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The interplay of personal and contextual diversity during the first year at Higher Education: Combining a quantitative and a qualitative approach

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Abstract

Research on student transition into Higher Education (HE) has taken different theoretical perspectives. First, studies investigated personal variables such as students' self-efficacy, emotions and motivation regarding the transition from school to HE. A second strand of research focused on contextual variables, for instance college effectiveness research. With this paper, we combine both the personal and the contextual approach. We aim to investigate the interaction between personal and contextual diversity during the transition into HE, taking into account students' diversity in particular with regard to gender and individual characteristics, such as self-efficacy. We explored the heterogeneity in students' personal characteristics by conducting a latent profile analysis (LPA) based on students' intrinsic motivation, self-efficacy and anxiety before entering Higher Education. LPA resulted in three distinct profiles, with significant differences in how students perceived the first year. This finding suggests that students' personal characteristics when entering Higher Education influence how they experience the study environment. To investigate the interplay between individual and contextual differences in more detail, we conducted a qualitative longitudinal study with 14 first-year students in parallel with the panel survey. We found that individual students react very differently to specific characteristics and events of the first-year environment. Our study adds to the growing body of research that aims to grasp the complexity of interactions between individual and contextual differences. Specifically, we illustrate how combining quantitative and qualitative methods can provide new insights into person-context interactions.

Keywords: transition, longitudinal study, latent profile analysis, quantitative-qualitative, longitudinal

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1. Introduction

For many students, entering HE is a decisive moment in their life with implications that reach far beyond merely changing the educational institution, their hometown, or country. Often, students in HE at the same time stop living with their parents, having to adjust to a lifestyle and to a social environment that is fundamentally different from what they have known before. To some extent, it is even necessary to disconnect from their previous environment, e.g. loosening the ties to parents and friends from home (Tinto, 1993). A successful transition requires students to develop an identity and a sense of belonging to the new socio-cultural context of HE (Perry & Allard, 2003). Concerning the academic requirements of HE, students have to adapt or develop their learning strategies to respond to various challenges, such as greater learner autonomy or higher amounts of content to be mastered (Coertjens, Donche, Maeyer, van Daal, & van Petegem, 2017; Donche, Coertjens, & van Petegem, 2010; Donche, Maeyer, Coertjens, van Daal, & van Petegem, 2013). Consequently, many students experience the transition into HE as a shock that may impede their academic success and even lead to dropping out even though they have the intellectual ability to master the academic requirements (Briggs, Clark, & Hall, 2012; Dyson & Renk, 2006; Gale & Parker, 2012; Kuh, Cruce, Shoup, & Kinzie, 2008; Leese, 2010; Tinto, 1993).

Research on student transition has been mainly conducted from two theoretical perspectives. First, studies investigated *personal variables* such as students' self-efficacy, emotions, and motivation regarding the transition from school to HE. For example, students with high self-efficacy find it easier to master the challenges of developing their identities as learners within the new educational context, are more motivated to learn, show better performance (Fenollar, Román, & Cuestas, 2007; Hsieh, Sullivan, & Guerra, 2007; Lau, Liem, & Nie, 2008; Martin, Colmar, Davey, & Marsh, 2010; Prat-Sala & Redford, 2010). Academic emotions, particularly study-related anxiety, affect performance and retention (Pekrun, Elliot, & Maier, 2009; Pekrun, Goetz, Titz, & Perry, 2002; Pekrun, Götz, & Perry, 2005; Pekrun & Linnenbrink-Garcia, 2012; Villavicencio & Bernardo, 2013). Both self-efficacy and students' emotions are closely linked to student motivation, which influences how students approach academic tasks.

The second strand of research investigates the transition to HE by looking at contextual characteristics of study environments. These contextual factors broadly fall into two categories, academic and social (Chapman & Pascarella, 1983; Tinto, 1993). Academic factors include requirements and challenges such as exams as well as resources such as communication with teaching faculty. Social factors are the quality of students' social relationships with each other as well as access to peer networks as resources for coping with challenges (Nevill & Rhodes, 2004; Rocconi, 2011). Previous research primarily established the effects of specific characteristics of the academic and social study contexts on student performance and retention, showing e.g. general positive effects of student learning communities (ibid.). In comparison, little is known about how subgroups of students, distinguished by sets of personal characteristics, perceive and interact with features of the academic and social study environment.

Both the personal and the contextual approach to researching the transition to HE point to the importance of acknowledging student diversity when investigating transition processes. Depending on their personal prerequisites, students respond differently to HE contexts, leading to very individual experiences of the transition. Hitherto, personal diversity and contextual diversity have been mostly investigated separately from each other, however, limiting our understanding of the interactions between these two dimensions. Recently, researchers are increasingly studying the role of students' diversity in transition processes, e.g. by using longitudinal research (Kyndt et al., 2015; Kyndt, Donche, van Daal, Gijbels, & van Petegem, 2019) and profile analysis (De Clercq, Galand, & Frenay, 2020; Martens & Metzger, 2017). Likewise, research has addressed contextual diversity at the meso-level, i.e. the design of study environments and its effects on different students' educational experiences (Duchatelet & Donche, 2019). Such research suggests that different bodies of students may react in very distinctive ways to elements in their study environment.

Building on social-cognitive theory (Bandura, 1989), the research presented in this paper integrates the personal and the contextual approach to develop a more detailed picture of student transition from school to HE. We address two main goals: First, we aim to identify subgroups in the first-year population of a Swiss business school, using study-related motivation, anxiety, and self-efficacy as grouping variables. Second, we aim to specify which contextual aspects of the study environment are particularly relevant for shaping students' experiences of the transition to HE and how students with different personal characteristics interact differently with these contextual features.

To achieve these goals, we conducted two studies in parallel: First, a longitudinal panel study investigating the development of students' self-efficacy, anxiety, and motivation during the first year in HE. We found that these constructs developed negatively throughout the first year of study (Brahm, Jenert, & Wagner, 2017). Based on the distribution of the data, we assumed that, depending on their individual dispositions, students interact differently with the study environment they encounter. To test this hypothesis and to better understand such diverse developments, we identified subgroups using latent profile analysis. Second, in parallel to the quantitative panel survey, we conducted a longitudinal interview study with students sampled from the panel cohort. The interview questions and the qualitative analysis of the interviews were based on the same theoretical framework as the panel study.

Our results point to various dimensions of student and contextual diversity that influence how and how well students manage the transition process. Our research contributes to the scholarly discourse on student transition as it provides a more fine-grained view on the different dimensions of diversity that influence how students experience the transition to HE. It complements the growing number of studies using longitudinal and profile analysis (see above). Furthermore, our results support the notion that theoretical assumptions on the relationships between contextual and personal variables may need reconsidering when student diversity is taken into account (De Clercq et al., 2020).

2. Literature Review

Over the last decades, research has produced a plethora of variables, which impact student success and retention in HE (Schneider & Preckel, 2017). Our research aims to combine personal and contextual factors influencing the transition to HE. This approach is rooted in social-cognitive theory (Bandura, 1989) which conceives of human agency as an interaction between personal factors such as self-efficacy, environmental factors such as perceived support or competition, and behavioural factors such as expected outcomes. Consequently, in our review of personal variables, we focused on constructs that supposedly influence how students interact with their study environment. Following this rationale, we investigated study-related self-efficacy, anxiety, and motivation in our survey-based panel study. From a social-cognitive perspective, all three constructs can be described as personal dispositions that influence how individuals perceive and act on their environment. Moreover, all three constructs have already been investigated regarding the transition to HE. Concerning contextual characteristics, we applied a broader approach to exploit the potential of the in-depth interviews in the qualitative study. Research on student transition has distinguished between academic and social integration as two important dimensions of transitioning into HE (Chapman & Pascarella, 1983; Tinto, 1993). Consequently, we focused our interviews on characteristics of the study environment that related to academic challenges and support as well as to social aspects such as peer interaction.

2.1 Personal variables

The first personal variable relevant for dealing with the challenges of the transition to HE is students' academic **self-efficacy** (Robbins et al., 2004; Talsma, Schüz, Schwarzer, & Norris, 2018). Self-efficacy refers to students' judgements about their capabilities to fulfil the performance

expectations across different task activities. There is ample evidence that self-efficacy has positive effects on studying. A systematic review by Honicke and Broadbent (2016) shows moderate correlations between self-efficacy and academic performance. In a meta-analytic panel analysis, Talsma et al. (2018) established a reciprocal relationship between self-efficacy and academic performance. The level of self-efficacy predicted future academic performance, and, at the same time, performance affected the development of self-efficacy. Regarding students' transition processes, a study with 192 students suggested that "high self-efficacy was related to better college adjustment" (Ramos-Sánchez & Nichols, 2007, p. 6). Furthermore, an increasing number of studies points to self-efficacy as an important resilience factor for disadvantaged groups such as so-called non-traditional or at-risk students in HE. In a study comparing first-generation to non-first-generation students, Aymans and Kauffeld (2015) found that for both groups, a higher level of self-efficacy was associated with a reduced dropout risk. Research on the development of self-efficacy in HE reveals complex interrelations with student characteristics and learning environments. In a longitudinal study with more than 600 students, Duchatelet and Donche (2019) found that autonomy-supporting learning environments can foster self-efficacy, thus, establishing a link between study context and personal development. Overall, findings in the HE context are in line with Bandura's (1989) social-cognitive theory which states that self-efficacy can be fostered by experiencing mastery and, at the same time, is a prerequisite for agency. Students who feel self-efficacious are more confident about their abilities and may feel less threatened by HE contexts. This makes them more agentic and resilient against challenges, improving their performance, and supporting their self-efficacy even further. Thus, we consider self-efficacy a key construct for understanding the relations between personal and contextual factors during HE transitions.

Second, in contrast to self-efficacy, students' **anxiety** negatively affects their academic performance (Mellanby & Zimdars, 2011; Zeidner, 1998) and their transition to higher education (Christie, Tett, Cree, Hounsell, & McCune, 2008). Hailikari, Kordts-Freudinger, and Postareff (2014) found that during their first study year students experienced satisfaction and enthusiasm, but they more frequently reported dissatisfaction, confusion, and anxiety. The study also found a positive relationship between the absence of negative emotions and study progress as well as achievement. A recent study with 233 first-year students in New Zealand confirms the negative effects of state anxiety on students' grades and self-efficacy. At the same time, this research found correlations between students' individual learning strategies and their experiences of anxiety and self-efficacy in exam situations (Sotardi & Brogt, 2019). Further investigation revealed that the relationships between anxiety and performance are influenced by the type of assessment (test or essay assignment) (Sotardi, Bosch, & Brogt, 2020). This finding hints at the interaction between students' personal and contextual diversity, i.e. a specific kind of anxiety being triggered by specific kinds of exams. Much like self-efficacy, anxiety can thus be regarded as a personal factor that is actualized through specific situations. As the transition to HE confronts students with many challenging situations such as exams, uncertain performance expectations, or unfamiliar social conventions, anxiety is an important construct for understanding differences in students' interactions with the study environment. In our quantitative research, we are interested in students' general levels of anxiety throughout the first study year.

Finally, we consider **motivation** to be an important construct for understanding how different students interact with study contexts. Intrinsic motivation is associated with proactive student behaviour such as using deep approaches to studying (Byrne & Flood, 2005). The development of students' motivation during the transition from school to HE has been repeatedly investigated. Most studies report negative developments throughout university studies (Busse, 2013; Jacobs & Newstead, 2000; Lau et al., 2008; Lieberman & Remedios, 2007; Martin et al., 2010; Pan & Gauvain, 2012), while few report an increase (e.g. Ratelle, Guay, Larose, & Senécal, 2004). In a longitudinal study with measurements towards the end of secondary school and at the beginning of HE, Kyndt et al. (2015) found a sharp increase in autonomous motivation at the point where students entered university. Once in HE, however, this growth reduced again significantly. Thus, it seems that students' expectations of what HE will be like are more motivating than their actual experiences. Martens and Metzger (2017) distinguished different subpopulations of students based on their motivation and related them with different elements of the integrated model of learning and action. They found that self-determined motivation was

associated with desirable learning behaviour such as persistent goal pursuit, acceptance of responsibility, and experiences of success. Other subgroups showed more differentiated profiles. For example, students with anxious learning motivation, mostly trying to avoid negative consequences, scored high in responsibility acceptance, but showed little sensitive coping strategies. The authors state that "the imbalance of high motivation and low intention will be most probably experienced as anxiety" (Martens & Metzger, 2017, p. 41). A comparison between students of Business Economics and Educational Sciences showed differences in the occurrence, the distribution, and the respective patterns of the subgroups between study programs (ibid.). This, again, suggests that motivation is an important construct for understanding diversity among students' personal characteristics as well as their interaction with study contexts. This is further supported by Noyens, Donche, Coertjens, van Daal, and van Petegem (2019) who showed that amotivation negatively impacts students' social integration during their first year at university.

2.2 Contextual factors

As we have argued above, the extent of self-efficacy, anxiety, and motivation that students exhibit is related to their experience of the study environment. In the qualitative part of our research, we aim to uncover, which concrete features of the first-year study environment shape students' transition experience. In particular, we strive to understand better, how students with different personal characteristics differ in their perceptions and interactions with these relevant contextual features. Following the qualitative paradigm, we kept the interview study more open than the quantitative study. Developing the interview questions, however, we used the well-established distinction between academic and social integration during HE transition.

Concerning **academic factors**, research found interactions between students and faculty to be particularly important for first-year students' experience, performance, and persistence. In a survey of 530 first-year students, the first impressions of the university staff mattered most for their first-year experience followed by their satisfaction with university life (Meehan & Howells, 2018). Various studies report significant effects of student-faculty interactions on performance indicators such as growth in knowledge and academic adjustment (Delaney, 2008; Kuh & Hu, 2001). Kim and Lundberg (2016) modeled the relationships between the extent of student-faculty interactions, students' behavior, and their intellectual development. They found that this interaction fostered students' engagement in class. This relationship was moderated by the levels of academic self-challenge and sense of belonging. In their qualitative account, Cotten and Wilson (2006) distinguish between different kinds of student-faculty interactions. They report that, generally, student-faculty interactions outside formal settings are scarce and that students fear negative effects from approaching faculty. This may suggest that students with a lower general level of anxiety and higher self-efficacy may also be able to benefit more from faculty interaction. Another factor relating to academic contexts are performance requirements in general. Obviously, exams play an important role in this regard (Cassady & Johnson, 2002). Beyond that, qualitative findings indicate that students' anxiety is caused by "not knowing what is expected" (Christie et al., 2008, p. 569), i.e. uncertainty about academic performance expectations. Building on these findings, we can hypothesize that students with higher levels of self-efficacy may feel less uncertain and anxious about performance requirements.

Concerning **social aspects,** student-peer interactions and particularly learning communities can have positive effects by connecting students with peers (Rocconi, 2011; Thompson & Mazer, 2009). For instance, Walsh, Larsen & Parry (2009) identified peers as the most frequent source of information and support. Zander, Brouwer, Jansen, Crayen, and Hannover (2018) found that integrating students in organized learning communities also helps them find social support networks. Social support from peers may be particularly beneficial in stressful situations, such as the transition to university (Ahern et al., 2006; Thomas, 2002). However, peer communities can also have segregation effects because students tend to group with others who share similar achievement levels (Brouwer, Flache, Jansen, Hofman, & Steglich, 2018). Also, some students may find it difficult to socialize away from the learning

environment (Riordan & Carey, 2019) which might also be due to the varying responsibilities students face (e.g. balancing work or study-related demands). Again, this may be a hint that students profit more or less from peer interactions, depending on how efficacious, anxious, and motivated they are to engage with others.

Summarizing, there is an increasing number of studies that aim to identify systematic differences within student populations by identifying subgroups defined by some personal variables (e.g. De Clercq et al., 2020; Duchatelet & Donche, 2019; Martens & Metzger, 2017; Sotardi et al., 2020). In this regard, self-efficacy, anxiety, and motivation have proved to be appropriate grouping variables. In contrast, only few studies (e.g. De Clercq et al., 2020) have investigated how different subgroups of students perceive their academic and social environment of the first year in HE. Thus, in our research, we apply a quantitative analysis to identify subgroups of students as defined by their self-efficacy, anxiety, and motivation while the parallel qualitative study helps us to understand better how such personal differences affect students' interactions with their study environment.

3. The studies: Methods, Samples and Data Analysis

3.1 Panel study on student transition

The research was conducted as a longitudinal study on students' self-efficacy, anxiety, and motivation during their first year at the University of St. Gallen/Switzerland. At this university, all students go through the same first-year study program, confronting them with very similar experiences, academic demands, and social environments. We asked all first-year students enrolled during the academic year 2011/2012 to fill in an online questionnaire at three time-points throughout their first year, thereby assessing their transition into university studies. The first data (t1) was collected about one week before the students entered the university (August 2011), the second (t2) in December 2011, and the third (t3) in April 2012 (after they had received the results of their first exams). Thus, the time lag between the measurement points is roughly equal. The age, gender, and nationality distribution of the sample reflected the general characteristics of the student population; the sample, therefore, was representative of the first-year students at the University of St. Gallen in 2011/2012. The response rate was about 63%, with 820 utilizable questionnaires at t1. The return rate at t3 was approx. 22% (285 questionnaires) of the students registered at t1. This is significantly worse than t1, but not unusually low for online surveys, in particular for a longitudinal study (Nulty, 2008; Sax, Gilmartin, & Bryant, 2003).

Table 1

Sample overview for the panel study

	t1	**t2**	**t3**
Number of participants	820	413	285
Average age	19.57	19.53	19.56
Gender	35.4% females, 64.2% males	35.4% females, 64.2% males	33.9% females, 66.1% males
Nationality	73.9% Swiss, 18.8% German, 7.4% other	70.9% Swiss, 22.5% German, 6.6% other	70.7% Swiss, 23.2% German, 6.0% other

At each time point, we collected the data with an online questionnaire, using scales on different aspects of motivation and emotions as well as scales on other individual and socio-cultural factors of studying. The questionnaire was administered in German. Based on self-determination theory (Deci & Ryan, 1996), the constructs intrinsic motivation (3 items, sample item: „I work and study for my course of studies because I am interested in the learning content.") (Grätz-Tümmers, 2003) and extrinsic motivation (3 items, sample item: „The most important thing to me is having a good grade point average in my studies.")[1] (Pintrich, Smith, Garcia, & McKeachie, 1991) were assessed. Furthermore, we included scales on students' self-efficacy (3 items, sample item: „If I make enough of an effort, I can master the learning content."), as well as students' anxiety (sample item: „I am worried about whether I can even manage my studies.") (Pekrun et al., 2005). To account for students' overall attitude, we also asked them what they thought about the institution (3 items, sample item, I like studying at the University of St. Gallen). At each measurement point, we asked the students which grade they strive for. At the third measurement point, we asked the remaining students how satisfied they were with their overall exam results. We used this as an, albeit weak, proxy for their performance. All scales met the expectations concerning psychometric properties (Cronbach`s Alpha between .712-784) and the assumed factor structure of the instrument has been confirmed (Brahm & Jenert, 2015). As independent variables, students' gender, origin, and age were also collected.

For data analysis, we used two major procedures: First, subgroups were identified applying latent profile analysis (LPA). This is a "technique[s] for recovering hidden groups in data by obtaining the probability that individuals belong to different groups" (Ferguson, Moore, & Hull, 2019, p. 1). In comparison to traditional cluster analysis, it has multiple advantages (De Clercq et al., 2020): "reducing type-1 error, accounting for measurement error, providing more rigorous decision criteria upon the number of profiles to retain, assessing the probability of membership of one participant into each respective profile" (p 4). To determine the latent profile, we used the personal variables (see section 2.1) at t1 to account for students' diversity at the beginning of their studies. We decided on the number of profiles to select by applying the statistical criteria suggested by Masyn (2013) and Ferguson et al. (2019) to assess LPA models: The Bayesian Information Criterion (BIC), and the Lo-Mendell-Rubin likelihood ratio test (LMR p value), to evaluate the relative fit of the models. The information criterion index BIC is a descriptive index and is based on the model likelihood. It takes the complexity of the

[1] Results for extrinsic motivation showed that it developed much the same as intrinsic motivation, however, on lower levels. As this does not add any extra information for this study, we do not report the results for extrinsic motivation.

model into account (i.e., more profiles indicate more complexity) and assesses how well the model fits the data. Nylund, Asparouhov, and Muthén (2007) recommend using the BIC index for evaluating the relative model fit. A lower value of the BIC indicates a better model fit and is preferred. The Lo-Mendell-Rubin likelihood (LMR) ratio is a statistical test that is not based on Chi-Square distributions but on a derived distribution and parametric bootstrapping. This test compares the model fit improvement between a model with k profiles and (k-1) profiles. A significant p-value indicates an improvement in the model fit in the k-profile model compared to the (k-1) profile model. Finally, entropy is a measure of classification uncertainty which is used less often (Ferguson et al., 2019). However, it can be helpful to determine the quality of the delineation of profiles as it measures "how well each LPA model partitions the data into profiles" (ibid., p. 3). Values higher than 0.8 indicate a good profile separation (Asparouhov & Muthen, 2014). It is worthwhile noting that this interpretation is counterintuitive as "lower entropy values actually represent more uncertainty or chaos in the model" (Ferguson et al., 2019, p. 3).

To interpret the LPA models, profile separation is examined as well (Masyn, 2013). Profile separation shows to what extent the different profiles are separate from each other. A high profile separation means that a respondent can clearly be assigned to a particular profile. A value of 0.70 or greater is considered acceptable (Nagin, 2005). Beyond the statistical criteria, the model with the best interpretable and theoretically meaningful solution should be preferred.

To analyze the data further, we also used ANOVA and general linear models to detect differences between the profiles. Data were analyzed with SPSS Version 24 and Mplus 8.

3.2 Qualitative longitudinal study

The qualitative study was conducted in parallel with the panel survey. We conducted a longitudinal series of interviews with 14 first-year students of the same cohort as the quantitative panel. We used purposeful sampling (Patton, 2002), defining selection criteria, to recruit participants. Unfortunately, we could not use the t1 survey data to select our sample due to privacy reasons. The aim, though, was to have a varied sample with students who would differ in their self-efficacy, anxiety, and motivation. Therefore, we slightly overrepresented women compared to the overall first-year student population. In the years before our study, women's dropout during the first-year at the University of St. Gallen had been significantly higher compared to their male counterparts despite showing the same A-level GPA. This suggested that, generally, women might be different in their non-cognitive personal characteristics as compared to men. Second, Swiss and non-Swiss students were representative of the first-year student population. As non-Swiss nationals have to pass an entry test, we supposed that this would likely result in systematic personal differences. Third, concerning the familial background, students from both academic as well as non-academic backgrounds were chosen, as non-academic backgrounds are usually associated with lower self-efficacy and higher anxiety (Zajacova, Lynch, & Espenshade, 2005). Table 2 provides an overview of the participants and the sampling criteria gender and nationality.

Table 2

Overview of participants

	Name	Gender	Nationality
1	Alex	Male	Swiss
2	Ben	Male	Swiss
3	Chris	Male	Non-Swiss
4	Daniel	Male	Swiss
5	Emily	Female	Swiss
6	Emma	Female	Swiss
7	Harry	Male	Swiss
8	Mary	Female	Non-Swiss
9	Max	Male	Swiss
10	Olivia	Female	Swiss
11	Peter	Male	Swiss
12	Rebecca	Female	Non-Swiss
13	Roger	Male	Swiss
14	Thomas	Male	Non-Swiss

The initial interview followed a detailed interview guide (see Appendix A). The interviews were aligned to the quantitative survey addressing students' feelings of self-efficacy, anxiety, and motivation. In contrast to the panel survey, we did not ask about these constructs directly, but rather talked about students' relationship to the university context regarding both academic demands and social relations. Questions, for instance, included: "Which kind of students would the University of St. Gallen want to develop/support? What does a student need to bring and do to successfully study at the University?" We asked students to talk about concrete experiences since the beginning of their study, respectively since the last interview, which affected their motivation, made them feel secure or anxious. Thus, the obtained data linked the development of students' personal characteristics to their experiences of specific situations in the study environment such as examinations, interactions with teachers and peers, etc.

Compared to the initial interview, the follow-up meetings were more narrative in nature. After each interview, we produced a short summary that was used to thematically link the interviews. In consequence, as the interview series progressed, each participant developed their individual narration of the first year, highlighting specific experiences and critical situations. We conducted four to five interviews with each participant, with the first interview lasting 45 to 75 minutes, and the follow-ups lasting 20 to 45 minutes.

To analyze all 60 interviews, each recording was transcribed verbatim and coded, using the Atlas.ti software. A combination of deductive and inductive coding was used (Fereday & Muir-Cochrane, 2006). First, we developed a list of codes, including the personal constructs underlying the quantitative and qualitative study. After the first round of coding, this list was supplemented, with codes representing the contextual factors that influenced students' first-year experience (see Appendix C for the coding scheme). Within each interview, two researchers coded sections in parallel to determine intercoder-reliability (IR). During the second round of coding (with the final codebook), adequate IR values were achieved (>.70). Each student was analyzed as an individual case with the aim to associate

personal developments with each student's specific perceptions of the study context (e.g., positive or negative valuations of examination situations).

4. Results

4.1 Quantitative Study: Differentiating students according to personal variables

Concerning personal variables, results from the panel study showed a general decline in students´ overall motivation and self-efficacy as well as an increase in study-related anxiety over the first year (Table 3).

The descriptive statistics (Table 3) show that the mean level of the constructs used for the latent profile analysis is high in general (scale values: 1=very low, 6=very high). The distribution of the data is skewed to the left (with one exception) and most variables have a low standard deviation. Only anxiety has a higher standard deviation and a more uniform distribution. The different constructs correlate with each other to a medium extent, with higher correlations appearing among the constructs at the different measurement points (see Appendix B).

Table 3

Descriptive statistics of the observed constructs at each measurement point

	t1			t2			t3		
	SE	**Anx.**	**IM**	**SE**	**Anx.**	**IM**	**SE**	**Anx.**	**IM**
N	811	808	808	411	411	407	326	323	325
Mean	4.93	3.47	4.89	4.59	3.82	4.57	4.70	3.40	4.42
Standard Deviation	.65	1.24	.78	.70	1.17	.893	.85	1.15	.90

SE = self-efficacy; Anx. = anxiety; IM = intrinsic motivation

Before students begin their studies, they are highly motivated and have a high level of self-efficacy (correlation of $r = .24$, $p < 0.01$). Nevertheless, some students score high on anxiety despite their high motivation and self-efficacy. In particular, the rather high standard deviation of 'anxiety' indicates that there might be different subgroups regarding this aspect. To identify potential subgroups in the student population, we conducted a latent profile analysis based on students' anxiety, intrinsic motivation, and self-efficacy at the measurement point 1. Table 4 shows a summary of the relevant fit indices for two to five latent profiles.

Table 4

Latent profile analysis: fit indices for the different profile solutions

Model Fit Indices	**Two Profiles**	**Three Profiles**	**Four Profiles**	**Five Profiles**	**Six Profiles**
Likelihood	-10914.33	-10612.62	-10491.41	-10379.21	**-10279.58**
BIC	22540.10	**22295.53**	22412.07	22546.64	22706.36
Entropy	0.78	**0.82**	0.83	0.82	0.83
LMR-LRT	-11645.10***	**-10914.40***	-10645.38	-10491.43	-10379.11

*** < .001

Based on the fit indices, we opted for the three-profile solution for four reasons: First, it shows the lowest value of BIC which we use since BIC "has been shown to outperform other indices with more continuous indicators" (Ferguson et al., 2019, p. 3). Second, the three-profile solution is the last one where the Lo, Medell, and Rubin (LMR) test is still significant, thus, indicating that this solution is better than the more parsimonious 2-class solution. Third, this solution results in a reasonable number of students in each profile and is theoretically interpretable. Finally, the entropy value of the three-profile solution is above .8, also indicating adequate profile separation. Table 5 shows the probability of whether a student is assigned to the appropriate class, providing another indicator that the three-profile solution is the most appropriate for the sample (values around .90 are seen as the relevant threshold). The three latent profiles were labelled accordingly (Table 6).

Table 5

Classification probabilities for the Most Likely Latent Profile Membership (Column) by Latent Profile (Row)

	Assignment to profile 1	**Assignment to profile 2**	**Assignment to profile 3**
Affiliation to profile 1	.93	.04	.03
Affiliation to profile 2	.08	.91	.01
Affiliation to profile 3	.07	.02	.91

Table 6

Descriptive statistics for the three student profiles with mean (standard deviation)

	profile 1 "**highly motivated and medium anxious**"			profile 2: **"highly motivated and self-confident"**			profile 3 **"least motivated and most anxious"**		
	t1	t2	t3	t1	t2	t3	t1	t2	t3
#	324	156	125	221	126	74	216	104	65
SE	4.95 (.32)	4.56 (.63)	4.68 (.78)	5.61 (.30)	5.00 (.62)	5.15 (.78)	4.22 (.56)	4.19 (.66)	4.25 (.84)
anx.	3.28 (.76)	3.62 (1.01)	3.30 (1.03)	2.51 (1.09)	3.39 (1.22)	2.91 (1.16)	4.78 (.76)	4.65 (.87)	4.23 (.98)
IM	5.01 (.58)	4.67 (.81)	4.44 (.90)	5.16 (.78)	4.75 (.88)	4.59 (.87)	4.50 (.85)	4.30 (.94)	4.14 (.98)

SE = self-efficacy, anx. = anxiety, IM = intrinsic motivation

In the following, we will first briefly describe the different profiles, and then we will give further information regarding the composition of these profiles and the differences concerning the relevant correlates.

The profile with most students (324 at t1) is characterized by rather high motivation and medium-level anxiety. Their self-efficacy, however, is not as high as with the second profile. The second biggest profile, with 221 students at t1, consists of highly motivated and self-confident students showing the highest levels of self-efficacy and intrinsic motivation and, correspondingly, the lowest level of anxiety. The last class (216 students) is characterized by the highest level of anxiety; both intrinsic motivation and, in particular, self-efficacy are rather low. ANOVAs with post hoc Bonferroni tests showed that the differences between the profiles are significant even though they are sometimes small. Furthermore, the different profiles develop differently over time (Table 6). While we will not analyze these differences in detail here, we can state that intrinsic motivation is significantly declining over time in all three profiles (see also Brahm et al., 2017) while students' self-efficacy plummets at the start of their studies, but then increases again from t2 to t3 (after students have completed their first assessment). For anxiety, however, the pattern is not the same for all profiles: While those in profiles 1 and 2 show increased anxiety at t2 which then lowers again at t3 (albeit at different levels), the students who are assigned to profile 3 (least motivated and most anxious) seem to lose their anxiety continuously over the first year. This may be seen as a hint that depending on the profile, students experience different sources of anxiety. We will elaborate on this in the discussion.

In a second step, we investigated how the different profiles are composed concerning gender, nationality, and ambitions of the students. Regarding gender, we found significant differences between the subgroups ($F = 3.41$, $p < .05$): in profile 1, 36% of students were female; in profile 2, females accounted for 29.3% of the students. In profile 3 which is characterized by the largest level of anxiety and the lowest levels of self-efficacy, female students were represented relatively more often with 41.1% (in the overall sample, 35.5% were female). In terms of students' nationality, there were no significant differences between the major countries reported in the study. The same holds for the age distribution in the different profiles. Regarding students' performance ambition, their expected grades declined over time and there is a significant difference (for t1: $F = 53.23$, $p < 0.00$) between the profiles at all three measurement points. The first profile aims for medium grades, while the highly self-confident students expect significantly higher grades, and the least self-efficacious believe that they will receive relatively lower grades.

Finally, we looked into how the different profiles related to variables that suggest links to contextual aspects in the study environment. We used students' satisfaction with their grades as a proxy

for their achievement. Although this can only function as a weak indicator of students' actual performance, we also found significant differences ($F = 5.98$, $p < 0.01$) between the three profiles. Interestingly, the highly motivated and medium self-efficacious profile 1 showed the highest satisfaction, followed by the second profile. This could indicate that these students have the most pragmatic and thus realistic idea about their performance, while students in profile 2 tend towards overconfidence. The students allocated to profile 3 were the least satisfied with their performance. Furthermore, we investigated students' attitudes towards the institution and found that the students in profile 2 showed significantly higher values in their attitude (for t1: $F = 16.01$, $p < 0.00$) while students in the most anxious profile showed a lower attitude. This pattern did not change over the first year.

Summarizing, the latent profile analysis hints at a significant diversity regarding students' personal dispositions when starting in higher education. Most interestingly, the profiles show differing patterns regarding important correlates of students' motivation and anxiety. The quantitative data, however, do not allow for deeper insights on how such personal diversity affects the ways in which students perceive and behave in their study environment. How, for example, do differences in self-efficacy, anxiety and motivation become apparent in concrete situations such as exam preparation or peer interactions? Do different students experience similar features of the study environment in different ways? Which situations are crucial in shaping different students' first-year experiences? The qualitative study allowed us to address these questions and develop a better understanding how personal differences are relevant for students' actual perceptions and practices during their first year in HE.

4.2 Qualitative study: Different students and different perceptions of similar contexts

As a first analytical step, we looked at students' personal diversity, ordering the qualitative sample according to their self-efficacy, anxiety, and motivation, following the logic of the quantitative study. As a second step, we investigated contextual diversity, i.e. whether there were systematic differences in how students perceived and acted on the academic and social environment of their first year at university.

4.2.1 Personal diversity

Six of our 14 students reported rather high levels of self-efficacy and motivation and low levels of anxiety from the beginning. For those students, the overall first-year experience can be described as positive, as none of them ever mentioned doubts about continuing their studies. In contrast, a further six students were rather anxious and easily demotivated. In general, their first-year experience was rather negative, they often voiced doubts about being in the right place. Roger is a typical example for this group, blaming himself for struggling with his studies:

> *„Yes, I think so, it's my own fault, because I've problems to motivate myself. And when I really start studying, then I'm somehow distracted so fast. Yes, that's actually the problem" (Roger, interview 2, line 156).*

Interestingly, one student from this group, Chris, changed from the 'negative' to the 'positive' group, having succeeded in the first series of exams, and most likely increased his self-efficacy from this mastery experience.

Two students, Harry and Olivia, cannot be easily attributed to either the 'positive' or the 'negative' experience group. Both reported rather high levels of self-efficacy throughout the first year, i.e. they always felt confident they could master the academic challenges. However, they had severe motivation losses at several points during the first year and repeatedly voiced doubts about belonging to this university and subject.

> *"Yes, actually, well, we just had the [semester] break, the phase without lectures and there, now actually a lot has changed. Before, I was relatively motivated, I still am, but [before] I was really positive. And slowly, especially during the break, then I was a bit, well, I thought: 'do you really want to study this and do you really want to belong to these people?' Yes, like that,*

I reflected a bit. That changed a bit. And actually, I'm still not really sure about it" (Harry, interview 2, line 12).

Overall, when looking at the patterns of self-efficacy, anxiety, and motivation, the findings from the qualitative study tie in nicely with the student subgroups detected with the latent profile analysis. The students that scored high in these constructs generally did well in mastering the challenges of the first year.

4.2.2 Contextual diversity

As expected, **performance expectations** in general, and exams in particular, were hugely important for the students. Especially towards the end of the first semester, all 14 students talked a lot about the coming exams.

"Well, of course it's on my mind that they [the exams] are coming. I know there is the preparation phase, but I know that I need to prepare as thoroughly as possible from now on. Generally, I am not badly prepared. I don't want to sit at it all the time, but also to have a little free time …. But, for example, what I'm working on is Law and Math because I feel that I will only be good there by practicing a lot. … In management I feel that I can easily hammer in the stuff during the final preparation phase" (Daniel, Interview 2, line 147-157).

Taking a closer look at how the students experienced and acted upon performance expectations highlighted differences between the subgroups. Daniel is among the students in the 'positive' group, and for him, the exams are a source of motivation to engage with those academic subjects that he feels are most difficult for him. He aims to do very well in all subjects and the impending exams make him develop a preparation strategy. He is very focused on academic success and, during exam preparation, even manages his relationships with peers for optimizing his success:

"Well now, I have agreed with a friend, well he's my best friend at Uni, and I have thought about studying with him. I think he is a good student, well a bright head. And we said that we'll see that first we reach a sufficiently high level individually and at the end of the preparation phase we'll sit together if there's something to discuss in Management or Economics." (Daniel, Interview 3, line 127-132).

Daniel regards the exams as a challenge that he masters by using all resources accessible to him. In contrast, students in the 'negative' group generally regard exams as a threat that causes anxiety and great stress.

"In some subjects, for example Management, I am quite disoriented. I don't know how to study in a structured way. It is somehow, it all consists of various components, there are the tutorials, the lectures and then the horror stories from the previous years; that it's not even enough to learn the slides by heart and what not…" (Chris, Interview 3, line 73-86).

Chris' anxiety coincides with low self-efficacy as well as a lack of suitable learning strategies to come to terms with the challenge of preparing for the exams.

Furthermore, students in our sample differed concerning the emphasis they put on the academic and social aspects of studying. Some students, such as 'positive Daniel' and 'negative Chris' focused mostly on the **academic aspects** of studying. They showed a rather rational stance, drawing motivation from subject-related interest or extrinsic rewards or being anxious about mastering exams in certain subjects. Emily is another example of students belonging to this group:

"I especially want to do well in my studies. Thus, I give my best – as much as possible – to get good grades and yes, just to have a good development, actually, to work on myself. I just think, time will tell in which direction I want to go, but now I just want to make the best possible out of myself, and I think I'm at the right place for that" (Emily, interview 1, line 123).

Students belonging to this group tended to keep social relations such as close friendships outside the university context, making a distinction between university friends and private friends. Students in

this group regularly developed their individual study plans relying on their capabilities and not wanting to be distracted by others.

In contrast, other students talked about the first year as an essentially **social experience**. Everything about studying had a social connotation, even when related to the academic aspect such as exam preparation.

> *"I think that it's not bad that the others [i.e. students] are there. It's rather like, when I'm sitting at home and do not work for half an hour, I don't reflect on it. But when I'm sitting in the library and I don't work for half an hour and I see how the others around me go on working, I somehow compare myself more to them in my head. And it shows you that that one over there, he's on that page and I'm far from where he is. I think that can also stress you out if you see how the others are doing it. But in general, I think it's more of a motivation" (Mary, interview 1, line 124-131).*

While for 'positive Mary', the social environment acts as a source of motivation, 'negative Rebecca' feels that her uncertainties and anxieties are worsened by her interaction with peers:

> *„I actually always ask somebody: 'how did you do that' or 'how did you study that'. ... Yes, I'm pretty much influenced by that, because I'm so insecure and don't know, if I'm doing it right, yes" (Rebecca, interview 1, line 158).*

Interestingly, these orientations towards the academic or the social seem to have a huge influence on the students' first-year experience. Emma belongs to the 'negative' group and emphasizes the social dimension of studying. She also interpreted academic aspects of studying such as performance expectations and exams in social terms, perceiving them as part of a social relationship between "the university" and "the students":

> *„The oral exam was a bit, well, it was the first oral exam at the university, and it was somehow strange. Well, the focus was actually not on the most important aspects and it actually showed – also when I talked to others –, that it's about us memorizing, really memorizing everything. And not, yes, I don't know. That was actually pretty disappointing, because, I don't know. They asked me such banal stuff. Well, I needed to answer such banal questions. ... But I also think, that was a statement by the uni for the first year so that you know 'ok, learn everything by heart, really everything'" (Emma, interview 2, line 21-40).*

The distinction between students who emphasize the academic and those who stress the social nature of studying extends to other characteristics of the first-year study context: In evaluating the first year, students in the 'academic' group would focus on the resources or challenges that helped or impeded their academic performance. For example, they valued well-designed learning materials or felt overwhelmed by information that was hard to access online. Concerning interactions with faculty, students in the 'social' group tended to interpret faculty actions such as jokes, irony, exam questions, etc. as intentional statements. In contrast, the 'academic' group saw faculty rather as a part of the learning environment who could be a more or a less supportive resource for their learning processes.

As shown above, the same is true for peer relations, which are regarded rather instrumental by students who regard studying as a job, focusing on the academic aspects. Essentially, peers are either perceived as a resource for supporting academic performance (for the 'positive' students) or as competition (for the 'negative' students). For students in the 'social' group, developing friendships with likeminded people was what motivated them to continue studying, and what helped them to deal with uncertainties and anxieties.

5. Discussion

Taking both the quantitative and the qualitative studies into account, we found personal and context-related aspects of diversity. Integrating the two studies, the results from the panel-based latent profile analysis and the small-sample interview study clearly converge and complement each other. Our research targeted two main goals: First, we aimed to identify subgroups within the first-year cohort at university by grouping them according to their self-efficacy, anxiety, and motivation. Second, we investigated whether such personal diversity relates to contextual diversity, i.e. differences in how students perceive elements of their study environments. With our results, we contribute to research on student diversity, in particular in the transition to higher education. Our study highlights the importance to consider both the micro- and meso-level when investigating students' transition into Higher Education. Furthermore, we can identify practical implications concerning the design of first-year study contexts for diverse student populations.

5.1 Theoretical implications

Regarding the first aim, the results from our quantitative study complement and extend previous research on student transition in general, and on profile analyses of first-year students in particular (e.g. De Clercq et al., 2020; Martens & Metzger, 2017). In line with the results reported by Martens and Metzger (2017), we found profiles that showed consistent patterns across self-efficacy, anxiety, and motivation. As expected, students who were assigned to the highly anxious profile were also least self-confident and least motivated. This corresponds to findings by Sotardi and Brogt (2019). We also found that the students in the most anxious profile were the least satisfied with their performance in the first assessment period in the first year. As a final relevant variable, we looked into motivation. For all three profiles identified, our data confirm the negative development of students' motivation throughout the first year and is, thus, in line with many studies in Higher Education (Busse, 2013; Jacobs & Newstead, 2000; Lau et al., 2008; Lieberman & Remedios, 2007; Martin et al., 2010; Pan & Gauvain, 2012). Interestingly, motivation is the only construct showing such a stable decline. In contrast, both self-efficacy and anxiety either remain stable or, after an initial decline, improve again from the second to the third time point (see Table 6). Unfortunately, we are not able to distinguish between different kinds of motivation as Martens and Metzger (2017) did. This is clearly an avenue for future research.

Concerning the links between personal and contextual diversity, our findings are in line with De Clercq et al. (2020, p. 8), who state that "students with different entrance profiles reported different perceptions of context, motivation, engagement, and consequently reached different levels of achievement". In our research, the affiliation to one or another profile was associated with more or less positive attitudes towards the university and with distinct satisfaction with their first assessment results. Profiles 1 and 2 show quite similar development patterns over the first year albeit on different absolute levels of the investigated constructs. In contrast, students in the 'least motivated and most anxious' profile differ from the other two profiles regarding the development of anxiety. For them, anxiety seems to be a constant companion which declines slightly yet constantly during the first year. In contrast, students in the other profiles become more anxious in anticipation of exams and go back to a rather low level of anxiety after the exam period. Again, this ties in with findings by Sotardi et al. (2020) who show that students may be anxious about different contextual stimuli (in their case different assessment types).

These quantitative findings are a first hint that students in the different profiles react in varying ways to contextual aspects. Findings from the qualitative study underpin this assumption, highlighting that students with diverse personal prerequisites perceive performance expectations as well as the social environment very differently. For example, highly motivated and self-efficacious students regard high-performing peers as a source of motivation and a resource for studying which is in line with the general results on peer support (e.g. Thomas, 2002; Thompson & Mazer, 2009). In contrast, students with low motivation and self-efficacy regard these peers as a potential threat and a source of anxiety. While we did not have objective data regarding students' achievement, we were able to show that those students

who were assigned to the most motivated and self-confident group also showed the most ambition regarding their grades, the most positive attitude towards the university, and were most content with their performance. This finding can be seen as a confirmation of the relation between high self-efficacy and college adjustment (Ramos-Sánchez & Nichols, 2007) which is also in alignment with Bandura's (1989) theory indicating that students with high self-efficacy may be able to deal better with challenges during the first year.

Our results suggest that when student diversity is taken into account, theoretical assumptions of relationships between personal and contextual variables may become less clear than previously thought. For example, our qualitative results show that peer interaction counts among the factors, which different students experience in very different ways. While most studies posit that peer interaction is generally a good thing for first-year students (e.g. Rocconi, 2011; Walsh et al., 2009; Thomas, 2002; Thompson & Mazer, 2009), our findings suggest that for some student groups and in some situations, being exposed to their peers may have rather negative effects (cf. Brouwer et al., 2018; Riordan & Carey, 2019). The notion that theoretical assumptions need to be differentiated in the light of student diversity ties in nicely with recent studies finding differential effects between personal and contextual characteristics. For example, Duchatelet and Donche (2019) found that the perception and the effects of autonomy-supportive learning environments differed according to the students' level and type of motivation. Sotardi et al. (2020) distinguish different kinds of test anxiety depending on student and exam characteristics. De Clercq et al. (2020) found that the affiliation to a specific student profile was related to strong variations in how students perceived contextual aspects such as course value. As a theoretical implication of their study, they suggest distinguishing between "shared" and "specific" factors that influence student transition (p. 8). Shared factors influence students' achievements independent of their individual profiles in the same ways, while specific factors have different influences on students in different profiles. Being aware of such a distinction seems particularly important for research on the effects of specific educational interventions. Depending on whether they address shared or specific factors, they may have little or even unintended effects for some student sub-populations.

5.2 Limitations

Of course, the design of our studies has some important limitations, which need to be addressed here. Both the quantitative and the qualitative studies have their individual flaws: Our research merits the benefits of a longitudinal panel study, but at the same time suffers the high attrition that is well-known for this type of survey, especially with the long intervals between the measurement points. The students who only participated in the first measurement did not differ significantly from those who replied to all three questionnaires. Nevertheless, some students who replied before the beginning of their studies might have decided to drop out of the university, thus not being reachable for the survey anymore. Future research should attempt to gather information about the students' whereabouts after the important transition period. Also, we did not gather data on the students' actual academic performance, making it impossible to relate our findings directly to previous studies such as De Clercq et al. (2020) who investigated the effects of being affiliated to a specific sub-population on study success.

Furthermore, the research was conducted at one particular university with a limited range of subjects – typical for a business school. This is both a limitation and a benefit. As the students study the same subjects in the first year, the effects of different study programs or disciplines can be excluded. However, this also means that the results are limited to one university. Thus, our findings should ideally be replicated at other institutions and – if possible – with more disciplinary diversity.

Above all, a more data-based linkage between the quantitative latent profile analysis and the qualitative interview study would strengthen the ties between personal and contextual diversity. Unfortunately, we could not analyze the interviewed students' survey data in a personalized way, as this would have violated the confidentiality guidelines for both studies. An alternative approach to solve this problem could have been to include variables measuring students' perceptions of aspects of the study

environment such as the support structures or the degree of challenge perceived in learning tasks in the survey (Kuh, 2009; Kuh, Kinzie, Schuh, & Whitt, 2005; Zhao & Kuh, 2004). This may be a promising route for future survey-based research as the qualitative study identified some specific events that according to the interviews affected the students' stance towards studying.

Despite these limitations, this study emphasizes the need to consider student diversity when investigating their transition experiences. It was particularly worthwhile complementing our latent profile analysis with the qualitative results as they illustrated the interplay of personal and contextual characteristics.

5.3 Conclusion and practical implications

Combining a person-centered quantitative panel study with a small-sample qualitative approach emphasizes the social-cognitive lens applied in this research (Bandura, 1989). It links students' personal development to the experiences they make when interacting with their study environment. This interaction is reciprocal as students' individual characteristics influence how they evaluate certain aspects of the study environment. This becomes apparent in the different orientations of the students in our sample, which highlight how different students perceive similar situations in distinctive and even contradictory ways. This is also visible in the different patterns of our student profiles. In turn, specific events in the study environment influence how students' motivations and emotions regarding studying develop. This interactional view emphasizes the conception of transition into HE as a process (Tett, Cree, & Christie, 2017). Rather than regarding students' developments as something purely personal, we contribute to research on students' transition by understanding their development as a result of each individual student's interactions with specific aspects of his or her study context. Thus, our study confirms the assumption that it is not only necessary to look into students' diversity, but rather to investigate how this diversity and the study environment, which students encounter at university, reinforce or hinder each other. This notion may inform future research which should investigate the interactional nature of the developmental process during the transition on a larger scale.

From a practical point of view, our study emphasizes the need for more customized support structures during the first year of higher education. These should go beyond the usual distinction of traditional and non-traditional students, but could, for instance, consider different levels of students' anxiety and confidence. One particularly interesting avenue could be the provision of learning-oriented communities (Zander et al., 2018) as these might obviate the challenge for some students who are not inclined to socialize on a more private level. Our results, however, imply that such communities should be carefully composed and supported to not exaggerate existing inequalities between students. Another important practical implication concerns students' anxiety, in particular when confronted with their first assessments. In light of the findings of both the quantitative and qualitative study, universities could further support their students by clarifying their expectations regarding the first exam period and by providing different kinds of support measures in advance of the first exams as some students may need more content-oriented support while others may need more learning-focused help.

Finally, our study may serve as an example for the value of using both quantitative and qualitative research approaches despite the limitations as to how the two studies were connected (see above). As discussed, recent studies that combine personal and contextual variables (e.g. De Clercq et al., 2020; Duchatelet & Donche, 2019; Sotardi et al., 2020) show that existing theoretical models regarding the relationships between contextual and personal variables may only be valid for very specific student populations. From an epistemological viewpoint, this could be considered as a limitation of variable-based approaches in general. One way to deal with this challenge is the increasing use of typological analysis such as latent profile analysis. To grasp the full complexity of person-context interactions, however, also more phenomenological approaches supported by qualitative methods seem to be promising (Aspers, 2009). In this sense, our qualitative study provides exemplary illustrations for different kinds of students that we had identified through latent profile analysis in the quantitative panel.

Keypoints

- Transition to Higher Education is influenced by personal and contextual characteristics
- Our study combines latent profile analysis (LPA) on a large-scale student panel and small-scale qualitative longitudinal interviews
- The LPA identified three student subgroups based on their anxiety, motivation, and self-efficacy
- The qualitative study found that depending on personal differences, students perceived and acted differently on specific situations such as exam preparation or peer-interaction.

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Appendix A

Interview Guideline

Initial interview: How do you experience the transition?
Please let us know how you experienced your first month at the University of St. Gallen?

Part 1: First impression	**1) Were you surprised by anything, which you had not expected?** **2) Are you comfortable with your studies so far? Why (not)?** 3) What was your most prevalent impression at the University up to now?
Part 2: Expectations	**1) Generally speaking: Why did you choose the University of St. Gallen for your study?** 2) In terms of your first experiences at the University of St. Gallen, in which respects were the expectations that you had fulfilled? **3) How did the University of St. Gallen as a study place influence your perception? (If possible, ask for information sources, such as internet pages, relevant persons, etc.)** 4) What would you like to achieve personally in your studies at the University of XYZ
Block 3: Perceptions	**1) Which kind of students would the University of St. Gallen want to develop / support?** **2) What does a student need to bring and do in order to successfully study at the University of St. Gallen?** 3) **How are or were you instructed on what you have to do to fulfill the study demands?** 4) Who are the most important contact persons for coping with your studies? 5) When you plan your studies, which information do you use (from official sources, e.g. from the university administration, from lecturers, from other students)?
Block 4: Social environment	1) **How do you experience the atmosphere among the students?** 2) How do the other students influence your own behavior during your studies? 3) **If you think about your friends and family outside the university – how do they see your studies at the University St. Gallen?**
	Final question: Currently, what puts you most under pressure regarding your studies at the University of St. Gallen?

Appendix B

Correlation table of the variables considered in the latent profile analysis

	SE_t1	Anx_t1	IM_t1	SE_t2	Anx_t2	IM_t2	SE_t3	Anx_t3	IM_t3
SE_t1	1.00								
Anx_t1	-.57**	1.00							
IM_t1	.25**	-.24**	1.00						
SE_t2	.52**	-.33**	.13**	1.00					
Anx_t2	-.40**	.57**	-.11*	-.52**	1.00				
IM_t2	.16**	-.16**	.50**	.20**	-.19**	1.00			
SE_t3	.38**	-.30**	.15*	.42**	-.39**	.20**	1.00		
Anx_t3	-.38**	.51**	-.14*	-.21**	.60**	-.10	-.55**	1.00	
IM_t3	.17**	-.17**	.47**	.24**	-.19**	.71**	.26**	-.17**	1.00

** p<0.01
* p <0.05

Appendix C

Coding Scheme

#	Code	Coder instructions / examples
1	*Quality of instruction*	
1.1	Positive	Perceived care from faculty, quality of materials
1.2	Negative	Feeling that one ‚does not learn anything', not feeling intellectually challenged by contents or faculty
2	*Performance expectations*	
2.1	Descriptive	What is asked in tests, intellectual challenge vs. rote learning, feelings of pressures and stress from exams
2.2	Positive	Being motivated by exams, having the feeling of 'getting something done'
2.3	Negative	Test anxiety, pressure, not feeling intellectually challenged by exams
3	*Infrastructure*	
3.1	Negative	No seats available in classes and on campus, E-Learning tools not working, old venue
4	*Social integration*	
4.1	Positive	Feeling of having friends among students, being able to call for help from other students, getting along well on campus, regarding studying as 'life' rather than a 'job'
4.2	Negative	Feeling alienated, being anxious about finding friends, feeling pressured or inferior to other students
5	*Personal gratification from studying at St. Gallen*	
5.1	Positive	Having privileged access to employers, profiting from the university's good standing
5.2	Negative	Being stigmatized by others as being capitalist, not having access to certain jobs, e.g. in SME
6	*Atmosphere among students*	

6.1	Positive	Having a challenging and engaging environment, being motivated by the esprit de corps
6.2	Negative	Feeling stressed by comparing oneself to other students, feeling bullied or marginalized in public situations such as studying in the library
7	*Success / Failure*	
7.1	Experiences of success	Passing an exam, finishing a term paper, starting an extracurricular activity
7.2	Experiences of failure	Failing an exam, feeling overwhelmed by course contents
8	*Atmosphere at the university*	
8.1	Positive	Feeling welcome by the university staff (e.g. by the rector, administrative staff), feeling at home on campus
8.2	Negative	Feeling unwelcome, feeling that the university wants to get rid of oneself, not liking it on campus
9	*Affective reactions*	
9.1	Positive	Spending much time on campus, rather being at St. Gallen than at your hometown, preferring living on your own / with flatmates to living with parents
9.2	Negative	Avoiding campus as much as possible, commuting to / from St. Gallen, keeping your distance to the university environment
10	*Attitude towards the university*	
10.1	Positive	Being glad to be a student of the university, identifying with the university, not being ashamed of studying in St. Gallen
10.2	Negative	Being ashamed of being a St. Gallen student, feeling that the university's reputation is not legitimate
11	*Attitude towards fellow students*	
11.1	Positive	Feeling close to other students, finding friends easily, feeling the people at the University enriching one's social network
11.2	Negative	Rather spending your time with friends from home, regarding the other students as snobbish, making a point of being different to the others
12	*Attitude towards contents*	
12.1	Positive	Feeling of learning something valuable, feeling of learning lots of new things
12.2	Negative	Feeling that contents are trivial, feeling of not learning anything new compared to school, feeling that contents are biased (e.g. capitalist, male-dominant)
13	*Attitude towards commercial courses that help pass the first year*	
13.1	Positive	Pragmatic stance: If it helps, it is okay
	Negative	Critical stance: Unfair bias towards students who can afford external help, paints a negative picture of the university
14	*Dealing with success and failure*	
14.1	Constructive ways of dealing with success / failure	Seeing passed / failed exams as a helpful feedback, using success as well as challenging situations as a source of motivation, being confident about mastering challenges

14.2	Destructive ways of dealing with success / failure	Destructive attributions: Success as luck, failure as confirmation of anxiety, regarding challenges such as exams as threats
15	*Perceptions of the university by the general public*	The university as an elite school, the university as a center of capitalism
16	*Perceptions of the university by significant others*	What family and friends believe about my studying at St. Gallen
17	*Fellow students as frame of reference*	Strong orientation towards other students, trying to figure out how to do well by observing other students
18	*Teaching faculty as frame of reference*	Trying to 'read' faculty behavior / communication to find out what they really want, asking around to get information about faculty members
19	*Expectations the university has regarding its students*	Feeling that 'the university' has hidden expectations or agendas such as keeping a certain type and getting rid of non-compliant students
20	*Distancing oneself from fellow students*	Making a point of being different from most other students, keeping away from situations that might lead to comparing oneself to others
21	*Effectiveness of one's learning strategies*	
21.1	Positive	Feeling that one's learning strategies are effective, feeling that by pursuing one's learning activities, one will be able to cope with the challenges of the first year, such as exams
21.2	Negative	Being uncertain whether one's learning activities are well-suited, feeling of being too slow, not knowing how to best prepare for exams
22	*Being able to meet performance expectations*	
	Positive	Feeling confident about passing exams, not feeling overwhelmed
	Negative	Being anxious about passing exams, feeling overwhelmed and pressured
23	*Self-image*	
23.1	Positive	St. Gallen as the right place to study
23.1	Negative	St. Gallen as an odd choice for oneself or even as a wrong decision
24	*Expectations towards the university*	What do students expect from the university?
25	*Expectations towards oneself*	What do students expect from themselves regarding their study behaviour (e.g. trying harder than in school, being more disciplined)?
26	*External locus of control*	Feeling driven by others, not feeling in charge of studying, not being able to make own choices
27	*Feeling disoriented by teaching faculty*	Being unsure because of different / inconsistent communication by teaching faculty
26	*Doubts about continuing*	Concrete plans for studying elsewhere
29	*Personal prerequisites*	
29.1	Positive	Feeling prepared for studying because of good grades in school, support from parents, siblings, relatives
29.2	Negative	Feeling unprepared, having negative experiences from school, not having anybody who could provide insights on how studying at St. Gallen works
30	*General motivation for studying*	Quality of motivation such as interest in subject, reputation of university

31	*Personal life circumstances and their significance for studying*	
31.1	Positive	Life is going well, no big worries, good relationships
31.2	Negative	Problematic situations such as long-distance relationships, personal troubles, financial problems
32	*Comparison to other universities*	
32.1	Positive	St. Gallen provides a better study experience than other universities
32.2	Negative	St. Gallen is not much different to other universities, just has better marketing
33	*Planning one's learning activities*	
33.1	Positive	Having a clear plan how to prepare for exams, being confident that one's planned learning activities will work out well
33.2	Negative	Being unsure how to start exam preparation, not being confident about one's planned activities
33.3	*Changes in learning strategy*	Learning strategy has changed or remained stable since previous interview
33.4	*Own strategy*	Description of individual learning strategy
34	*Ideas about the future*	How do students want to proceed from the point of the current interview? Are there major changes?