inaccuracies in reporting. Additionally, self-reported data are susceptible to *social desirability bias*, where participants may unconsciously downplay socially undesirable emotions or exaggerate positive experiences to present themselves in a more favourable light (Tourangeau & Yan, 2007). Given the personal nature of the responses, some participants may have been hesitant to disclose their true emotions, especially if they believed their answers could be traced back to them. Conducting future studies in controlled environments, where confidentiality is explicitly emphasized, may help mitigate these concerns and ensure more accurate responses.

From a methodological perspective, while the longitudinal design and use of ESM were strengths, the frequency of measurements could be reconsidered. Collecting data multiple times per day could offer a more detailed understanding of emotional variability and the immediate impact of workplace experiences on psychological need fulfilment. Future research might explore the benefits of more frequent assessments to capture these dynamics more precisely.

Another limitation concerns the sample size and statistical power, particularly the relatively small number of FGS. While the lower number of FGS in the study reflects broader university demographics, the unequal group sizes (19 FGS vs. 67 CGS) may have constrained statistical power and made direct comparisons between groups more challenging. To better understand the study's ability to detect effects, a sensitivity analysis was conducted using G*Power. The results indicated that while the study was sufficiently powered to detect moderate-to-large effects, smaller effects may not have been reliably identified. Therefore, any non-significant findings must be interpreted with caution, as they may be due to limited power rather than the absence of an effect. Future studies should aim for larger and more balanced samples to improve representativeness and statistical robustness.

Another limitation of this study is that students were categorized strictly as either FGS or CGS based on their parents' level of degree, without accounting for potential subgroup differences within the FGS population. However, research suggests that FGSs are not a homogeneous group, as factors such as early exposure to middle-class norms, socioeconomic background, and prior professional experience can shape their ability to adapt to university and work environments (Ivermark & Ambrose, 2021). This distinction may be particularly relevant for postgraduate FGS, as their extended academic trajectory could reflect greater adaptation to

academic and professional settings but also additional challenges, such as increased financial strains. Additionally, having siblings or other relatives who attended university may provide informal guidance, reducing some of the challenges typically associated with being FGS, like lacking knowledge. Research also suggests that parental exposure to higher education—such as attending university without completing a degree—may offer some advantages similar to those of CGS (Cataldi et al., 2018). Future studies should distinguish between FGS with relatives who have some university experience and those with none, as these differences may influence their educational and career trajectories. Furthermore, important demographic factors were not accounted for in this study, including students' SES and prior work experience, both of which may influence their transition into the workplace. Additionally, there is limited data on the FGS population in the Netherlands, particularly at the postgraduate level, making it difficult to contextualize the findings within a broader national framework. Future research should address these subgroup differences and demographic gaps to provide a more comprehensive understanding of FGS experiences.

Furthermore, the treatment of negative emotions in the study presents a limitation. Negative emotions were not explicitly defined, which may have led to variations in how participants interpreted and reported their experiences. Distinguishing between specific negative emotions, such as frustration, anxiety, or disappointment, could offer a more nuanced understanding of their distinct effects on need fulfilment. Additionally, while the study primarily focused on negative emotions, it did not account for the role of positive emotions, which have been shown to buffer stress and promote resilience (Tugade and Fredrickson, 2004). Future research should explore the interplay between positive and negative emotions to provide a more comprehensive picture of emotional variability during the transition into the workforce.

Finally, the generalizability of the findings is limited by the sample characteristics. The study was conducted with clinical psychology master's students from the University of Groningen, all of whom were engaged in a mandatory internship as part of their program. This specific context may not fully reflect the experiences of students from different academic disciplines, institutions, or professional settings. Future studies should aim to include a more diverse sample, encompassing students from various study fields and universities, to assess whether the findings hold across different educational and occupational contexts.

Implications and Conclusion

This study contributes to the ongoing discussion on equity and inclusion in higher education and the workforce by shedding light on the unique emotional experiences of FGS. The findings highlight that emotional patterns play a crucial role in how students—both FGS and CGS—adjust to professional life, shaping their sense of belonging, autonomy, and competence. These insights have practical significance for universities, employers, and policymakers, emphasizing the need for more inclusive educational and professional environments that support all students in their transition into the workforce.

One key takeaway is that tailored mentorship and structured institutional support should not only target FGS but also address challenges faced by CGS. While postgraduate FGS may have developed resilience through early exposure to academic and professional obstacles or dropped out before reaching the internship, CGS may be less accustomed to setbacks in educational and work environments. The findings suggest that CGS experience a stronger decline in need fulfilment when facing persistent negative emotions, indicating that they may also benefit from interventions that help them navigate emotional challenges in professional settings.

At the same time, systemic changes in the education system could prevent these disparities from arising in the first place. The early tracking system in secondary education, which channels students into rigid academic or vocational pathways, may reinforce structural inequalities. Introducing greater flexibility in educational trajectories and providing training for teachers on implicit biases could help ensure that students are not prematurely categorized in ways that limit their opportunities. Universities and workplaces should also adopt inclusive policies that actively recognize and address disparities in emotional and professional development, creating environments where students from all backgrounds feel equally supported and prepared for the workforce.

The findings also suggest that internships and entry-level positions should foster environments where students feel encouraged to explore different professional identities without fear of failure. Providing open communication, constructive feedback, and opportunities for reflection can help both FGS and CGS integrate their experiences into long-term personal and career development, ensuring they build confidence and adaptability in professional settings.

Beyond practical skills, this study highlights how early work experiences shape students'

psychological need fulfilment, influencing their sense of competence, autonomy, and belonging. Internships are not just career stepping stones; they influence students' confidence, self-perception, and aspirations. Recognizing the emotional challenges of this transition is important to ensuring that both FGS and CGS have the support they need to thrive in the workplace.

While offering valuable insights, this study also underscores the need for further research. Future studies should examine subgroup differences within the (postgraduate) FGS population, the role of positive emotions, and how structural discrimination within the education system and the collaborative university culture in the Netherlands influence students' academic and professional development. Expanding this work across diverse academic and professional settings will provide a deeper understanding of how to best support students in this critical phase of their careers.

The aspiration that once led FGS to pursue higher education—the hope for a better life, financial security, and respect—does not end at graduation. Yet, many still find themselves struggling to claim their place in the professional world. Their transition is more than a career move; it is an emotional journey shaped by uncertainty, expectation, and resilience. At the same time, CGS may find themselves unprepared for setbacks, lacking the emotional coping strategies that FGS have developed through prior experiences with adversity. Recognizing these emotional challenges for both groups is essential to ensuring that students are not only given opportunities but also the institutional and workplace support they need to succeed. By integrating these insights into educational policies, career development programs, and workplace practices, we take a step toward a future where all students—regardless of background—can turn their aspirations into lasting success.

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Appendix A

Informed Consent Form

Met dit onderzoek willen we onderzoeken hoe studenten zich ontwikkelen tijdens hun stage, wat ze meemaken, en welke ervaringen voor hen belangrijk zijn. Dit onderzoek zal helpen om het ontwikkelingsproces tijdens de stage beter te begrijpen en op basis daarvan meer aangepaste hulp te kunnen bieden aan studenten voor of tijdens hun stage. Je deelname aan dit onderzoek bestaat uit verschillende elementen: - In deze eerste vragenlijst vragen we naar je achtergrond en je verwachtingen over de stage. Deze vragenlijst duurt ongeveer 30 min. - Tijdens je stage vragen we om vijf maanden lang iedere week een logboekje in te vullen (10 min. per keer) - Na afloop van de stage zal er nog een aantal keren een vragenlijst van 20 min. zijn (direct na afloop, na 3 maanden, na 6 maanden en na 9 maanden). In totaal kost het je dus 2 uur voor vragenlijsten, en vier uur voor het invullen van de logboekjes. Wat krijg je ervoor? Als je meedoet met het volledige onderzoek ontvang je 60 euro voor je deelname. Als je daar prijs op stelt ontvang je na afloop een bestand met je gegevens, en de door jou ingevulde logboekjes. Deelname aan dit onderzoek is geheel vrijwillig. Je kan je medewerking op elk tijdstip stopzetten en de gegevens die verkregen zijn uit dit onderzoek laten verwijderen. De gegevens die verkregen zijn uit dit onderzoek zullen anoniem worden verwerkt en kunnen daarom niet bekend gemaakt worden op een individuele identificeerbare manier. In dit eerste deel van de studie vragen we naar je studentennummer. Je hoeft dit niet op te geven, maar we gebruiken het studentennummer om je antwoorden te koppelen aan je studieresultaten op het einde van het jaar. Op een van de volgende pagina's kan je aangeven of je hiervoor toestemming geeft. Voor vragen over dit onderzoek kan je terecht bij Sascha Krom (projectstagiaires@gmail.com) of bij Saskia Kunnen (e.s.kunnen@rug.nl).

Ik ga akkoord met deelname aan dit onderzoek

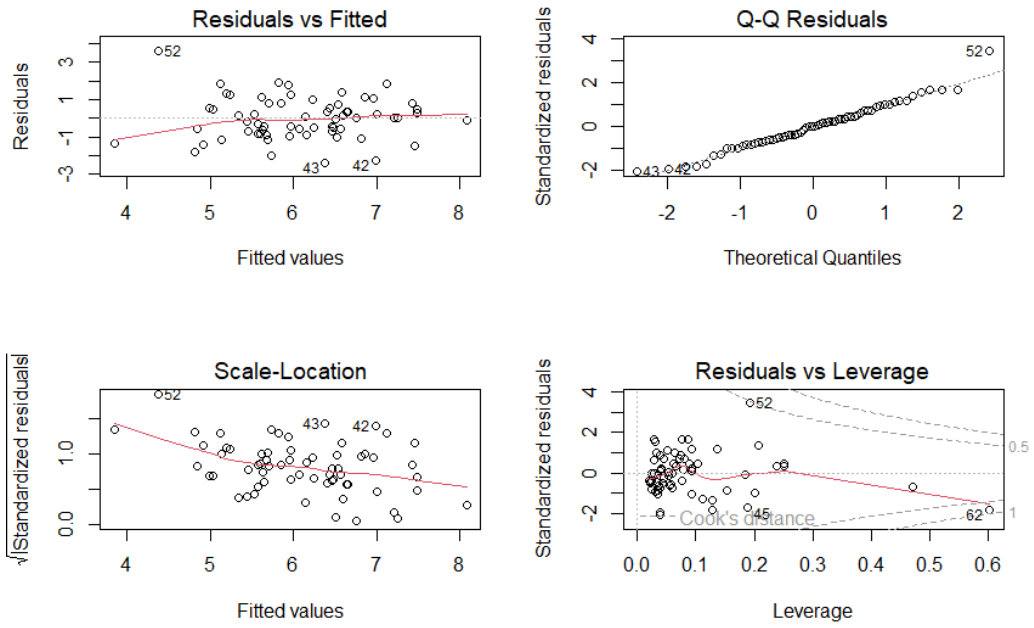
- o Ja
- o Nee

Appendix B

Assumption Check of Regression Models

Figure B1

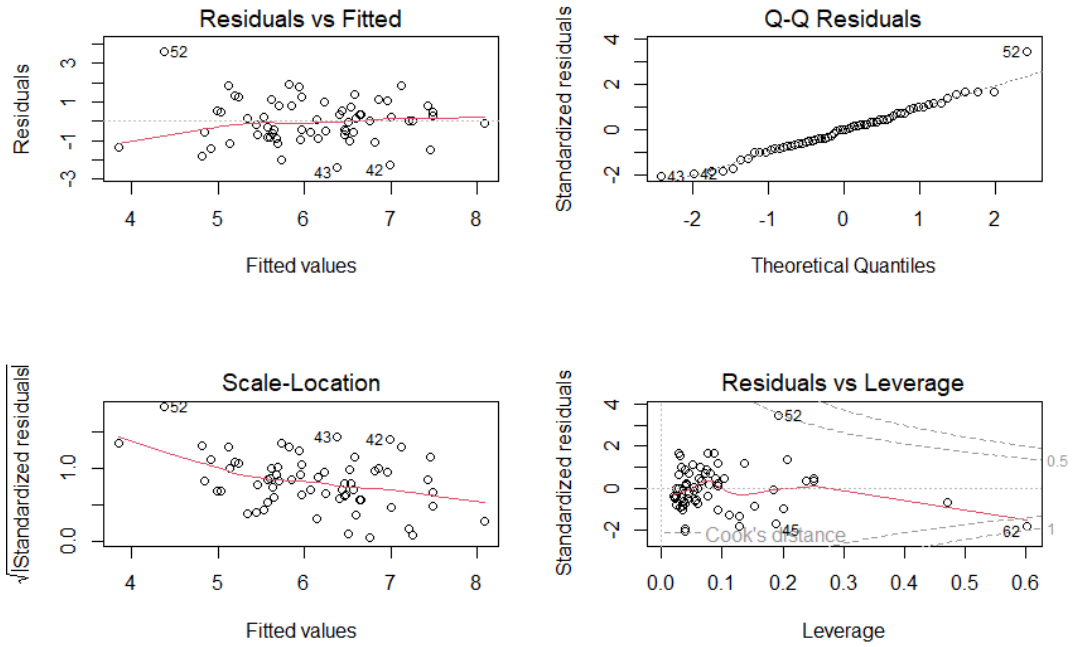
Diagnostic Plots for Regression Assumptions with Autonomy being the Dependent Variable



Note. Residuals vs. Fitted: Evaluates linearity and homoscedasticity. The residuals appear randomly scattered, suggesting no major violations. *Q-Q Plot of Residuals:* Assesses normality of residuals. Data points closely follow the diagonal line, indicating approximately normal residuals. *Scale-Location Plot:* Tests homoscedasticity. The spread of standardized residuals is relatively constant across fitted values, supporting this assumption. *Residuals vs. Leverage:* Identifies influential data points. No extreme leverage points are observed, indicating that no single observation excessively influences the model.

Figure B2

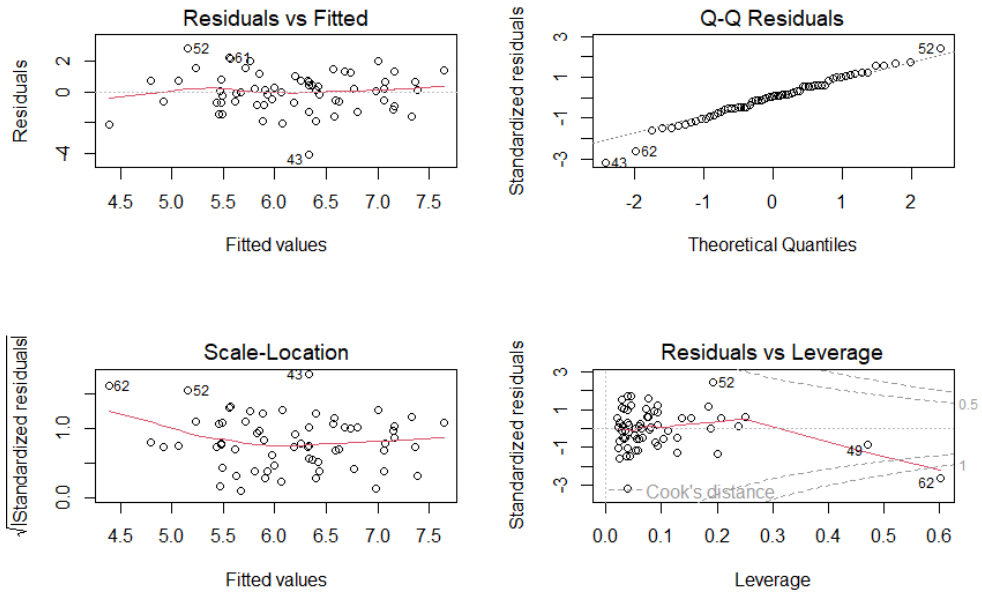
Diagnostic Plots for Regression Assumptions with Confidence being the Dependent Variable



Note. Residuals vs. Fitted: Evaluates linearity and homoscedasticity. The residuals appear randomly scattered, suggesting no major violations. *Q-Q Plot of Residuals:* Assesses normality of residuals. Data points closely follow the diagonal line, indicating approximately normal residuals. *Scale-Location Plot:* Tests homoscedasticity. The spread of standardized residuals is relatively constant across fitted values, supporting this assumption. *Residuals vs. Leverage:* Identifies influential data points. No extreme leverage points are observed, indicating that no single observation excessively influences the model.

Figure B3

Diagnostic Plots for Regression Assumptions with Relatedness being the Dependent Variable



Note. Residuals vs. Fitted: Evaluates linearity and homoscedasticity. The residuals appear randomly scattered, suggesting no major violations. *Q-Q Plot of Residuals:* Assesses normality of residuals. Data points closely follow the diagonal line, indicating approximately normal residuals. *Scale-Location Plot:* Tests homoscedasticity. The spread of standardized residuals is relatively constant across fitted values, supporting this assumption. *Residuals vs. Leverage:* Identifies influential data points. No extreme leverage points are observed, indicating that no single observation excessively influences the model.

Appendix C

R-Code

```
library(tidyverse)   # For data manipulation
library(lme4)        # For multilevel models
library(lmerTest)    # For p-values in multilevel models
library(car)         # For checking regression assumptions
library(MASS)        # For additional statistical functions
library(dplyr)
library(ggplot2)
library(psych)
library(haven)
library(foreign)
library(car)
########################PRE ANALYSIS#####################################################################
setwd("C:/Users/Jennifer/Documents/Uni/University Twente/MA/Master Thesis/Study_RStudio")
data <- read_sav("MasterData1.sav")
data$ID <- 1:nrow(data)
# Select only the required variables
data1 <- data[, c("ID", "emo_3_avg",
                  "emo_3_sd",
                  "need_1_last4", "need_2_last4", "need_3_last4", "eerstegen")]
data1$ID <- 1:nrow(data1)
# Descriptive statistics p-value
t.test(need_1_last4 ~ eerstegen, data = data1, var.equal = TRUE)
t.test(need_2_last4 ~ eerstegen, data = data1, var.equal = TRUE)
t.test(need_3_last4 ~ eerstegen, data = data1, var.equal = TRUE)
t.test(emo_3_avg ~ eerstegen, data = data1, var.equal = TRUE)
```

```
t.test(emo_3_sd ~ eerstegen, data = data1, var.equal = TRUE)

# Correlation Matrix

library("Hmisc")

res <- cor(data1)

round(res, 2)

res2 <- rcorr(as.matrix(data1))

res2

# Correcting the syntax error by properly closing the parentheses

res2 <- rcorr(as.matrix(data1), type = c("pearson", "spearman"))

# View the results

res2

# Filter complete cases

data1_filtered <- data1[complete.cases(data1), ]

# Mean-center variables

data1_filtered <- data1_filtered %>%

  mutate(emo_3_avg_mc = emo_3_avg - mean(emo_3_avg, na.rm = TRUE), emo_3_sd_mc = emo_3_sd -
mean(emo_3_sd, na.rm = TRUE))

############ Need 1

model_need1_step1 <- lm(need_1_last4 ~ emo_3_avg_mc + emo_3_sd_mc + eerstegen, data = data1_filtered)

summary(model_need1_step1)

# Need 1 Interaction

model_need1_step2 <- lm(need_1_last4 ~ emo_3_avg_mc +  emo_3_sd_mc + eerstegen +
emo_3_avg_mc:eerstegen + emo_3_sd_mc:eerstegen, data = data1_filtered)

summary(model_need1_step2)

########### Need 2

model_need2_step1 <- lm(need_2_last4 ~ emo_3_avg_mc + emo_3_sd_mc + eerstegen, data = data1_filtered)

summary(model_need2_step1)

#Need 2 Interaction
```

```
model_need2_step2 <- lm(need_2_last4 ~ emo_3_avg_mc +  emo_3_sd_mc + eerstegen +
emo_3_avg_mc:eerstegen + emo_3_sd_mc:eerstegen, data = data1_filtered)

summary(model_need2_step2)

#########Need 3

model_need3_step1 <- lm(need_3_last4 ~ emo_3_avg_mc + emo_3_sd_mc + eerstegen, data = data1_filtered)

summary(model_need3_step1)

# Need 3 Interaction

model_need3_step2 <- lm(need_3_last4 ~ emo_3_avg_mc +  emo_3_sd_mc + eerstegen +
emo_3_avg_mc:eerstegen + emo_3_sd_mc:eerstegen, data = data1_filtered)

summary(model_need3_step2)

confint(model_need1_step1, level = 0.95)

confint(model_need1_step2, level = 0.95)

# For Need 2

confint(model_need2_step1, level = 0.95)

confint(model_need2_step2, level = 0.95)

# For Need 3

confint(model_need3_step1, level = 0.95)

confint(model_need3_step2, level = 0.95)

# Diagnostics

diagnostic_plots <- function(model) {

  par(mfrow = c(2, 2))

  plot(model)

  par(mfrow = c(1, 1))

  print(vif(model))  # Check multicollinearity

}

diagnostic_plots(model_need1_step2)

diagnostic_plots(model_need2_step2)

diagnostic_plots(model_need3_step2)

# MISSING SIMPLE SLOPE ANALYSES FOR INTERACTIONS
```

```
data[is.na(data)] <- NA

# Daten für FGS (eerstegen == 1) filtern

data_fgs <- subset(data1_filtered, eerstegen == 1)

# Daten für CGS (eerstegen == 0) filtern

data_cgs <- subset(data1_filtered, eerstegen == 0)

# Simple Slope für FGS need 1

model_fgs <- lm(need_1_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_fgs)

summary(model_fgs)

# Simple Slope für CGS need 1

model_cgs <- lm(need_1_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_cgs)

summary(model_cgs)

# relationship der beziehung

ggplot(data1_filtered, aes(x = emo_3_avg_mc, y = need_1_last4, color = factor(eerstegen))) +

  geom_point(alpha = 0.6, size = 2) +  # Punkte für individuelle Personen

  geom_smooth(method = "lm", se = TRUE, size = 1.5) +  # Regressionslinien für FGS und CGS

  scale_color_manual(values = c("blue", "red"), labels = c("CGS", "FGS")) +

  labs(

    title = "Interaction of Average Negative Emotions and Group Status",

    x = "Average Negative Emotions",

    y = "Autonomy in the Last Four Waves",

    color = "Group") +

  theme_minimal()

# relationship der beziehung FGS, Variability neg Emotions und Autonomy

ggplot(data1_filtered, aes(x = emo_3_sd_mc, y = need_1_last4, color = factor(eerstegen))) +

  geom_point(alpha = 0.6, size = 2) +  # Punkte für individuelle Personen

  geom_smooth(method = "lm", se = TRUE, size = 1.5) +  # Regressionslinien für FGS und CGS

  scale_color_manual(values = c("blue", "red"), labels = c("CGS", "FGS")) +

  labs(
```

```
    title = "Interaction of Variability in Negative Emotions and Group Status",
    x = "Variability in Negative Emotions",
    y = "Autonomy in the Last Four Waves",
    color = "Group") +
  theme_minimal()
#####################################################
# Simple Slope für FGS need2
model_fgs2 <- lm(need_2_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_fgs)
summary(model_fgs2)
# Simple Slope für CGS need 2
model_cgs2 <- lm(need_2_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_cgs)
summary(model_cgs2)
# # relationship der beziehung FGS, Variability neg Emotions und Competence
ggplot(data1_filtered, aes(x = emo_3_sd_mc, y = need_2_last4, color = factor(eerstegen))) +
  geom_point(alpha = 0.6, size = 2) +  # Punkte für individuelle Personen
  geom_smooth(method = "lm", se = TRUE, size = 1.5) +  # Regressionslinien für FGS und CGS
  scale_color_manual(values = c("blue", "red"), labels = c("CGS", "FGS")) +
  labs(
    title = "Interaction of Variability in Negative Emotions and Group Status",
    x = "Variability Negative Emotions",
    y = "Competence in the Last Four Waves",
    color = "Group") +
  theme_minimal()
#####################################################
# Simple Slope für FGS need 3
model_fgs3 <- lm(need_3_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_fgs)
summary(model_fgs3)
# Simple Slope für CGS
```

```
model_cgs3 <- lm(need_3_last4 ~ emo_3_avg_mc + emo_3_sd_mc, data = data_cgs)
summary(model_cgs3)
# relationship der beziehung FGS, Variability neg Emotions und Relatedness
ggplot(data1_filtered, aes(x = emo_3_sd_mc, y = need_3_last4, color = factor(eerstegen))) +
  geom_point(alpha = 0.6, size = 2) +  # Punkte für individuelle Personen
  geom_smooth(method = "lm", se = TRUE, size = 1.5) +  # Regressionslinien für FGS und CGS
  scale_color_manual(values = c("blue", "red"), labels = c("CGS", "FGS")) +
  labs(
    title = "Interaction of Variability in Negative Emotions and Group Status",
    x = "Variability Negative Emotions",
    y = "Relatedness in the Last Four Waves",
    color = "Group"
  ) +
  theme_minimal()
# Erstelle ein leeres DataFrame für das Long-Format
long_data <- data.frame(
  ID = integer(),        # Teilnehmer-ID
  week = integer(),      # Woche
  eerstegen = integer(), # FGS/CGS-Indikator
  need_1 = numeric(),    # Werte für Need 1
  need_2 = numeric(),    # Werte für Need 2
  need_3 = numeric(),    # Werte für Need 3
  emo_3 = numeric(),     # Werte für Negative Experience (emo_3)
  emo_3_avg = numeric(), # Durchschnitt von emo_3
  emo_3_diff = numeric() # emo_3 - emo_3_avg)
# Schleife durch alle Teilnehmer (IDs)
for (i in 1:nrow(data)) {
  # Hole die Daten für diese ID
```

```
person_id <- data$ID[i]
eerstegen_value <- data$eerstegen[i]  # FGS/CGS-Indikator
# Hole die Werte für Need 1, Need 2, Need 3 und emo_3
need_1_values <- as.numeric(data[i, grep("^need_1\\.", names(data))])
need_2_values <- as.numeric(data[i, grep("^need_2\\.", names(data))])
need_3_values <- as.numeric(data[i, grep("^need_3\\.", names(data))])
emo_3_values <- as.numeric(data[i, grep("^emo_3\\.", names(data))])
# Berechne den Durchschnitt von emo_3 (ignoriere NA-Werte)
emo_3_avg_value <- mean(emo_3_values, na.rm = TRUE)
# Fülle fehlende Werte mit NA auf, falls weniger als 32 Wochen vorhanden sind
need_1_values <- c(need_1_values, rep(NA, 32 - length(need_1_values)))
need_2_values <- c(need_2_values, rep(NA, 32 - length(need_2_values)))
need_3_values <- c(need_3_values, rep(NA, 32 - length(need_3_values)))
emo_3_values <- c(emo_3_values, rep(NA, 32 - length(emo_3_values)))
# Berechne die Differenz emo_3 - emo_3_avg
emo_3_diff_values <- emo_3_values - emo_3_avg_value
# Erstelle ein temporäres DataFrame für diese Person
temp_data <- data.frame(
  ID = rep(person_id, 32),            # Wiederhole die ID für jede Woche
  week = 1:32,                        # Wochen von 1 bis 32
  eerstegen = rep(eerstegen_value, 32), # Wiederhole eerstegen
  need_1 = need_1_values,             # Werte für Need 1
  need_2 = need_2_values,             # Werte für Need 2
  need_3 = need_3_values,             # Werte für Need 3
  emo_3 = emo_3_values,               # Werte für Negative Experience (emo_3)
  emo_3_avg = rep(emo_3_avg_value, 32), # Durchschnitt von emo_3
  emo_3_diff = emo_3_diff_values      # emo_3 - emo_3_avg)
# Füge die temporären Daten dem Long-Format-Datenset hinzu
```

```
  long_data <- rbind(long_data, temp_data)
}
# Überprüfe das Ergebnis
head(long_data)
long_data <- long_data %>%
  filter(!is.na(eerstegen))
# ICC#############################
library(lme4)
# Fit null models (random intercept only) for each dependent variable
model_autonomy <- lmer(need_1 ~ (1 | ID), data = long_data)
model_competence <- lmer(need_2 ~ (1 | ID), data = long_data)
model_relatedness <- lmer(need_3 ~ (1 | ID), data = long_data)
model_neg_emotions <- lmer(emo_3 ~ (1 | ID), data = long_data)
# Extract variance components
var_autonomy <- as.data.frame(VarCorr(model_autonomy))$vcov
var_competence <- as.data.frame(VarCorr(model_competence))$vcov
var_relatedness <- as.data.frame(VarCorr(model_relatedness))$vcov
var_neg_emotions <- as.data.frame(VarCorr(model_neg_emotions))$vcov
# Calculate ICC
icc_autonomy <- var_autonomy[1] / (var_autonomy[1] + var_autonomy[2])
icc_competence <- var_competence[1] / (var_competence[1] + var_competence[2])
icc_relatedness <- var_relatedness[1] / (var_relatedness[1] + var_relatedness[2])
icc_neg_emotions <- var_neg_emotions[1] / (var_neg_emotions[1] + var_neg_emotions[2])
# Print ICC values
icc_autonomy
icc_competence
icc_relatedness
icc_neg_emotions
```

```
####################Vusualisation between-person and within-person##################

library(ggplot2)

library(dplyr)

library(gridExtra)

#############################################################NEED1#################################

# Between-Person Association (Plot A)

between_plot <- ggplot(long_data, aes(x = emo_3_avg, y = need_1)) +

  geom_point(alpha = 0.5) +

  geom_smooth(method = "lm", se = FALSE, linetype = "dashed") +  # Gestrichelte Trendlinie

  labs(title = "Plot A: Between-Person Association",

       x = "Negative Emotion Person-Mean",

       y = "Autonomy") +

  theme_minimal()

# Within-Person Association (Plot B)

within_plot <- ggplot(long_data, aes(x = emo_3_diff, y = need_1, group = ID)) +

  geom_line(alpha = 0.4, color = "black") +  # Individuelle schwarze Linien

  geom_smooth(aes(group = 1), method = "lm", se = FALSE, linetype = "dashed", color = "blue", size = 1) +  # Eine
blaue gestrichelte Linie für den Trend

  labs(title = "Plot B: Within-Person Association",

       x = "Negative Emotion Person-Mean Centered",

       y = "Autonomy") +

  theme_minimal()

# Beide Plots anzeigen

grid.arrange(between_plot, within_plot, ncol = 2)

#############################################################Need2#################################
#########################################

# Between-Person Association (Plot A)

between_plot <- ggplot(long_data, aes(x = emo_3_avg, y = need_2)) +

  geom_point(alpha = 0.5) +
```

```
  geom_smooth(method = "lm", se = FALSE, linetype = "dashed") +  # Gestrichelte Trendlinie

  labs(title = "Plot A: Between-Person Association",

       x = "Negative Emotion Person-Mean",

       y = "Competence") +

  theme_minimal()

# Within-Person Association (Plot B)

within_plot <- ggplot(long_data, aes(x = emo_3_diff, y = need_2, group = ID)) +

  geom_line(alpha = 0.4, color = "black") +  # Individuelle schwarze Linien

  geom_smooth(aes(group = 1), method = "lm", se = FALSE, linetype = "dashed", color = "blue", size = 1) +  # Eine
blaue gestrichelte Linie für den Trend

  labs(title = "Plot B: Within-Person Association",

       x = "Negative Emotion Person-Mean Centered",

       y = "Competence") +

  theme_minimal()

# Beide Plots anzeigen

grid.arrange(between_plot, within_plot, ncol = 2)

########################NEED3#########################################################################

# Between-Person Association (Plot A)

between_plot <- ggplot(long_data, aes(x = emo_3_avg, y = need_3)) +

  geom_point(alpha = 0.5) +

  geom_smooth(method = "lm", se = FALSE, linetype = "dashed") +  # Gestrichelte Trendlinie

  labs(title = "Plot A: Between-Person Association",

       x = "Negative Emotion Person-Mean",

       y = "Relatedness") +

  theme_minimal()

# Within-Person Association (Plot B)

within_plot <- ggplot(long_data, aes(x = emo_3_diff, y = need_3, group = ID)) +

  geom_line(alpha = 0.4, color = "black") +  # Individuelle schwarze Linien
```

```
  geom_smooth(aes(group = 1), method = "lm", se = FALSE, linetype = "dashed", color = "blue", size = 1) +  # Eine blaue gestrichelte Linie für den Trend

  labs(title = "Plot B: Within-Person Association",

       x = "Negative Emotion Person-Mean Centered",

       y = "Relatedness") +

  theme_minimal()

# Beide Plots anzeigen

grid.arrange(between_plot, within_plot, ncol = 2)

# Umwandeln der 'eerstegen'-Variable in einen einfachen Faktor

long_data$eerstegen <- as_factor(long_data$eerstegen)

library(nlme)

##################MLM#################################

library(nlme)

library(sandwich)

library(clubSandwich)

library(lmtest)

#########Need 1#########################

fit1 <- lme(

  fixed = need_1 ~ 1 + week + emo_3_avg * eerstegen + emo_3_diff * eerstegen,

  random = ~ 1 + emo_3_diff | ID,

  correlation = corAR1(form = ~ 1 | ID),

  data = long_data,

  na.action = na.omit)

robust_se <- vcovCR(fit1, type = "CR2")  # "CR2" is recommended for small samples

summary(fit1, robust = TRUE)

intervals(fit1)

library(emmeans)

# Get simple slopes for each group
```

```
simple_slopes <- emtrends(fit1, var = "emo_3_avg", specs = "eerstegen")
summary(simple_slopes, infer = TRUE)
#############Need 2#################
fit2 <- lme(
  fixed = need_2 ~ 1 + week + emo_3_avg * eerstegen + emo_3_diff * eerstegen,
  random = ~ 1 + emo_3_diff | ID,
  correlation = corAR1(form = ~ 1 | ID),
  data = long_data,
  na.action = na.omit)
robust_se <- vcovCR(fit2, type = "CR2")  # "CR2" is recommended for small samples
summary(fit2, robust = TRUE)
intervals(fit2)
# Get simple slopes for each group
simple_slopes <- emtrends(fit2, var = "emo_3_avg", specs = "eerstegen")
summary(simple_slopes, infer = TRUE)
###############Need 3#####################
fit3 <- lme(
  fixed = need_3 ~ 1 + week + emo_3_avg * eerstegen + emo_3_diff * eerstegen,
  random = ~ 1 + emo_3_diff | ID,
  correlation = corAR1(form = ~ 1 | ID),
  data = long_data,
  na.action = na.omit)
robust_se <- vcovCR(fit3, type = "CR2")  # "CR2" is recommended for small samples
summary(fit3, robust = TRUE)
intervals(fit3)
simple_slopes <- emtrends(fit3, var = "emo_3_avg", specs = "eerstegen")
summary(simple_slopes, infer = TRUE)
###############calculate standardized estimates Need 1################
```

```
long_data$week_z <- scale(long_data$week)
long_data$emo_3_avg_z <- scale(long_data$emo_3_avg)
long_data$emo_3_diff_z <- scale(long_data$emo_3_diff)
fit1_std <- lme(
  fixed = need_1 ~ 1 + week_z + emo_3_avg_z * eerstegen + emo_3_diff_z * eerstegen,
  random = ~ 1 + emo_3_diff_z | ID,
  correlation = corAR1(form = ~ 1 | ID),
  data = long_data,
  na.action = na.omit)
library(clubSandwich)
robust_se <- vcovCR(fit1_std, type = "CR2")  # "CR2" recommended for small samples
coefs <- coef_test(fit1_std, vcov = robust_se)
estimates <- coefs$beta  # Fixed effect estimates
robust_ses <- coefs$SE   # Robust standard errors
# Compute 95% confidence intervals
lower_ci <- estimates - 1.96 * robust_ses
upper_ci <- estimates + 1.96 * robust_ses
results_table <- data.frame(
  Predictor = rownames(coefs),
  "Std. Estimate" = round(estimates, 3),
  "95% CI Lower" = round(lower_ci, 3),
  "95% CI Upper" = round(upper_ci, 3),
  "p-value" = round(coefs$p_Satt, 3)  # Extract p-values)
print(results_table)
################ Calculate standardized estimates for need_2 (Competence) #################
long_data$need_2_z <- scale(long_data$need_2)  # Standardize need_2
fit2_std <- lme(
  fixed = need_2_z ~ 1 + week_z + emo_3_avg_z * eerstegen + emo_3_diff_z * eerstegen,
```

```
  random = ~ 1 + emo_3_diff_z | ID,
  correlation = corAR1(form = ~ 1 | ID),
  data = long_data,
  na.action = na.omit)
robust_se2 <- vcovCR(fit2_std, type = "CR2")
coefs2 <- coef_test(fit2_std, vcov = robust_se2)
estimates2 <- coefs2$beta
robust_ses2 <- coefs2$SE
# Compute 95% confidence intervals
lower_ci2 <- estimates2 - 1.96 * robust_ses2
upper_ci2 <- estimates2 + 1.96 * robust_ses2
results_table2 <- data.frame(
  Predictor = rownames(coefs2),
  "Std. Estimate" = round(estimates2, 3),
  "95% CI Lower" = round(lower_ci2, 3),
  "95% CI Upper" = round(upper_ci2, 3),
  "p-value" = round(coefs2$p_Satt, 3))
print(results_table2)
################ Calculate standardized estimates for need_3 (Relatedness) #################
long_data$need_3_z <- scale(long_data$need_3)  # Standardize need_3
fit3_std <- lme(
  fixed = need_3_z ~ 1 + week_z + emo_3_avg_z * eerstegen + emo_3_diff_z * eerstegen,
  random = ~ 1 + emo_3_diff_z | ID,
  correlation = corAR1(form = ~ 1 | ID),
  data = long_data,
  na.action = na.omit)
robust_se3 <- vcovCR(fit3_std, type = "CR2")
coefs3 <- coef_test(fit3_std, vcov = robust_se3)
```

```
estimates3 <- coefs3$beta

robust_ses3 <- coefs3$SE

# Compute 95% confidence intervals

lower_ci3 <- estimates3 - 1.96 * robust_ses3

upper_ci3 <- estimates3 + 1.96 * robust_ses3

results_table3 <- data.frame(

  Predictor = rownames(coefs3),

  "Std. Estimate" = round(estimates3, 3),

  "95% CI Lower" = round(lower_ci3, 3),

  "95% CI Upper" = round(upper_ci3, 3),

  "p-value" = round(coefs3$p_Satt, 3))

print(results_table3)
```

Appendix D

Acknowledgement of AI Support

In this master's thesis, ChatGPT was used as a supportive tool to make certain research processes more efficient. This included refining the conceptual framework of the study by creating first ideas, structuring and editing individual text sections for enhanced language and grammar, as well as creating code templates for data analysis in R-Studio. All theoretical interpretations, methodological decisions, and final analyses were conducted independently by the author to ensure the scientific integrity and originality of the work.