

Fair Enough?!

Investigating the Specific Challenges of Diverse University First-Year Students

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The authors declare that they have no conflict of interest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Review Board of the Faculty of Psychology at the Université catholique de Louvain. Informed consent was obtained from all individual participants included in the study.

Abstract

The transition into higher education (HE) is a particularly challenging process for students due to a large variety of difficulties and requirements. Moreover, increasing student numbers and diversity in European HE have complexified the issue of the successful transition to university. Consequently, it is important to further develop our understanding of the heterogeneity of students and the specific challenges that impact their successful and less stressful transitions into higher education. This paper contributes to this scientific endeavor. More precisely, a study was carried out among 1,048 first-year students from a French-speaking Belgian university . Using latent profile analysis, our results yielded five profiles representing different combinations of achievement predictors (high school grade, socio-economic status, informed-choice, and self-efficacy beliefs). When comparing the profiles, our results further highlighted key differences in the way students experienced the specific challenges associated with the transition and succeeded at the end of the first year. The discussion of the results allowed us to provide practical implications and future perspectives on the thorny issue of diversity into the transition to HE.

Keywords: academic success, person-centered analysis, transition, first-year academic studies,
Belgian French community

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Introduction

The transition into higher education (HE) remains at the forefront of policy and practice in education worldwide (Gale & Parker, 2014). Successful transition to HE is critical for both students and society. However, starting HE is a challenging process that may cause students to experience stress, failure, decreased self-esteem, and depression (Trautwein & Bosse, 2017). Transitions into HE can also result in different realities. For example, students choose study programs with varying aims; they study diverse disciplines and are confronted with other students who each bring their own realities to campus. These particularities in students' bodies, experiences, and contexts call for an extended investigation of the diversity into the transition to HE (De Clercq, Jansen, Brahm & Bosse, 2021).

From an individual perspective, this diversity is characterized by an increasing student heterogeneity during the first year at the university (Jenert, & Brahm, 2021). This growing heterogeneity has strengthened the necessity to better consider the impact of students' differences on the successful transition to university in general and on study success in particular (Gillet et al., 2020; Hailikari, Sund, Haarala-Muhonen, & Lindblom-Ylänne, 2020; Wolter, 2013). In this line, several studies investigated the impact of students' diversity on student adjustment and success to university (Balloo, 2018; Hailikari et al., 2020; Van Herpen, 2019). Relevant profiles were identified, highlighting that the student body cannot be considered a consistent whole and that the particularities of these students do impact their adjustment to university. Among these studies, recent work consistently highlighted six entrance students' profiles based on combinations of social, academic, motivational, and study choice background indicators (De Clercq et al., 2017; 2020): Disadvantaged, Underprivileged, Apprehensive, Poor Performer, Thoughtless, and Advantaged profiles. These profiles provided interesting insights to soften students' transition but necessitate further replications.

This differentiated approach of the transition to HE outlined above suffers from one main limitation: the majority of studies have tested the impact of student profiles on distal outcomes such as adjustment and achievement but did not investigate their particular experience of the academic context (Quinlan, 2019; Winstone & Hulme, 2019). A promising framework to address the experience of HE context lies in Trautwein & Bosse's (2017) taxonomy of critical requirements. This framework depicted a broad range of institutional requirements students

perceive as critical for the transition to HE such as communicating with teachers, appropriating the course content, coping, adjusting to the rules and requirements and coping with the workload. We can postulate that the difficulties in managing these requirements will be specific to the distinct student bodies. Therefore, the current study investigated the nature of students' diversity in terms of entrance characteristics (i.e., past performance, informed choice, academic self-efficacy, and socioeconomic status) and assessed differences in terms of contextual experience and academic achievement using latent profile analysis. Moreover, we investigated the extent to which this diversity was similar across several study programs. Indeed, recent studies have suggested that the transition to HE can be specific to the institutional context (Bardach, Lüftenegger, Oczlon, Spiel & Schober, 2020) composed of diverse student bodies (De Clercq et al., 2021; Schaeper, 2019).

Framing of the transition to HE

The notion of transition lacks a clear-cut definition in the literature (Colley, 2007). For example, Zittoun (2009) endorsed a developmental approach of transition and considered it a brutal rupture implying a major change in attitudes and behavior to cope with a new environment. The notion of rupture is defined by Zittoun (2012) as an event perceived by a person as challenging the sense of “normal” or “usual”. Hutchinson's (2005) life course perspective rather conceived transition as a continuous and progressive change in individual status. Along the same lines, Colley (2007) referred to a process of change over time. Gale and Parker (2014) defined the transition as the « *ability to navigate change* » (p.4), and Anderson, Goodman, and Schlossberg (2011) used the terms “turning point” or phase between “two periods of stability” (p. 30). Finally, Briggs, Clark, and Hall (2012) depicted the transition as an adjustment process to a major change in life. Based on these conceptions, Kovač (2015) conducted a conceptual work of clarification of the notion of transition. Applied to HE, we can define the transition into HE as a process of instability and, thus, a rupture period, which leads to a qualitative evolution regarding students' academic and social integration. Transitions into HE can have different manifestations: from secondary to higher education, from home country to abroad, from vocational/professional to university higher education. This paper focuses on the transition from secondary to HE.

The transition cycle model (Nicholson, 1990) framed transition as a process characterized by four successive stages. This model was documented and applied to the transition into HE (Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017; De Clercq, Roland, Brunelle, Galand, & Frenay, 2018; Torenbeek, Jansen, & Hofman, 2010). In the preparation stage, which

takes place before the entrance to university, students prepare for change by achieving a state of readiness, setting clear and realistic expectations, and developing adaptive motivational beliefs to change. A number of pitfalls may also be encountered during that stage: unreadiness, reluctance, and fearfulness. The encounter stage consists of the first weeks at the university during which students adjust their initial beliefs, knowledge, and perceptions to the actual academic context. In the adjustment stage, students actively attempt to cope with the new environment by “melding” their behaviors to fit the requirements of the context (Nicholson & West, 1989). The adjustment stage can partially overlap the encounter stage in time and mostly takes place during the first year at the university (Coertjens et al., 2017). In the stabilization stage, students are expected to have acquired “*sustained trust, commitment and effectiveness with tasks and people... to realize their potential in their roles*” (Nicholson, 1990, p. 89), and only minor remaining adjustments are made. This stage is barely fully reached during the first year at university yet, students’ academic success could be a good index of reaching the stabilization stage (De Clercq et al., 2018).

Based on this model, Coertjens and colleagues (2017) put forth that the most crucial transition period is likely to range from the entrance to the university to students’ first experience with formal assessment in higher education, mostly occurring at the end of the first semester. The first formal assessment experience in HE is identified as a crucial moment that provides objective feedback to the students on the quality of their adjustment (Christie, Tett, Cree, Hounsell, & McCune, 2008). Recent studies also highlighted the importance of this period, alternatively called the early achievement process, on students’ successful transition (Willems, Coertjens, Tambuyzer, & Donche, 2019; Willems, van Daal, Van Petegem, Coertjens, & Donche, 2021). De Clercq and colleagues (2018, 2019) also provided concrete evidence that early achievement was critical for successful student transition through both experimental and longitudinal qualitative designs. These authors highlighted that a poor adjustment during the first semester could lead to a “snowball effect” of deficiencies accumulation that leaves the students too far behind to overcome their gaps in the mastery of the core content and competencies. This vicious circle largely increases their risks of failure and dropout (De Clercq et al., 2018). From that perspective, this paper mainly focuses on the first semester at the university as a significant stage of adjustment to HE.

Heterogenous preparation for university

As assumed by the transition cycle model (Nicholson, 1990), the preparation for the transition is really important to initiate an adaptive adjustment process when entering the university. This

stage is characterized by intertwined tasks and pitfalls that students have to handle together in order to facilitate their entrance to the new transition context. These tasks and pitfalls draw on factors widely studied in the literature on the transition to HE.

Achieving a state of readiness can be defined as preparation in terms of knowledge, skills, and available resources to cope with the transition (Duncan et al., 2007). On the one hand, the quality of academic knowledge and skills can be related to the vast body of research on the positive impact of past performance on academic achievement and persistence (Brown, Tramayne, Hoxha, Telander, Fan & Lent, 2008; Westrick, Le, Robbins, Radunzel, & Schmidt, 2015). As an illustration of the strong impact of this factor, a meta-analysis by Richardson and colleagues (2012) identified a corrected average correlation of .41 between past performance and academic achievement. On the other hand, the number of available resources to cope with the transition can be measured through students' socio-economic status (SES). Several studies highlighted the importance of SES on academic achievement and retention (Arias Ortiz & Dehon, 2013). A meta-analysis instead suggests a weak positive direct effect on achievement and retention (Rodríguez-Hernández, Cascallar & Kyndt, 2020).

Developing clear and realistic expectations is also an important task during students' preparation stage (Balloo, 2018; Jansen, André, & Suhre, 2013; Torenbeek, Jansen, & Hofman, 2010; Vandelanotte & Demanet, 2021). These authors highlighted the importance of the student study choice process in building these clear expectations. More precisely, research has shown that students who make an informed and thoughtful study choice are more likely to adapt to HE (Germeijs, Luyckx, Notelaers, Goossens, & Verschueren, 2012; Vulperhorst, van der Rijst, & Akkerman, 2020).

Developing adaptive motivational beliefs to change was related in HE literature to the construct of self-efficacy beliefs (Jansen & Van der Meer, 2012; Jansen et al., 2013). Academic self-efficacy beliefs are considered the most powerful psychosocial predictors of academic achievement (Elias & MacDonald, 2007; Robbins et al., 2004). Self-efficacy beliefs also play a pivotal role in social, emotional, cognitive, and behavioral levers of adjustment (Kyndt, Donche, Coertjens, van Daal, Gijbels, & Van Petegem, 2019).

Taken in conjunction, these factors can mostly be considered as the main levers of an adaptive preparation to HE. However, students show striking differences in their level of preparation for HE and many of them have difficulties in managing this combination of tasks. Several fall into the pitfalls of unreadiness, reluctance, and fearfulness identified by Nicholson (1990). Previous

research addressed this heterogeneity in the preparation by combining the factors mentioned above (De Clercq, Galand & Frenay, 2017; 2020). These studies identified several patterns of students with specific weaknesses. More precisely, six profiles were depicted: Disadvantaged, Poor performer, Thoughtless, Underprivileged, Apprehensive, and Advantaged (De Clercq et al., 2017). Disadvantaged students combined weaknesses on past performance, SES, informed choice and self-efficacy beliefs, a combination of factors that increased their chance to experience difficulties during the academic year, dropout, and failing the year. Conversely, the Advantaged profile combined strengths and was depicted as the most adaptive profile. Each of the four remaining profiles was characterized by a specific weakness. Poor performers and Underprivileged students had, respectively, past performance, and SES as weaknesses, making them more vulnerable to different forms of unreadiness. Poor performers with weakness in past performance presented particularly low academic achievement. The Thoughtless profile was characterized by very poor informed choice, making it sensitive to reluctance. This profile showed low academic achievement and a particularly high dropout rate. Finally, the Apprehensive profile showed under average self-efficacy, exposing them to fearfulness. This profile was surprisingly adaptive and shows that the lack of self-efficacy beliefs can be offset by bright past performance, privileged background, and thoughtful study choice process.

These studies highlighted that diversity of preparation exists, can be identified, and significantly impact academic success and dropout (De Clercq et al., 2017). Moreover, it has also been highlighted that these profiles of students did not cope with their adjustment in the same way (De Clercq et al., 2020). However, the main limitation of these studies is the lack of precise understanding of the experience of the academic context. Today, it remains unclear what are the specific challenges experienced by these students and how it impacts their academic success.

A thoughtful investigation of HE requirements

In order to initiate an in-depth investigation of the experience of the academic context, a detailed framework of the specific challenges of the transition is needed. Trautwein and Bosse (2017) developed a taxonomy of critical requirements experienced by students during their first year at university. The authors used a mixed-methods approach to describe the institutional barriers to the successful transition of the first-year student experience. Indeed, research shows that student success is influenced by both individual factors and the nature of the institutional context as a learning environment (Bosse, 2016). The taxonomy of critical requirements

identified four main dimensions: content-related, personal, social, and organizational requirements (see Table 1).

Table 1. Higher education requirements

<u>Critical requirements</u>	<u>Description of the dimensions</u>	<u>Examples of items</u>
Personal requirements	Coping with the workload while considering private obligations (family, sport activities...)	(1) Plan study time appropriately (e.g. time and duration of study) (2) Solve personal problems (e.g. coping with illness, financial difficulties) (3) Cope with assessment results (e.g. poor grades)
Content-related requirements	Appropriating the course content through an effective working method and confirm the choice of study made	(1) Adopt a scientific approach (e.g. the way course content is approached at university differs from that at secondary school) (2) Make the links between theory and practice (e.g. find examples of application)
Organizational requirements	Adjusting to the rules and requirements of higher education	(1) Adapt to the particularities of university teaching (e.g. large audience, lectures)
Social requirements	Building and managing social relationships with other students and teachers	(1) Communicate with teachers about their results (e.g. question, discussion) (2) Cope with discrimination from other students (e.g. experience of exclusion) (3) Organize teamwork (e.g. finding a group)

Personal requirements include difficulties in planning learning activities and adjusting to student life (managing the workload and other obligations such as family, sports, friends, etc.). Content-related requirements refer to difficulties associated with the characteristics of the study program and the skills expected and required for course completion. Organizational requirements refer to difficulties related to the university system with its rules, regulations, and institutional conditions. Finally, social requirements relate to social relationships with other students and faculty. It should be noted that the challenges posed by the critical requirements are interrelated and can therefore be cumulative. This can lead to chain relationships (e.g., a student who is unable to cope with the workload in higher education may find it challenging to work in a team and thus experience exclusion; Bosse, 2016).

This recent taxonomy is still understudied in the literature. Yet, it has been validated and replicated in French-speaking contexts (De Clercq, Van Meenen, & Frenay, 2020; De Clercq & Perret, 2020). Exploratory factor analysis and confirmatory factor analysis confirmed the four dimensions. Moreover, qualitative analyses also identified these dimensions as core challenges for the students in the first year at the university (Willems, Coertjens, & Donche, 2021). Van Meenen and colleagues (2021) also highlighted that the framework was relevant to compare traditional students' and adult learners' experiences of the first year at the university. Moreover, the study from De Clercq and Perret (2020) also supported that the taxonomy allowed to identify significant differences between French and Belgian students in their experience of the first year at the university. Cameron & Rideout (2020) explored the specific dimensions of content-related requirements in order to highlight the specific challenges that composed this global dimension.

Another recent study investigated whether learners' perceptions of different critical requirements could combine to generate distinct student profiles with specific difficulties on these four dimensions (Bohndick, Bosse, Jänsch & Barnat, 2021). The latent profile analysis conducted reveals that this was not the case. Students rather present a cumulative experience of the requirements and differ only on their global level of difficulty experienced about the critical requirements. An interesting future perspective would be to investigate if the specificity of the experiences of requirements could occur when students' preparation diversity is considered.

Aim of the study

The study aimed at investigating students' diversity in their preparation to HE using latent profile analysis. Complementary to variable-centered approaches, person-centered approaches aim to identify clusters of individuals—called profiles—who are distinct on a set of indicators (Hofmans et al., 2020). Based on the previous taxonomy of entrance profiles (De Clercq et al., 2017; 2020), we first aimed at replicating students' patterns based on past performance, informed choice, self-efficacy beliefs, and SES. We expected to identify the same six patterns of students than were identified before: Disadvantaged, Underprivileged, Apprehensive, Poor Performer, Thoughtless, and Advantaged profiles.

The second and third aims of the study were to investigate the perceived institutional requirements of these entrance profiles and their impact on academic achievement at the end of the first semester. More precisely, we expected to find strong differences in academic achievement between the profiles. Moreover, we also postulated significant differences in the

perceived institutional requirements of the profiles. According to Bohndick and colleagues (2021), we adopted a global perspective and hypothesized that the requirements would co-occur together. Therefore, three subgroups of profiles might be expected, respectively characterized by low, average, and high perceived requirements. Yet, we also postulated that some profiles could perceive some specific requirements as more important based upon the specific weaknesses of their profiles. For example, De Clercq and colleagues (2020) showed that Underprivileged students were particularly sensitive to peer support. From that perspective, we expected that this profile would have a higher perception of social requirements and their importance for academic achievement. Moreover, a Thoughtless profile more prone to reluctance could experience more difficulties concerning personal requirements.

The fourth aim of the study was to analyze how entrance profiles distribute in the study program. Previous studies show variations in students' characteristics between the programs (Schaeper, 2019), so we expected to find such differences in our analyses. More precisely, we anticipated to find more adaptive profiles in prestigious programs such as engineering and medicine. We could also postulate to find more underprivileged students in human sciences programs such as psychology and law, which were identified as more accessible to students from a humble background in our educational system (Galdiolo, Nils & Vertongen, 2012).

Method

Participants and Procedure

Data were collected from 1,048 first-year students from 12 different study programs in a major university in Belgium using an online survey. The study was approved by the institutional review board of the university, and the anonymity and confidentiality of the data were ensured. The sample consisted of 426 male students (40.6%) and 621 female students, with one student who omitted to indicate information about gender. The most represented study programs in the sample were Engineering ($n = 144$, 13.8%), Pharmacy and Biomedical Sciences ($n = 131$, 12.5%), Psychology and Educational Sciences ($n = 118$, 11.3%), Economical, Social, and Political Sciences ($n = 118$, 11.3%), and Science ($n = 68$, 6.5%). The remainder of the sample (31%) were studying Law and Criminology, Philosophy, Arts and Letters, Medicine and Dentistry, Bioscience Engineering, Motor Sciences, Architecture and Urbanism, and Management Sciences. A total of 145 students (13.8%) omitted to indicate their study program.

Measures

Following De Clercq and colleagues (2017, 2020), four entrance variables were measured for the profile indicators: past performance, informed choice, academic self-efficacy beliefs, and socio-economic status. Students were asked to indicate their most recent performance in percentage in high school. This measure was standardized to achieve compatibility and ease interpretation with other psychometric measures during profile enumeration. Informed choice was measured using 8 binary items for which students had to indicate the behaviors they had performed or not regarding their choice of study. These items were thinking about study choice and job prospects, thinking about possible studies after high school, seeking information about studies and professions, discussing with career counselors, discussing with relatives, discussing with professionals, seeking help from orientation centers, meeting with other students. A last item used a Likert scale rating and asked students to indicate their degree of information and decidedness from 1 (very poorly informed and decided) to 5 (very well informed and decided). Academic self-efficacy beliefs were measured using a four-item scale adapted from (Galand, Raucent & Frenay, 2010) using Likert scale rating from 1 (strongly disagree) to 5 (strongly agree). Socio-economic status was calculated based on father's and mother's educational level.

Critical requirements were measured at the end of the first semester using the French version of the critical requirements questionnaire (De Clercq et al., 2020). Thirty-three items assessed personal, organizational, content-related, and social requirements. Internal consistency was satisfactory for all critical requirements indicators. Cronbach Alphas of the different dimensions ranged from .69 to .80.

Finally, early academic achievement was measured at the end of the first exam session (January) using students' GPA (overall percentage). In the French-speaking Belgian tertiary educational system, achievement is measured through the average percentage for all courses. This final score was collected from department records and used as an overall indicator of achievement.

Table 1. *Correlation Matrix.*

Variables	1	2	3	4	5	6	7	8	9
1. Gender	–								
2. Past performance	.04	–							
3. Informed choice	.11**	.15***	–						
4. Self-efficacy beliefs	–.08*	.14***	.05	.75					
5. Socioeconomic status	–.07*	.14***	.18***	.20***	.71				
6. Personal requirements	–.13***	.13***	.07*	.21***	.13***	.80			
7. Organizational requirements	–.03	.05	.04	.22***	.03	.43***	.69		

8. Content requirements	-.08**	.11**	.17***	.26***	.13***	.44***	.34***	.71
9. Social requirements	-.11**	.00	.15***	.10**	.04	.44***	.38***	.38*** .78

Note. Gender was coded 1 = men and 2 = women. * Significant at the .05 level. ** Significant at the .01 level. *** Significant at the .001 level. When relevant, Cronbach's alphas are reported on the diagonal.

Results

Preliminary analyses

Unless explicitly stated, we performed all statistical analyses using the *Mplus* 8 robust maximum likelihood estimator with full information maximum likelihood. First, two sets of confirmatory factor analyses were conducted to assess the reliability and discriminant validity of profile indicators and critical requirements. As for profile indicators, we used the weighted least square robust estimator (WLSMV) in order to account for the categorical nature of some of the profile indicators (e.g., father's and mother's educational level, 8 first items of the informed choice measure). WLSMV estimation has been proven to be a more reliable estimator than (robust) maximum likelihood when confronted with categorical and interval measures such as Likert scale ratings (Bandalos, 2014; Finney & DiStefano, 2013). The model achieved excellent fit to the data (χ^2 (100) = 298.39, RMSEA = .04, CFI = .97, TLI = .96, WRMR = 1.32). Similarly, the model for the outcome of profiles, critical requirements, reached satisfactory fit to the data (χ^2 (480) = 1448.10, RMSEA = .04, CFI = .90, TLI = .89, SRMR = 0.05). Consistent with recommended practice regarding person-centered approaches, we extracted the factor scores from these models to be used in subsequent analyses. The bivariate correlations of all variables are reported in Table 1.

Latent profile analyses

We performed latent profile analyses in a profile enumeration process from 1 to 8 profiles (see Table 2). We followed state-of-the-art guidelines regarding the choice and interpretation of profile solutions (Morin et al., 2020; Spurk et al., 2020). During the process, parsimony, theoretical adequacy and meaning, redundancy, as well as fit statistics guide researchers' interpretations. Analyses were performed using 5,000 random sets of starting values, allowing 200 iterations for each start, and retaining the 200 best solutions for the optimization stage. We used the following fit statistics to evaluate profile solutions: Akaike information criterion (AIC), consistent AIC (CAIC), Bayesian information criterion (BIC), sample-size adjusted BIC (SABIC), adjusted Lo-Mendell-Rubin likelihood ratio test (aLMR), bootstrap likelihood ratio test (BLRT), and entropy. While decreasing fit statistics for the AIC, BIC, SABIC, and CAIC indicate better fit to the data, the p-value associated with aLMR and BLRT indicates whether

the addition of profiles is significant compared to a solution with fewer profiles. The entropy indicates the degree of distinctiveness of the profiles and should be greater than .70.

Table 2. *Profile Enumeration Statistics.*

# of profiles	LL	#fp	SCF	AIC	BIC	SABIC	CAIC	aLMR	BLRT	Entropy	Smallest profile
1	-5044.00	8	0.934	10,104.10	10,143.64	10,118.23	10,151.64	—	—	1	—
2	-4748.05	17	0.982	9,530.10	9,614.33	9,560.34	9,631.33	.000	.000	.885	23.86%
3	-4625.90	26	0.998	9,303.81	9,432.63	9,350.05	9,458.63	.000	.000	.889	11.14%
4	-4520.56	35	1.037	9,111.13	9,284.54	9,173.37	9,319.54	.000	.000	.864	14.22%
5	-4453.64	44	1.101	8,995.28	9,213.29	9,073.54	9,257.29	.083	.000	.852	12.98%
6	-4395.06	53	1.182	8,896.12	9,158.72	8,990.38	9,211.72	.318	.000	.874	1.15%
7	-4350.18	62	1.278	8,824.35	9,131.54	8,934.62	9,193.54	.486	.000	.882	4.01%
8	-4316.94	71	1.213	8,775.89	9,127.67	8,902.16	9,198.67	.537	.000	.883	1.15%

Note. LL = log likelihood; fp = free parameters; SCF = scaling correction factor; AIC = Akaike information criteria; BIC = Bayesian information criteria; SABIC = sample-size adjusted BIC; CAIC = consistent AIC; aLMR = adjusted Lo-Mendell-Rubin likelihood ratio test; BLRT = bootstrap likelihood ratio test.

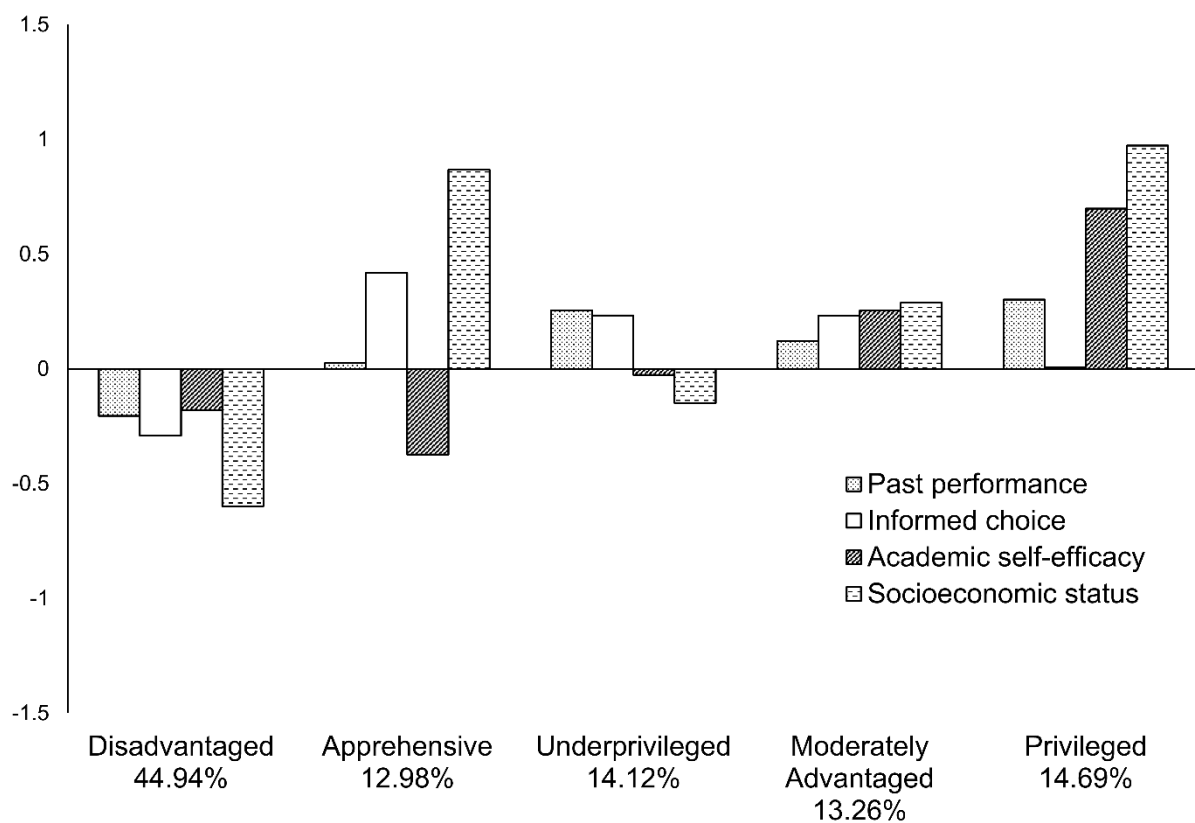
Upon inspection, all fit indices continued to decrease up to the 8-profile solution, except for the CAIC. These cases are not rare and researchers are encouraged to look at elbow plots (Morin et al., 2020). Fit indices tended to reach a plateau after four profiles. While BLRT was not informative as it displayed significant p-values across the enumeration process, aLMR became non-significant at six profiles, suggesting that adding a sixth profile did not significantly improved model fit. Inspection of profile sizes showed the extraction of a very small profile from 6- to 8- profiles. Therefore, we carefully examined the 4- and 5-profile solutions to check for statistical adequacy and theoretical meaning. The examination of these profile solutions showed that all solutions were statistically proper and that profiles were all meaningful and well distinct from each other. The addition of a profile from the 4- to the 5-profile solution resulted in the emergence of a meaningful profile composed of a substantial proportion of participants. For these reasons, we decided to retain the 5-profile solution as the best description of the data (see Figure 1).

Interpretation of profiles

The 5-profile solution is depicted in Figure 1. The first profile encompassed a majority of first-year students (44.94%) who reported low levels of all dimensions, especially socio-economic status. We labeled this profile the *Disadvantaged*. The second profile was composed of 12.98% of the sample and exhibited high levels of informed choice along with high socio-economic status. In contrast, students in this profile reported low academic self-efficacy. We labeled this

profile the *Apprehensive*. In contrast with students from the first profile, students in the third profile (14.12%) seemed to originate from low socio-economic backgrounds but reported higher levels of past performance during high school and informed choice. For these reasons, we labeled this profile the *Underprivileged*. The fourth profile was composed of students (13.26%) with moderate levels of all dimensions and was thus called the *Moderately advantaged*. Finally, students in the fifth profile (14.69%) exhibited moderate levels of past performance, average level regarding their informed choice and the highest level of self-efficacy and socio-economic status. For this reason, we labeled them the *Privileged*.

Figure 1. *Final 5-profile solution of first-year students' entrance characteristics.*

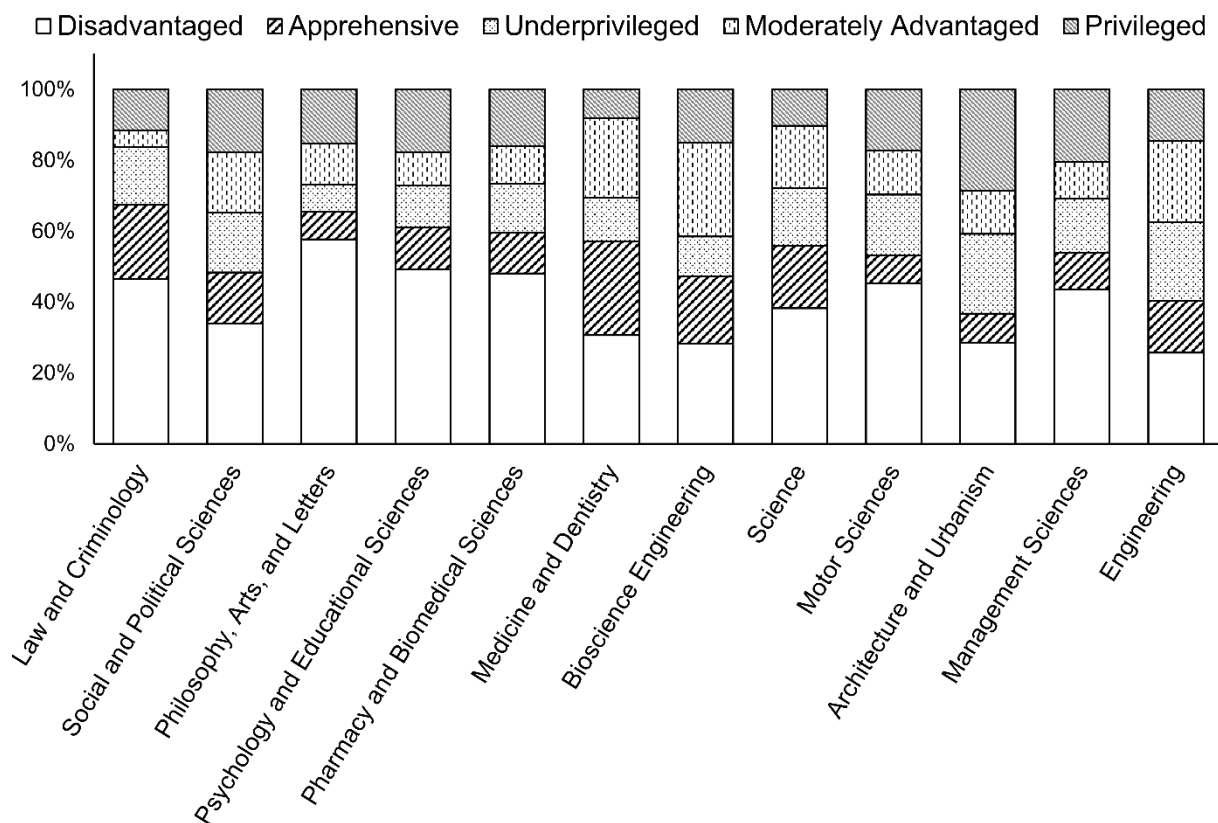


Multilevel analysis of profiles in study programs

Following a procedure developed by Mäkikangas et al. (2018), we investigated whether profiles found at the individual level exhibited variability in size at the study program level using multilevel latent profile analysis. Our analysis revealed that significant variations in profile sizes across study programs emerged in the data, especially with regards to *Disadvantaged* for which the variance component at the study program level was significant (estimate = .21, $p < .05$). This pattern was confirmed with a chi-square independence test between study programs and profile membership ($\chi^2(48) = 79.88$, $p < .01$, Cramer's $V = .15$). Figure 2 depicts the profile

proportions in each study program. An examination of the different profile proportions in study programs revealed that the *Disadvantaged* were more prevalent in Philosophy, Arts, and Letters (57.7%), Psychology and Educational Sciences (49.2%), Pharmacy and Biomedical Sciences (48.1%), and in Law and Criminology (46.5%). The *Apprehensive* were more prevalent in Medicine and Dentistry (26.5%), Law and Criminology (20.9%), Bioscience Engineering (18.9%), and Sciences (17.6%). The *Underprivileged* were more prevalent in Architecture and Urbanism (22.4%), in Engineering (22.2%), and in Motor Sciences (17.2%). The *Advantaged* were more prevalent in Bioscience Engineering (26.4%), Engineering (22.9%), and Medicine and Dentistry (22.4%). Finally, the *Privileged* were more prevalent in Architecture and Urbanism (28.6%), and Management Sciences (20.5%).

Figure 2. *Profile proportions in each study program.*

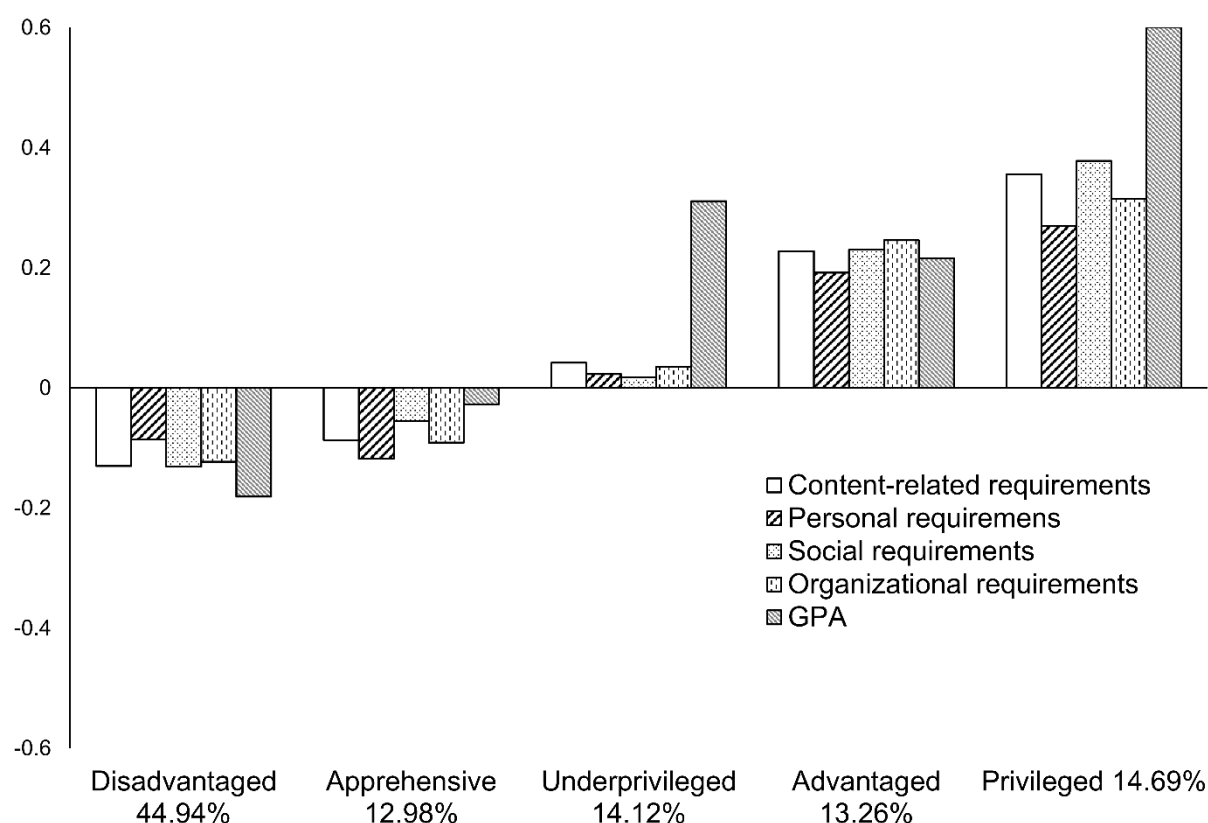


Impact of profiles on critical requirements

We examined the differences in critical requirements (i.e., personal, organizational, content, and social) and grade point average between profiles using the BCH option available in *Mplus* (see Figure 3). Results showed that levels of critical requirements homogenously and linearly differed between profiles. The *Disadvantaged* and the *Apprehensive* showed lower levels on all critical requirements compared to the *Advantaged* ($\chi^2 = 16.01, p < .001$; $\chi^2 = 7.46, p < .01$,

respectively) and the *Privileged* ($\chi^2 = 39.44, p < .001$; $\chi^2 = 15.70, p < .001$, respectively). Additionally, the *Underprivileged* reported lower levels of critical requirements than the *Privileged* ($\chi^2 = 10.18, p < .01$). About grade point average, while the *Disadvantaged* and the *Apprehensive* had similar achievement, the *Disadvantaged* had lower achievement rates compared to the *Underprivileged* ($\chi^2 = 9.84, p < .01$), the *Moderately Advantaged* ($\chi^2 = 9.01, p < .01$), and the *Privileged* ($\chi^2 = 33.29, p < .001$). The *Apprehensive* did not display a different achievement level compared to the *Underprivileged* and the *Advantaged* but achieved lower than the *Privileged* ($\chi^2 = 8.51, p < .01$). Finally, the *Privileged* achieved higher than the *Advantaged* ($\chi^2 = 6.35, p < .05$), but not compared to the *Underprivileged*.

Figure 3. Outcomes of the 5-profile solution of first-year students' entrance characteristics.



Discussion

The purpose of this study was to investigate students' entrance profiles according to dimensions of their preparation, their distribution among study programs, and their impacts on the experience of the first semester and early achievement. Such findings innovatively contribute to the literature on student diversity in the transition to HE.

Refining the Typology of Students' Entrance Profiles

This study identified five entrance profiles: Disadvantaged, Apprehensive, Underprivileged, Moderately Advantaged, and Privileged. The first three profiles closely matched the entrance profiles reported in earlier studies (De Clercq et al., 2020). Yet, the Apprehensive profile exhibited lower past performance than previous studies and was less adaptive to a successful transition to HE. This assertion was supported by the low score of this profile on early GPA. This low score demonstrated that the combination of low past performance and self-efficacy beliefs constitutes a major weakness for these students, which hindered their ability to achieve. This result is consistent with previous literature, which identified past performance and self-efficacy beliefs as the most important predictors of academic achievement during the first year at university (Elias & MacDonald, 2007; Robbins et al., 2004; Rodríguez-Hernández et al., 2020). Among these three replicated profiles, Underprivileged students were depicted as adaptive because they showed the second-highest score on early GPA. This result is consistent with previous studies (De Clercq et al., 2020) and showed that the effect of low SES on academic achievement could be alleviated when combined with positive past performance and informed choice. This result is consistent with previous research highlighting that SES impact on achievement was negligible when past performance was considered in the analyses (Sackett, Kuncel, Arneson, Cooper & Waters, 2009).

Two new profiles were also identified and showed commonalities with the initial typology. Moderately Advantaged drew near the Advantaged profile identified by De Clercq and colleagues (2017; 2020), yet the strengths of this profile were less marked than in the original typology. Privileged students also resembled the Thoughtless profile with strong self-efficacy beliefs and low informed choice. However, Privileged students differed from Thoughtless profiles in their high scores on SES and past performance. Considering these changes, the Privileged profile can be conceived as more adaptive than the Thoughtless profile was. The investigation of the relationship between the profiles and early achievement confirmed the adaptive nature of Privileged students. This profile exhibited the highest scores on GPA, which showed that poor study choice could largely be offset by strong SES, past performance, and self-efficacy. This finding is in accordance with empirical research on academic success that identified these three variables as important positive predictors of achievement (Richardson et al., 2012). We can speculate that Privileged Students could be more sensitive to motivation and retention issues considering their poor informed choice.

These refined profiles provided new interesting combinations of factors with specific strengths and weaknesses that could change the way they adjust to the academic context. The original

taxonomy was thus enriched by these new patterns. More broadly, the complex nature of the profiles identified in this study lends credence to a person-centered approach of the tasks and pitfalls composing the preparation stage of Nicholson's model of transition cycles.

The Specific Composition of Study Programs

Another goal of this study was to define the distribution of students' profiles among the study programs. As expected, significant variation in the composition of the study programs was found. More precisely, social sciences programs were composed of a larger proportion of at-risk profiles such as Disadvantaged and Apprehensive students. For example, the Law and Criminology program was composed of more than 65 percent of Disadvantaged and Apprehensive students. Conversely, Natural Sciences programs exhibited a higher proportion of adaptive profiles such as Privileged and Moderately Advantaged profiles. For instance, the Engineering program was composed of nearly 40 percent of adaptive students. Critically, study programs do not deal with the same students, which could impact the way they address the question of the transition to HE. Social Sciences programs seem to represent educational democratization which supports Organisation for Economic Cooperation and Development (OECD) incentives to enroll increased numbers of HE students from diverse backgrounds and to shift to universal access of the population to HE (Gale & Parker, 2014). Yet, these programs would also be more sensitive to the issue of massification, dropout, and failure, which might imply several difficulties in supporting students' adjustment during the first year, sustaining learning quality, and dealing with diploma devaluation (Lee, Kim, & Jung, 2020). Therefore, more investigation is needed to know how to sustain social sciences programs to deal with this growing heterogeneity.

Consequences for Critical Requirements

The study revealed another noteworthy finding about the experience of the academic context. As demonstrated by Bohndick and colleagues (2021) the difficulties experienced by the students on the institutional requirements seem to be cumulative and evolve together. Adaptive profiles generally have fewer difficulties in managing institutional requirements, whereas at-risk profiles struggled to do so. However, three hypotheses can also be drawn to explain this lack of qualitative differences. First, students were asked to report their difficulties at the end of the first semester when they were already clearly involved in the adjustment stage of Nicholson's model (1990). Meanwhile, the students could have ironed out the differences between the dimensions of requirements and reported a more general level of difficulty. This

assumption is in line with previous research, which highlighted that the first weeks of the academic year represent a period of important cognitive restructuring (De Clercq et al., 2019; Torenbeek et al., 2010). From that perspective, the investigation of the experience of the institutional context during the encounter stage could have provided stronger differences between the profiles. Second, we can postulate that the specificity of requirements experienced by students' profiles was partially blurred by the global perspective of the context endorsed by the study. This study investigated the experience of different profiles of students among very diverse study programs. Yet, the impact on these specific programs on the institutional experience was not considered. This lack of learning context consideration could have hindered our ability to find specific differences among the profiles. Such context specificities could be considered in further studies. Third, the diversity of the institutional experience might not be in the level of difficulty experienced but more in the way students manage to overcome these requirements. In other words, the different profiles could use different strategies to manage the requirements of the institutional context. This assumption is in line with previous work of De Clercq and colleagues (2020), which highlighted that these profiles experienced specific adjustment processes to achieve at the university. For example, Underprivileged students strongly relied on peer support, whereas Apprehensive students were more sensitive to the teaching quality to perform. Yet, the literature on critical requirements is still in development and needs further investigation to understand more deeply how it is intertwined with student heterogeneity.

Study Limitations and Future Research

Among the limitations of this study, two need to be highlighted. First, the study endorsed a cross-sectional design whereas several authors advocated that the best way to study the transition to HE is through longitudinal designs (Coertjens et al., 2017; Gijbels & Esterhazy, 2021). An interesting future perspective would be to analyze the dynamic evolution of the experience of the institutional experience through the different stages of the transition cycle model (1990). Using latent growth analyses, entrance profiles could be combined with perceived requirements in the very first weeks of the first year, before the first formal assessment experience, and at the beginning of the second year. Such a design could allow for a comprehensive investigation of the transition covering the four stages of the transition cycle model. Second, the study only broadly explored profile variations among the study programs. Such an approach proved a wide variation of profiles between the programs but could not provide specific evidence of the impact of this diversity. In that perspective, it could be relevant

to specifically address the experience of the program from a multilevel perspective. Such an approach could detail the specific difficulties experienced by the profiles in the different institutional contexts. Previous research (Bonhdick et al., 2021; De Clercq, Galand, Hospel & Frenay, 2021) already highlighted specific requirements from one educational context to another.

Practice implications and Conclusion

The findings provided new insights into the understanding of contextual and individual diversity in the transition to HE. From a practical point of view, particularly at-risk profiles were identified, such as the Disadvantaged and Apprehensive ones. This study provides a simple and effective tool to detect the students with particular needs for attention and support from the very first day of the academic year. This early identification could allow for early interventions that directly compensate for the specific weaknesses of these students. These interventions would then take action early enough to avoid deficiency accumulation and strong difficulties for students to fill the gap. Moreover, identifying the contexts mainly composed of at-risk students can also constitute an effective tool to settle targeted management of the support for success. In conclusion, the development of this approach focused on student diversity could not only open new avenues for research on student diversity in HE, but it could also provide an alternative option to understanding how students can best be supported through their transition to HE.

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