A HEAD START INTO HIGHER EDUCATION

How students academically prepare and adjust for a successful transition into university

Sanne G. A. van Herpen

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How students academically prepare and
adjust for a successful transition into university

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voor een succesvolle overstap naar de universiteit

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Chapter 1

Introduction

In the past decades there has been a remarkable growth in the number of students enrolling in higher education (HE) (Marginson, 2016). For instance, in the Netherlands, the number of students enrolled in HE has doubled over the last twenty years (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2017) towards more than 50,000 students starting an undergraduate degree at university in 2016. This expansion of participation in HE contributes to economic growth and global competitiveness. However, more participation in HE does not imply that more students are successful in HE. Students' academic success is an ongoing concern for many higher education institutions (HEIs) because students dropping out or taking longer than planned to complete their degree can create negative financial consequences for HEIs, as many institutions are held accountable for student performance (De Boer et al., 2015; Hillman, Tandberg, & Gross, 2014; Marginson, 2016). Moreover, academic failure is considered unfavourable for students as it can result in increased financial costs due to switching and possible psychological costs such as loss of motivation or self-confidence. For example, in the Netherlands approximately 33 per cent of first-year students do not continue the same course programme in their second year (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2016, 2017). In the United States and Australia about 20 percent of students studying full time at HEIs do not continue into the second year (Australian Government, 2015; National Center for Education Statistics, 2015), and in the United Kingdom, non-continuation rates from the first to the second year vary between 1.2 and 21.4 percent among HEIs (Higher Education Funding Council for England, 2016).

Previous research has shown that on average students' level of academic success is lowest in the first year of HE, because they face several challenges during the transition into HE. These challenges include making a right choice for a degree programme, building new relationships with peers and faculty, gaining confidence in their academic capabilities to perform well in HE and putting in enough effort to fulfil the demands of HE (Barefoot, 2008; Gale & Parker, 2014; Harvey, Drew, & Smith, 2006; Tinto, 2012; Yorke et al., 1997). HEIs therefore provide support to first-year students by offering, for example, seminars, learning communities and/or summer bridge programmes (Cabrera, Miner, & Milem, 2013; Hatch & Bohlig, 2016; Inkelas, Daver, Vogt, & Leonard, 2007; Keup, 2005; Porter & Swing, 2006). However, more research is needed to clarify more systematically how to ease the transition into HE (cf. Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017a; Pike, Hansen, & Lin, 2011; Porter & Swing, 2006; Sablan, 2014).

The transition into HE, the focus of this dissertation, can be explained as a period of significant change in students' educational career (Gale & Parker, 2014). Students develop meaning of the new unknown learning environment in several stages

(Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017a; Nicholson, 1990; Torenbeek, 2011). During the first stage, the so-called preparation stage (Nicholson, 1990) students prepare for HE. They graduate from secondary school and deliberate and finally choose where and what to study. By choosing their goal, students create an initial level of stability or reference point for themselves in the transition into HE. During the second stage, students encounter their new chosen learning environment. This encounter stage is quickly followed by a third stage in which students try to adjust effectively to HE. During this adjustment stage students develop a next level of stability (i.e. the fourth stage), in which they generally understand the demands of HE and can cope and adapt continuously to perform well, i.e. function as self-regulated learners (Zimmerman, 1990a). This dissertation address the preparation, encounter and adjustment stages.

This dissertation aims to investigate how students from a pre-university secondary school track can be supported in a successful transition into HE. This introduction chapter first describes three significant challenges that students face during the transition into HE and includes a short review of the literature for each of the challenges. Next, an overview of this dissertation is presented including research aims and research designs of the conducted empirical studies. The chapter concludes with a reading guide for the dissertation.

Transition challenge 1: choosing a degree programme

In the preparation phase of the transition cycle, students face the challenge of choosing a degree programme. In the Netherlands, access to HE is open for students who have completed a preparatory university track (in Dutch: VWO) or a senior general secondary education track (in Dutch: HAVO) or completed a higher professional education programme (in Dutch: HBO) (Nuffic, 2016). Students who meet the admission requirements of HE can choose from numerous degree programmes at more than 50 HEIs (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2017). These HE degree programmes are often focused on a specific work domain. However, it is often difficult for first-year students to choose a programme that best fits their interests and competences and their future field of work. This is a stressful moment for students. Making the wrong choice could lead to dropping out, which also has negative effects for HEIs.

Students can choose a degree programme based on several reasons. These reasons are an expression of self-determined motivation for learning (Ryan & Deci, 2000). Students can go to university for self-determined, intrinsic reasons such as, ‘I want to learn more about this subject’ and/or for less self-determined, extrinsic reasons

like 'I am going to university because my parents expect me to do so'. Previous studies on students' motivation for attending HE have shown a positive link with academic performance (e.g. Guay & Vallerand, 1996; Vallerand, Fortier, & Guay, 1997). Recent studies by Guiffrida, Lynch, Wall, and Abel (2013) and Kennet, Read and Stuart (2013) found that intrinsic motivation such as personal interest in learning predicts academic performance best. However, these studies were conducted while students were already enrolled in HE. Consequently, their results add little to our understanding of how to support students during the preparation phase of the transition cycle. They fail to consider that students' motivation for attending HE before they start at university might differ from their motivation when they are actually enrolled in HE (e.g. Kember, Hong, & Ho, 2008).

Especially in the Netherlands more information on the relationship between choosing a degree programme and academic success is warranted as Dutch HEIs are required to offer applicants a so-called matching opportunity to find the optimal fit between the students' capacities and interests and the degree programme to increase first-year retention rates (Ministerie van Onderwijs, Cultuur en Wetenschap [Ministry of Education, Culture and Science], 2013; 2015). This dissertation explores students' reasons for studying at an HEI when they apply for HE, and how these relate to first-year academic performance.

Transition challenge 2: building relationships with peers and faculty and developing a sense of belonging in higher education

During the encounter and adjustment phase of the transition cycle, students face a second challenge, namely building new relationships with peers and faculty and developing a sense of belonging in their new learning environment (Gibney, Moore, Murphy, & O'Sullivan, 2011; Palmer, O'Kane, & Owens, 2009; Tett, Cree, & Christie, 2017; Walton & Brady, 2017). A sense of belonging refers to feeling at home, fitting in, being a member of one or more communities and feeling supported at the institution (Hausmann, Ward Schofield, & Woods, 2007; Hurtado & Carter, 1997). The academic learning environment differs significantly from that at secondary school. During secondary school students get to know their peers and teachers relatively well. In HE, students must adapt to a larger educational setting, which includes more students and teachers and on average less in-class time with teachers and peers. On the other hand, there is more available time for independent learning or informal contact with peers through, for instance, fraternities, campus communities or work. Research has shown that first-year university students often struggle to build new relationships with peers

and faculty and to develop a sense of belonging in HE (e.g. Gibney et al., 2011; Palmer et al., 2009; Tett et al., 2017; Walton & Brady, 2017).

How students understand their new learning environment and their position within this environment depends on how they interpret the cues available (Walton & Brady, 2017). These cues can include exam requirements, assignments, class discussions or small talk with peers. The cues can be vague, implicit or even ambiguous, as with many everyday situations. How students perceive and interpret these available cues depends on their personal perspective (which is fuelled and filtered by personal history) (cf. Erhard, Jensen, & Granger, 2012; Walton & Brady, 2017; Zaffron & Logan, 2009). This personal perspective shapes the risks and opportunities perceived in situations at university. Students who worry if they belong in HE (because they feel they are not smart enough or come from a marginalised group) may perceive every-day experiences, such as problems during peer group work, as confirmation of this negative sense of belonging. As a result, students may not take advantage of learning opportunities, such as discussing unclear learning material with peers, and they might not build the relationships with peers and faculty necessary for belonging and success (Dweck, 2006; Walton & Brady, 2017; Walton & Cohen, 2007). In sum, students' personal perspective influences how they understand the available cues and subsequently how they experience the learning environment. This in turn affects their interactions with significant others in the learning environment as well as their sense of belonging in HE.

Previous studies have shown that students' interactions with peers and faculty are important for their academic success in HE. Such interactions can take place formally or informally, either inside or outside of a classroom setting (Hagenauer & Volet, 2014; Hommes et al., 2012; Pascarella & Terenzini, 2005). Student-faculty interactions and student-peer interactions have been related to several important academic outcomes such as increased student satisfaction with HE (Kim & Sax, 2009), a stronger commitment to graduate (Pascarella & Terenzini, 2005), lower attrition rates (Richardson & Radloff, 2014), higher first-year grades (Severiens & Wolff, 2008) and higher college grade point averages (Kim & Sax, 2009). Previous studies have also shown the correlation between interaction behaviour and sense of belonging. Student-faculty interactions are found to enhance a sense of belonging in HE (Brooman & Darwent, 2014; Kim & Lundberg, 2016; Meeuwisse, Severiens, & Born, 2010; Stephen, O'Connell, & Hall, 2008) and vice versa, people tend to be more motivated to engage with others when they feel they belong in a setting (Walton & Cohen, 2007).

Based on the above, it seems important to encourage first-year students to be aware of their personal perception on the academic context (which is fuelled and filtered by personal history) and to positively perceive the available cues to promote

interactions with faculty and fellow students and a sense of belonging. Furthermore, it seems important to reduce feelings of uncertainty and to keep students' minds (or perceptions) open for positive cues and experiences of belonging in HE by informing them that such self-doubts about belonging and building new relationships are common in the transition into HE (cf. Gibney et al., 2011; Palmer et al., 2009; Tett et al., 2017; Walton & Brady, 2017). Many HEIs therefore offer transition programmes to their first-year students, to support them in understanding the academic context, in building new relationships with peers and faculty and in feeling at home in HE (e.g. Hatch & Bohlig, 2016). It has been shown that these programmes support transitioning students in getting to know their peers and faculty, in feeling at home in HE, and in performing well there (Ackermann, 1991; Cabrera, Miner, & Milem, 2013; Hausmann et al., 2009; Porter & Swing, 2006). However, more quasi-experimental research is needed to corroborate the evidence of the effectiveness of transition programmes offered to HE students (cf. Coertjens et al., 2017a; Pike et al., 2011; Porter & Swing, 2006; Sablan, 2014). This dissertation uses a quasi-experimental design to investigate whether participation in a pre-academic transition programme is related to differences in interaction, sense of belonging and academic performance among first-year Dutch students.

Transition challenge 3: regulating academic self-efficacy belief and effort for learning

During all the stages of the transition cycle, students are faced with an important third challenge, namely regulating their personal academic self-efficacy belief and effort for learning. Academic self-efficacy belief refers to students' beliefs about their capabilities to learn or perform actions at designated levels (Bandura, 1986, 1997). Effort for learning refers to trying hard, working hard, paying attention and showing persistence when faced with challenging tasks at school (Pintrich, 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006). Previous research has shown that academic self-efficacy belief has one of the strongest relationships with academic performance, incremental to background characteristics and intellectual abilities (Hattie, 2009; Multon, Brown, & Lent, 1991; Richardson, Abraham, & Bond, 2012; Robbins et al., 2004), and is a relatively strong predictor of academic performance compared to, for instance, study choice aspects and learning strategies (De Clercq, Galand, Dupont, & Frenay, 2013) and student-institution integration and satisfaction with the HEI (McKenzie & Schweitzer, 2001). Several recent studies have shown that effort mediates the relationship between academic self-efficacy and academic performance (Jung, Zhou, & Lee, 2017; Kassab, Al-Shafei, Salem, & Otoom, 2015; Komarraju & Nadler, 2013). Several review studies and

meta-analyses studies have also shown that effort is an important factor for performance in HE (Credé & Phillips, 2011; Hattie, 2009; Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017).

Despite the convincing evidence of the importance of academic self-efficacy belief and effort for academic success in HE, little research has focused on the role of academic self-efficacy and effort during the transition into HE. Research has shown that students' academic success in the first year is most vulnerable (Barefoot, 2008; Gale & Parker, 2014; Harvey, Drew, & Smith, 2006; Tinto, 2012; Yorke et al., 1997), which makes more insight into how students experience the transition into HE very relevant. A few previous studies on this transition have shown that students reported that they had to take more responsibility for their own learning (by having to manage their time to study more independently and motivating themselves to study) compared to secondary school (Hockings, Thomas, Ottoway, & Jones, 2018; Tett et al., 2017; Van der Meer, Jansen, & Torenbeek, 2010). Other studies have also shown that students put in less effort in their first year in HE than they had expected before entering college (e.g. Kuh, 2007), maybe because they failed to understand what kind of effort is needed to succeed in HE. Moreover, this increased demand on independently regulating one's effort for learning appears to make students feel insecure about their capabilities to perform well (Briggs, Clark, & Hall, 2012; Brooman & Darwent, 2012, 2014; Christie, Tett, Cree, Hounsell, & McCune, 2008). It seems that students are highly confident about their skills when they start HE (e.g. Gibney et al., 2011), but that this initial confidence can fade quickly when faced with the challenges of studying at university (Putwain & Sander, 2016; Tett et al., 2017), increasing the chance of students failing their first year (Wagner & Brahm, 2017).

Notwithstanding these earlier studies, there is a need for a different, more person-oriented and developmental-oriented research to highlight the complex and dynamic character of transitioning into HE and first-year academic success (Kyndt, Donche, Trigwell, & Lindblom-Ylänne, 2017; Willems, Noyens, Coertjens, van Petegem, & Donche, 2018). It seems plausible that students adjust differently to HE, showing different patterns of change in self-efficacy, effort and performance (e.g. Nightingale et al., 2013). In addition, previous studies have provided little information on how to support students to cope with the challenging demands on their academic self-efficacy belief and learning efforts when entering HE. This dissertation applies a person-oriented approach (cf. Bergman & Trost, 2006; Räisänen, Postareff, & Lindblom-Ylänne, 2016) to investigate how first-year students academically adjust to university by examining changes in students' performance, effort and academic self-efficacy during the transition into HE. In addition, this dissertation uses a quasi-experimental design to examine the effects of a pre-academic (i.e. before starting HE) transition programme

on first-year students' 1) academic self-efficacy belief, 2) effortful behaviour and 3) academic performance.

The present dissertation

This dissertation examines how students can be supported to successfully transition from a pre-university secondary school track into university. More specifically, it investigates and describes the three challenges students' face during this transition in four chapters (see Figure 1), using different types of research methods (see also Research Design). Chapter 2 discusses how first-year academic performance can be predicted by students' reasons to attend university, their level of effort during secondary school and their level of academic self-efficacy before they start university.

Chapter 3 includes an in-depth study of how students regulate their academic self-efficacy, effort and performance during the transition into university. More specifically, it uses a qualitative person-oriented approach (Bergman & Trost, 2006; Malmberg & Little, 2007; Räisänen et al., 2016) to investigate the development of students' performance, effort and academic self-efficacy belief when they transition from secondary school to university and to identify profiles of student adjustment.

Chapter 4 and Chapter 5 use a quasi-experimental design to investigate the effects of a four-day, pre-academic programme (i.e. before starting at university) on student–faculty interactions, student–peer interactions, sense of belonging, and first-year academic performance (Chapter 4), and the effects on students' level of academic self-efficacy belief, effort and performance (Chapter 5). The overall aim of this pre-academic programme was to ease the difficulties of transitioning into HE. More specifically, we tried to increase students' sense of belonging and enhance the quality of their interactions by changing their negative perceptions of the new learning environment. We wanted students to perceive potentially unsettling social and academic experiences as normal difficulties of the transition into HE and not as evidence that they did not belong or could not succeed there (cf. Walton & Brady, 2017; Walton & Cohen, 2011). Furthermore, we wanted to make students aware of how their academic self-efficacy belief and effort can be influenced, what difficulties are normal during the transition into HE and how they can cope with these influences and difficulties to promote their academic self-efficacy belief and effortful behaviour, to start successfully at university.

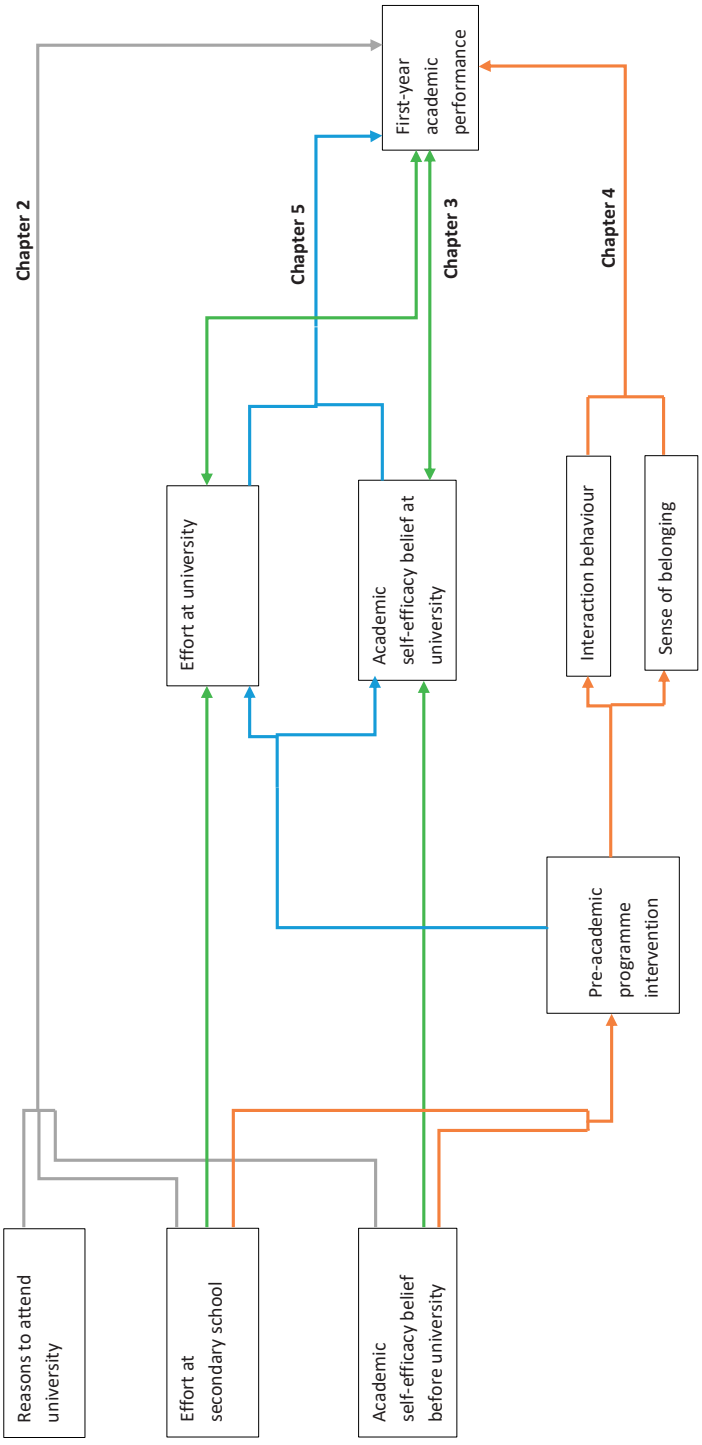

Figure 1. An overview of the concepts and relationships investigated in this dissertation

In sum, this dissertation studies the transition into university by investigating first-year students' academic performance (i.e. grades attained in the first year, first-year grade point average and first-year retention rate) in relation to relevant factors for academic performance, namely academic self-efficacy belief, effort for learning, student-faculty interaction and student-peer interaction, and sense of belonging. In addition, this dissertation applies a long-term mixed-method approach to deepen our understanding of how to effectively support students during the transition into university.

Research design

The studies presented in this dissertation used data from three research projects. In the first study (Chapter 2), students' reasons to attend university and their effort and academic self-efficacy in relationship to first-year academic success were investigated with data collected through the Erasmus University Rotterdam Enrolment Monitor (currently named Erasmus University Rotterdam Study Choice Check). Students filled in the questionnaire during their application for university; participation was voluntarily. Participants provided their identification numbers so academic results could be obtained from the university's student administration office. We used exploratory factor analysis (EFA in SPSS) and confirmatory factor analysis (CFA in AMOS) to distinguish the pre-university reasons for attending university. Given the categorical nature of first-year academic success (passed, provisionally passed, failed, stopped), we used multinomial logistic regression analysis in SPSS to answer our questions whether pre-university effort, pre-university self-efficacy and pre-university reasons for attending university are related to academic success.

We conducted a qualitative research project on study choice behaviour and learning behaviour during the transition from secondary school into university to investigate the development of students' performance, effort and academic self-efficacy belief from secondary school to university (Chapter 3). Participants were secondary school (in Dutch: VWO) students in their final grade from (the region of) the city of Rotterdam, the Netherlands. These participants were interviewed twice; three months before their final exams at secondary school and three months after their enrolment at a Dutch university. All interviews were tape-recorded, transcribed verbatim and analysed using Atlas.ti (Friese, 2017). The qualitative data were analysed using a self-developed person-oriented change matrix analysis tool to investigate changes in students' performance, effort and academic self-efficacy from secondary school to university, to identify profiles of student adjustment.

We conducted a quasi-experimental research project with students from the Erasmus School of Law, Erasmus University Rotterdam, the Netherlands to investigate

the effects of a pre-academic programme (i.e. transition intervention) on interaction behaviour, sense of belonging and academic performance (Chapter 4), and on academic self-efficacy belief, effort and academic performance (Chapter 5). While applying for the full-time first-year bachelor programme in National Law, Financial Law, or Criminology, students could volunteer to participate in the intervention. Those who participated (experimental group) were compared with students who did not participate (control group). The intervention was carried out two weeks before students started their first year at university. All students filled in a questionnaire during application (i.e. pre-test) and at the end of the first course at university (i.e. post-test). Academic performance data were obtained from the university's student administration office. We used multivariate analysis of variance and chi-square-tests in SPSS to test the hypotheses on interaction behaviour, sense of belonging and academic performance, as reported in Chapter 4. To answer the research questions as reported in Chapter 5, we used multivariate analysis of variance in SPSS and structural equation modelling (Arbuckle, 2014).

Reading guide

After this first introduction chapter, Chapter 2 to 5 will present the empirical studies. Chapter 2 presents the first quantitative study on early predictors of first-year academic success at university. Chapter 3 presents the qualitative study on different profiles of academic adjustment to university, based on changes in students' performance, effort and academic self-efficacy during the transition into university. Chapter 4 and 5 present a quasi-experimental study aimed at testing whether a pre-academic programme intervention affects student–faculty interactions, student–peer interactions, sense of belonging and first-year academic performance (Chapter 4) and whether it affects students' effort, academic self-efficacy belief and first course grade (Chapter 5). Chapter 6 summarises the results from various studies, discusses the findings in this dissertation and draws conclusions. We address the methodological limitations, discuss the implications of how to support students during the transition into HE and provide directions for future research. Please note that there may be some overlap across the chapters since this thesis consists of a collection of papers that can be read independently.

Chapter 2

Early predictors of first-year academic success at university: Pre-university effort, pre-university self-efficacy, and pre-university reasons for attending university[1]

[1] This chapter has been published 'open access' as:
van Herpen, S. G. A., Meeuwisse, M., Hofman, W. H. A., Severiens, S. E., & Arends, L. R. (2017). Early predictors of first-year academic success at university: pre-university effort, pre-university self-efficacy, and pre-university reasons for attending university. Educational Research and Evaluation, 23(1–2), 52–72. https://doi.org/10.1080/13803611.2017.1301261

Abstract

Given the large number of dropouts in the first year at university, it is important to identify early predictors of first-year academic success. The present study (*n* = 453 first-year students) contributes to literature on the transition from secondary to higher education by investigating how the non-cognitive factors pre-university effort and pre-university academic self-efficacy influences first-year retention at university. In addition, we examined pre-university reasons for attending university and whether these reasons were related to first-year retention. Multinomial logistic regression analyses showed that pre-university effort positively predicted first-year retention, whereas pre-university academic self-efficacy did not. With exploratory factor analysis and confirmatory factor analysis we identified six pre-university reasons for attending university: career perspective, personal development, compliance with the social environment, attractiveness of the institution, recommended by others and location. None of the pre-university reasons appeared to significantly predict first-year retention. Implications for research and practice are discussed.

Introduction

The transition from secondary education to higher education (HE) is often experienced as challenging and difficult by students (Gale & Parker, 2014), which results in relative low retention rates in the first year compared to following years in HE (Tinto, 2012). For example, in the Netherlands, 33% of the university students drop out or switch after the first year (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2016). These substantial dropout rates also exist in the US; 20% of the students studying fulltime at four-year HE institutions do not return to university for their second year (National Center for Education Statistics, 2015). In Australia, New Zealand and the United Kingdom approximately seven to 19% of the bachelor students drop out after their first year (Australian Government, 2015; Higher Education Funding Council for England, 2016; Education Counts, 2016). Not all countries systematically document first-year retention, but also in France and in Belgium approximately 21 to 24% of the students leave HE without a qualification (Organisation for Economic Co-operation and Development, 2010) and in Germany, 33% drop out of a bachelor degree (Heublein, 2014).

These dropout and retention rates have significant repercussions for HE finances, for example in the Netherlands universities are state funded by number of graduates per year. Dutch HE institutions therefore have a clear interest in identifying early, pre-university predictors of first-year academic success to support students towards a successful transition to HE.

Traditional cognitive factors such as secondary school grade point average (GPA) and standardised ability test (SAT) scores are well-known and important positive pre-university predictors of first-year academic success (Robbins et al., 2004). Extant research has also shown that non-cognitive factors such as student learning behaviour and motivation are important predictors of academic success (Richardson, Abraham, & Bond, 2012; Robbins, Allen, Casillas, Peterson, & Le, 2006). However, these studies have mainly focused on how first-year academic success is affected by students' non-cognitive study behaviour *during* HE. In light of easing the transition from secondary school to HE, expanding the knowledge on how study behaviour *during secondary education* influences first-year academic success at university (e.g. Casillas et al., 2012) is relevant. In this study we investigated *pre-university* non-cognitive factors (i.e. before students were enrolled at university) as predictors of first-year academic success. We hereby followed the approach of Robbins et al. (2004) and Richardson et al. (2012) in combining research on educational persistence and motivational theories on academic achievement.

We first present a short overview of the literature on predictors of academic success and explain the difference between traditional, cognitive predictors and non-

traditional, non-cognitive predictors of academic success. We then focus on three malleable non-cognitive factors, namely effort, academic self-efficacy and reasons for attending university. The level of effort and self-efficacy, and the reasons for attending university can be changed by teachers and students themselves (Christenson, Reschly, & Wylie, 2012; Kember, Hong, & Ho, 2008; Wentzel & Wigfield, 2009), which makes them relevant factors for HE institutions trying to ease the transition from secondary to higher education and to increase first-year retention (Tinto, 2012).

Predictors of Academic Success

Extensive research has been conducted to identify why students successfully complete the first year of HE or not (Harvey, Drew, & Smith, 2006). Robbins et al.'s review (2004) and Richardson et al.'s meta-analysis (2012) provide a comprehensive overview of predictors of academic success. These studies distinguish between traditional or cognitive factors, and non-traditional, non-intellective or non-cognitive factors. Cognitive factors refer to intellectual abilities and are usually measured with SAT scores and GPA. Non-cognitive factors refer to psychosocial and study skill factors and include self-regulated learning factors and motivation (Allen, Robbins, & Sawyer, 2009).

The studies of Robbins et al. (2004) and Richardson et al. (2012) have confirmed the influence of prior academic attainment (SAT and GPA). These studies also show that several non-cognitive factors have a significant influence on academic success at university, additional to the influence of prior academic attainment. For example, Richardson et al. (2012) found that effort regulation and academic self-efficacy are two of the strongest predictors of academic success, controlled for prior academic attainment. We therefore include effort and academic self-efficacy in the present study to further investigate these constructs as possible *pre-university* predictors of first-year academic success.

In addition to effort and self-efficacy, another relevant non-cognitive concept is reasons for attending university (Kember et al., 2008). Students' reasons for attending university can be understood as a form of academic motivation (Ryan & Deci, 2000): students can go to university for self-determined, intrinsic reasons like "I like to learn more about this domain" and/or for less self-determined, extrinsic reasons like "I go to university because my parents expect me to do so". Previous research shows that academic motivation is related to academic performance (e.g. Fortier, Vallerand, & Guay, 1995). To increase retention rates, Dutch HE institutions are keen to support student applicants during the process of choosing a study programme and stimulate them to choose from a more self-determined perspective, which is known as a positive predictor for academic success (Guiffrida, Lynch, Wall, & Abel, 2013; Kennett, Reed, &

Stuart, 2013; Vallerand, Fortier, & Guay, 1997). The present study seeks to extend the existing research by exploring how *pre-university* reasons for attending university (measured during application for university) may predict first-year retention.

Effort

Effort is an important non-cognitive predictor of academic success and can be understood as a marker of energy or as active student behaviour in the student motivation process (Reschly & Christenson, 2012; Skinner & Pitzer, 2012). Effort indicates how engaged students do their academic tasks; it refers to trying hard, working hard, paying attention and showing persistence when faced with challenging academic work (Pintrich, 2004; Richardson et al., 2012)**.** It is seen as a student characteristic that can be controlled and changed by students (Skinner, Chapman, & Baltes, 1988), which makes it a relevant factor for our study on the transition from secondary education to HE and increasing first-year retention.

From previous studies it is known that effort influences academic performance (see meta-analysis of Richardson et al., 2012 and Robbins et al., 2004) and is used by students as an explanation for success or failure (Graham & Williams, 2009). An explanation for success is for example "I tried hard" and for failure "I did not put forth all my effort". Effort thus influences (perceptions of individuals on their) past and future academic performance. In our study we focus on *pre-university* effort; how is the level of effort during the last period at secondary school related to first-year retention at university? The measured level of effort in the present study should therefore be understood as a possible long-term, early indicator of first-year retention.

A study by Casillas et al. (2012) found that, after controlling for prior grades, effort during middle school (average age 13.5 years) was incrementally predictive of GPA during secondary school two years later. Several authors pointed out that it is not known whether the relationship between effort and academic success can be generalised to university applicants (cf. Richardson et al., 2012). Our study contributes to filling this research gap by exploring the relationship between pre-university effort and first-year retention.

Academic Self-efficacy

Academic self-efficacy, or students' perception of their capability to learn and perform is another important non-cognitive factor in predicting academic success (Bandura, 1997; Schunk & Pajares, 2009). While effort is seen as active student behaviour, self-efficacy is seen as a motivational belief (Schunk & Mullen, 2012; Schunk & Pajares, 2009). Students' perception of their level of self-efficacy is based on past performance, performance of others, feedback of others on their capabilities and performances, and their own feelings about tasks or performances.

Reviews by Multon, Brown, and Lent (1991), Brown et al. (2008) and Richardson et al. (2012) convincingly showed that academic self-efficacy is related to academic success in HE. However, surprisingly little is known about how academic self-efficacy is related to academic success during the transition from secondary education to university. Although student applicants can only make a general future-oriented judgment of their capability to perform well at university, we expect that they are able to assess their capabilities to perform successfully based on their past experience in pre-university education (Pintrich, 2004, p. 397; Schunk & Pajares, 2009). In the present study, we therefore explore the possible relationship between pre-university academic self-efficacy and first-year academic success.

Reasons for attending University

For students, as well as for HE institutions and for society, it is important to choose a degree programme with careful consideration, because a mistaken choice can have a substantial (financial) negative impact for all parties. For example, Dutch HE institutions are primarily assessed and financed on the number of graduates per year. In addition, since 2015 Dutch students have no state funding of their tuition fees and scholarships are not (yet) a commodity. Moreover, students' reasons for attending university have become increasingly relevant for Dutch HE institutions because since 2014 "matching" has become a legally obligated part of the application procedure for bachelor programmes (Ministerie van Onderwijs, Cultuur en Wetenschap [Dutch Ministry of Education], 2013). In practice, this means most applicants are asked to participate in one or more face-to-face group sessions to explicitly discuss their choice for the particular programme, or are asked to fill in a study choice questionnaire. In both situations applicants receive feedback on how well they match with the programme. In case of a negative match, students receive the advice not to enrol. Students are not obliged to follow this advice if they applied before 1st May. After this date, institutions can decline applicants when the matching procedure gives a negative outcome. The assumption behind this policy is that choice support increases retention. Therefore, next to effort and self-efficacy, it is interesting to explore students' reasons for attending university when predicting academic success at an early, pre-university stage.

The educational persistence literature has focused mainly on reasons for dropping out (Tinto, 2012), and in choice motivation research the specific context of transitioning to HE has previously not been a major focus (De Clercq, Galand, Dupont, & Frenay, 2013; Kember et al., 2008). Studies on reasons for attending university during the transition from secondary to higher education are mainly inspired by the self-determination theory (SDT). In this theory, three main dimensions of motivation are distinguished: intrinsic motivation, extrinsic motivation and amotivation (Ryan & Deci,

2000). Intrinsic motivation refers to doing something because of interest, which fulfils feelings of competence and autonomy. For example, you choose a study programme for personal interest and development. Extrinsic motivated behaviour refers to doing something because it leads to a separable outcome, like choosing a study programme to please your parents. Extrinsic motivation can vary in self-determined behaviour: internalisation and integration create a more self-determined behaviour, such as choosing a certain study programme because it gives good career opportunities. Lastly, amotivation refers to behaviour that lacks intentionality and a sense of personal causation (Ryan & Deci, 2000, p. 61), for example, choosing to attend university because there is nothing else the student can think of doing.

Kember et al. (2008) developed a motivation-orientation framework, inspired by SDT and based on empirical qualitative research among college and university students. The authors distinguished six motives why young adults want to attend HE: compliance (it is a logical step to go to university after secondary school), individual goals, personal interest, an appealing career perspective, sense of belonging to the student population and student life style. Kember et al. (2008) and more recently Richardson et al. (2012) and De Clercq et al. (2013) concluded that the transition from secondary education to higher education and study choice behaviour, which is the context of our study, has not (yet) been a focus of motivation research.

Earlier studies (Guay & Vallerand, 1996; Vallerand et al., 1997) showed that self-determined motivation is related to academic achievement at high school. And recent studies (Guiffrida et al., 2013; Kennett et al., 2013) found that intrinsic reasons (like personal interest) predicted academic success best. But previous studies fail to take into account that students' reasons for going to university may be different *before they start university* than their reasons *after the transition* to university (e.g. during the first year or following academic years). This change in reasons might be caused, for example, by how students experience their study programme (Kember et al., 2008). The present study therefore contributes to the field of study success and student transition by exploring pre-university reasons for attending university, and how these pre-university reasons relate to first-year academic success.

The Present Study

Given the large number of students who drop out in the first year of university in the Netherlands and the aim to support students effectively in transitioning from secondary education to HE, our study focused on identifying early non-cognitive predictors of first-year retention. Reviews on non-cognitive factors of academic success emphasise the importance of students' effort and self-efficacy next to prior academic attainment

(Richardson et al., 2012; Robbins et al., 2004). However, it is not known whether effort and academic self-efficacy displayed during secondary education influence academic success at university. In addition, as far as we know, reasons for attending university have not been measured before students start at university and it is not known how these *pre-university* reasons relate to first-year academic success. The present study therefore contributes to fill this gap in the literature by answering the following main research question (RQ): What is the relationship between the non-cognitive factors *pre-university* effort (RQ1), *pre-university* academic self-efficacy (RQ2) and *pre-university* reasons for attending university (RQ3) and first-year retention? Before answering the three research questions, we first explore students' pre-university reasons for attending university.

Method

Context

The present study was conducted at a large urban four-year research university in the Netherlands. Dutch HE distinguishes between research-oriented education (WO) offered by research universities and higher professional education (HBO) offered by universities of applied sciences. Only a secondary education diploma at preparatory university level (VWO) gives direct access to a research university. Indirect access to a research university is also possible via completion of the first year of higher professional education (with additional subject requirements) (Nuffic, 2016). The present study focuses on students coming directly from secondary school with a preparatory university diploma, as this is the largest enrolment group for Dutch research universities.

The university in this study applies an academic dismissal policy, which requires students to make satisfactory progress during their first year at university. Students obtain credits for every sufficiently completed subject. Students who accumulate the maximum of 60 credits in the first year can proceed to the second year. Those who accumulate between 40 and 60 credits pass the first year provisionally; they can follow the second year programme, but must accumulate all missing credits from the first year within the second year, otherwise they are dismissed from the programme. Students with fewer than 40 credits fail and are dismissed. Students who voluntarily drop out of a programme during the first year are distinguished as 'stopped'. Five schools of the university apply the described policy. Other schools within the university apply a different policy, and were therefore excluded from the present study.

For our particular study, the number of credits seemed to be a more appropriate and relevant measure than GPA. As described above, students from the

involved university will be dismissed if they do not obtain a certain number of credits. Furthermore, Dutch universities are state funded by the number of students graduating from university. In Dutch universities it is therefore less relevant for students to obtain a high or low GPA, than to obtain the necessary credits. Students are generally focused on passing the minimum required grade (which is in general 5.5 on a scale from 1 to 10) and passing the first (and following) year(s). Within this context, we believe that number of credits was the most appropriate and relevant dependent measure to use in our study.

Procedure and Participants

2696 first-year bachelor students were enrolled in different schools at the university for the academic year 2011-2012. We invited all these students to fill in an online questionnaire measuring their effort during pre-university education, their level of pre-university academic self-efficacy and their pre-university reasons for attending university. Students filled in the questionnaire during their application for university; participation was voluntarily. Participants provided their identification numbers so academic results could be obtained from the university administration. The total response rate was 32% (N = 863). Additional participant selection from this sample was based on comparable academic dismissal policies at the schools of the university, prior academic attainment (i.e. preparatory university diploma) and retrievable academic results after one year at university. This resulted in a final sample of 453 participants from five different schools with comparable dismissal policies (i.e. Economics, Health Management, Law, Arts and Philosophy) who completed a preparatory university track at secondary education (see Table 1). *T*-tests showed no statistically significant differences on effort (t (870) = .48, p > .05), self-efficacy (t (870) = 1.76, p > .05) and first-year retention (t (710) = -1.38, p > .05) between students in our final sample in comparison with students who were excluded from analysis. We therefore assume the final sample to be representative of the total number of students who responded to our questionnaire. There was no information available on non-response reasons. However, with the use of the university administration, we verified that our final sample did not differ in first-year retention compared to students in the non-response group who completed a preparatory university track at secondary education (χ^2 (3) = 7.7, p > .05). Therefore, we assume our sample is representative of the university's first-year student population who completed a preparatory university track at secondary education.

Measures

Based on previous research in the domain of educational persistence and motivation, we developed a questionnaire that fitted our research aim and the Dutch educational context. The questionnaire contained the following variables.

Pre-university Effort

Effort during secondary education was measured by the nine-item school effort scale by Butler (2007). This scale is in line with earlier work of Skinner on agency beliefs for effort (Skinner et al., 1988). An example question is 'I try my best during the lessons'. The response categories ranged from 1 (*never*) to 5 (*always*). Cronbach's alpha was .81.

Pre-university Academic Self-efficacy

As the goal of the present study was to predict overall performance in the first year, academic self-efficacy was measured in general and did not focus on specific subjects like maths or languages. Students' expectations of their own performance during the first year at university were measured with an adapted version of the self-efficacy scale developed by Pintrich, Smith, Garcia, and McKeachie (1993) (e.g. 'I think I will receive good grades in the first year'). The response categories ranged from 1 (*not true at all*) to 5 (*very true*). Cronbach's alpha was .90.

Pre-university Reasons for attending University

To our knowledge, no instrument was available on reasons for attending university measured among students before they start at university. Based on the literature (cf. Kember et al., 2008; Ryan & Deci, 2000), therefore, forty reasons for attending university were constructed (see Appendix A). The reasons were formulated to measure motivation to attend university *before enrolment*. The questionnaire included reasons for attending university in general (e.g. 'I want to have a good job later'), reasons for choosing a specific major (e.g. 'The subjects of this programme intrigue me'), and reasons for choosing the specific institution (e.g. 'The atmosphere at this university is pleasant'). The response categories ranged from 1 (*not a decisive factor at all*) to 5 (*a highly decisive factor*).

Table 1. Participant background information (n = 453)

		n	%
Gender	Male	227	50.1
	Female	217	47.9
	Missing	9	2.0
	Total	453	100.0
Ethnicity[a]	Dutch ethnic majority	309	68.2
	Non-Western ethnic minority	109	24.1
	Western ethnic minority	29	6.4
	Missing	6	1.3
	Total	453	100.0
Socioeconomic status (SES) parents	High	297	65.6
	Middle	84	18.5
	Low	50	11.0
	Missing	22	4.9
	Total	453	100.0
Secondary school GPA	6.0 or <	13	2.9
	6.1 – 7.0	234	51.7
	7.1 – 8.0	114	25.2
	8.1 – 9.0	16	3.5
	9.1 – 10.0	0	0
	Missing	76	16.8
	Total	453	100.0
Academic discipline	Economics	216	47.7
	Health Management	80	17.7
	Law	104	23.0
	Arts and Philosophy	53	11.7
	Missing	0	0
	Total	453	100.0
Academic success	Passed (60 credits)	236	52.1
	Provisionally passed (40 – 59 credits)	83	18.3
	Failed (< 40 credits)	55	12.1
	Stopped[b]	35	7.7
	Missing	44	9.7
	Total	453	100.0

Note. The schools Arts and Philosophy were taken together because of a low number of respondents per school.

[a] Students belong to an ethnic minority group if at least one parent is born outside the Netherlands. Western ethnic minority students are not used in further analysis because this group was too small.

[b] Average attained credits = 5

Academic Success

Academic success was defined by the number of earned credits in the first year (cf. Beekhoven, De Jong, & Van Hout, 2002; Van den Berg & Hofman, 2005) as registered by the university administration. More specifically, the following categories were used: *passed* (60 credits), *provisionally passed* (between 40 and 59 credits), *failed* (less than 40 credits) and *stopped* (average obtained credits in this group was five).

Control Variables

From previous research, it is known that gender, ethnic background, socioeconomic status, and secondary school GPA are associated with reasons for attending university and/or academic success (cf. Bruinsma & Jansen, 2009; Phinney, Dennis, & Osorio, 2006; Richardson et al., 2012). To control for these variables in predicting academic success, participants were asked to answer questions on gender (male / female), ethnic background (ethnic majority student / Western ethnic minority student / non-Western ethnic minority student), socioeconomic status (low / middle / high educational level of students' parents) and chosen academic discipline (Economics / Health Management / Law / Arts / Philosophy). Secondary school GPA was retrieved from The Education Executive Agency (Dienst Uitvoering Onderwijs or DUO).

Analyses

We used exploratory factor analysis (EFA in SPSS) and confirmatory factor analysis (CFA in AMOS) to distinguish the pre-university reasons for attending university. Spearman correlation coefficient was used to explore the relationships between the variables included in this study.

Given the categorical nature of first-year academic success (passed, provisionally passed, failed, stopped), we used multinomial logistic regression analysis in SPSS to answer our questions whether pre-university effort is related to academic success (RQ1), whether pre-university self-efficacy is related to academic success (RQ2), and whether pre-university reasons for attending university are related to academic success (RQ3). We used the following covariates: gender, ethnicity, SES, secondary school GPA, and academic discipline. Using multinomial logistic regression, we compared the effect of predictors on a chosen reference group (e.g. students who passed the first year) to the other three categories (e.g. provisionally passed, failed, and stopped). We first compared students who had provisionally passed, failed or stopped during the first year with those who had passed the first year. Next we compared students who had stopped during the first year with those who had provisionally passed or had failed the first year. By doing this, we were able to compare all academic success groups.

We custom built one regression model in SPSS. The model contained main effects for the demographic characteristics (gender, ethnicity, SES, secondary school GPA and academic discipline), and for the predictors effort, academic self-efficacy and reasons for attending university. One interaction effect (ethnicity*SES) was added stepwise, because the literature has shown a correlation between ethnic background and SES (Sirin, 2005).

Results

Exploratory and Confirmatory Factor Analysis on Pre-university Reasons for attending University

First, we investigated the factor structure of the forty pre-university reasons for attending university with exploratory factor analysis (EFA) (see Appendix A and Table 2). A ten-factor solution appeared to fit the data best (59% explained variance). A closer examination of the validity of each factor (with the general rules of thumb of a minimum of three items per factor, factor loadings above .500, and a discriminant loading of at least .200 with other factors and factor interpretability) resulted in six factors / reliable scales, based on 25 items. Career perspective (k = 6, α = .84) refers to the extrinsic motivation of a good job or salary; personal development (k = 5, α = .73) relates to the intrinsic motivation of willingness to learn and to develop knowledge; compliance with the social environment (k = 3, α = .69) refers to the motivation to go to university to meet the expectations of parents or family; attractiveness of the institution (k = 4, α = .73) refers to the physical and cultural atmosphere at the university; recommended by others (k = 4, α = .72) refers to the advice of friends and family about the intended programme; location (k = 3, α = .76) refers to the motivation of students to continue to live with their parents when starting university.

Secondly, we performed a confirmatory factor analysis (CFA) to evaluate the trimmed model containing six latent factors with 25 items as indicators. An EFA results in a solution in which all observed items load on all latent factors, (possibly) making the solution overly complex. We therefore evaluated the trimmed model with CFA in which we allowed each observed item to load on only one latent factor. The results showed a reasonable fit with the data (n = 453, χ^2 (259) = 611.22, p < .01, CFI = .90, RMSEA = .06, SRMR = .065). The combination of the EFA and CFA indicates sufficient construct validity of the six reasons for attending university.

Table 2. Results of Exploratory Factor Analysis (varimax rotated) on reasons for attending university (n = 453)

Factor	k	Cronbach's α	M	SD
Career perspective	6	.84	3.70	.79
Personal development	5	.73	4.11	.64
Compliance with the social environment	3	.69	2.96	1.07
Attractiveness of the institution	4	.73	2.98	.93
Recommended by others	4	.72	2.29	.94
Location	3	.76	3.45	1.28

Mean Scores and Correlations

Table 3 presents mean scores, standard deviations, and Spearman correlations of all variables. A high score corresponds to a high level of the construct. Respondents reported on average above 3.5 on a 1-5 scale for pre-university effort and pre-university academic self-efficacy. Personal development was the most important pre-university reason for students to attend university (M = 4.11, SD = .64), followed by career perspective (M = 3.70, SD = .79) and location (M = 3.45, SD = 1.28).

Of the demographic variables, ethnic background was negatively associated with first-year academic success (r_s = -.17, p < .01). This means that students with a non-Western ethnic background were less academically successful in their first year at university compared to students with a Dutch ethnic background. Secondary school GPA was positively related to academic success (r_s = .34, p < .01), indicating that a higher GPA is associated with a greater chance of passing the first year. Regarding the predictors, pre-university effort and pre-university academic self-efficacy both positively correlated with academic success (pre-university effort: r_s = .12, p < .05; pre-university academic self-efficacy: r_s = .10, p < .05). In other words, the more effort and academic self-efficacy students showed before enrolment, the more successful they were in the first year. Of the pre-university reasons for attending university, 'personal development' (r_s = .11, p < .05) and 'location' (r_s = .11, p < .05) showed a positive correlation with first-year academic success at university. This means that the more importance students attached to personal development and the possibility of continuing to live with their parents, the more successful they were in the first year at university.

Table 3. Means, standard deviations and Spearman correlations between all variables (n = 453)

	Variable	*M (SD)*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.	Academic success year 1	3.27 (.99)	(-)												
2.	Gender	1.49 (.50)	.00	(-)											
3.	Ethnicity	1.26 (.44)	-.17**	.17**	(-)										
4.	SES parents	2.57 (.69)	-.00	-.08	-.10*	(-)									
5.	Secondary school GPA	6.87 (.57)	.34**	-.04	-.12*	.09	(-)								
6.	Reason: career perspective	3.70 (.79)	-.03	-.09	.14**	.01	.00	(-)							
7.	Reason: personal development	4.11 (.64)	.11*	.15**	.10*	.05	.15**	.23**	(-)						
8.	Reason: compliance with the social environment	2.96 (1.07)	-.09	.02	.18**	.18**	-.07	.26**	.15**	(-)					
9.	Reason: attractiveness of the institution	2.98 (.93)	-.03	.07	.20**	-.03	-.05	.25**	.23**	.18**	(-)				
10.	Reason: recommended by others	2.29 (.94)	-.09	-.21**	.05	.02	-.06	.26**	.00	.38**	.33**	(-)			
11.	Reason: location	3.45 (1.28)	.11*	.03	.07	-.24**	-.06	.00	-.14**	-.05	.09	.12**	(-)		
12.	Pre-university effort	3.75 (.57)	.12*	.24**	.11*	-.05	.22**	.06	.38**	.03	.18**	.04	.06	(-)	
13.	Pre-university academic self-efficacy	3.62 (.59)	.10*	-.10*	.04	.04	.14**	.18**	.40**	.08	.19**	.08	.04	.22**	(-)

Note. Variable 1 is coded as: 1 = stopped, 2 = failed, 3 = provisionally passed, 4 = passed. Variable 2: 1 = male, 2 = female. Variable 3: 1 = ethnic majority, 2 = non-Western ethnic minority. Variable 4: 1 = low, 2 = middle, 3 = high. Variable 5: 1-10 scale. Variable 6 until 13: 1-5 scale. Academic discipline was not included in the table because this is not a nominal or scale variable.

* $p < .05$; ** $p < .01$; *** $p < .001$

Early Predictors of Academic Success

We conducted a multinomial logistic regression analysis to investigate whether pre-university effort (RQ1), pre-university academic self-efficacy (RQ2) and pre-university reasons for attending university (RQ3) predict first-year academic success. The odds ratio (*OR*) indicates the effect of a predictor on academic success (see Table 4). An *OR* above 1 indicates an increased likelihood that students fall in the comparison group (e.g. stopped in the first year) and not in the reference group (e.g. passed the first year) as the predictor (e.g. effort) increases. An *OR* between 0 and 1 indicates a decreased likelihood that the students fall in the comparison group (e.g. stopped in the first year) as the predictor increases. Nagelkerke's R^2 represents the model fit. The results (see Table 4) show the constructed model had a good fit with the data (χ^2 (45) = 107.79, p < .001) and explained 33% of the variance. We found no interaction effect of SES*ethnicity and thus omitted it from the analysis. All following results reported below were not affected by mutual correlations between effort, self-efficacy and reasons for attending university.

The results showed that effort during secondary school was important in predicting the likelihood of a student dropping out in the first year at university (RQ1). If the level of pre-university effort increased by one unit, the chance of stopping in the first year (instead of passing the first year) decreased by a factor of .31 (*OR* = .31, p < .01). In addition, if the level of pre-university effort increased by one unit, the chance of provisionally passing the first year (instead of stopping in the first year) increased by a factor of 2.79 (*OR* = 2.79, p < .05). These results indicate that effort at secondary school could make a positive difference between the chance a student (provisionally) passes the first year instead of stopping in the first year. Furthermore, the results show that if the level of pre-university effort increased by one unit, the chance of failing at the end of the first year (instead of stopping during the first year) at university increased about five times (*OR* = 5.08, p < .01). This means that pre-university effort could have a positive influence on persisting instead of dropping out in the first year at university.

We found no statistically significant difference in academic success for academic self-efficacy (p > .05) (RQ2). In other words, the level of academic self-efficacy when students applied for university had no influence on the chance of a student stopping, failing, provisionally passing or passing the first year. Our results also showed that none of the pre-university reasons for attending university had an influence on academic success (p > .05) (RQ3). The pre-university reasons why students wanted to attend university thus had no effect on first-year academic success.

Table 4. Multinomial logistic regression analysis with pre-university effort, pre-university self-efficacy and pre-university reasons for attending university on first-year academic success (n = 453)

	Stopped versus Passed (ref. group)			Failed versus Passed (ref. group)			Provisionally passed versus Passed (ref. group)			Stopped (ref. group) versus Failed			Stopped (ref. group) versus Provisionally passed		
Variable	*B*	*SE*	*OR*	*B*	*SE*	*OR*	*B*	*SE*	*OR*	*B*	*SE*	*OR*	*B*	*SE*	*OR*
Constant	22.87	5.28		13.34	4.06		7.66	2.90		-9.53	6.05		-15.21	5.53	
Background characteristics															
Gender															
Male	-.52	.53	.59	-.05	.8	.95	-.63	.39	.53	.47	.64	1.59	-.11	.59	.90
Ethnicity															
(Dutch ethnic majority ref. group)															
Non-Western ethnic minority	-.03	.63	.98	-1.50	.48	.22**	-1.25	.40	.29**	-1.47	.69	.23*	-1.22	.65	.29
SES	-.56	.31	.57	.21	.32	1.23	.32	.25	1.38	.77	.40	2.15	.88	.36	2.42*
Secondary school GPA	-.28	.07	.76***	-.20	.05	.82***	-.09	.04	.92*	.08	.08	1.08	.19	.07	1.21**
Academic discipline															
(Economics ref. group)															
Health Management	.04	.58	1.04	.11	.53	1.11	-.67	.47	.51	.07	.68	1.07	-.70	.65	.50
Law	-.98	.76	.38	-.52	.61	.59	-.97	.51	.38	.46	.89	1.58	.01	.84	1.01
Arts and Philosophy	.89	.10	.41	-20.61	.00	.00	1.64	.71	.20*	-19.72	.00	.00	-.75	1.12	.47
Pre-university predictors															
Effort	-1.19	.48	.31**	.44	.44	1.55	-.16	.34	.85	1.63	.58	5.08**	1.02	.52	2.79*
Academic self-efficacy	-.12	.46	.89	-.06	.40	.94	-.31	.31	.74	-.06	.55	1.07	-.19	.50	.83
Reasons for attending university:															
Career perspective	.17	.41	1.18	-.09	.32	.91	-.12	.26	.88	-.26	.46	.77	-.29	.43	.75
Personal development	-.11	.40	.90	-.34	.37	.71	-.04	.31	.96	-.23	.47	.79	.07	.44	1.07
Compliance with the social environment	.22	.27	1.13	-.04	.22	.96	-.08	.17	.92	-.26	.32	.77	-.30	.29	.74
Attractiveness of the institution	-.06	.29	.94	-.02	.26	.98	.14	.21	1.15	.05	.35	1.04	.20	.32	1.23
Recommended by others	.08	.31	1.09	.42	.26	1.52	.19	.22	1.21	.33	.36	1.40	.11	.34	1.11
Location	-.22	.19	.81	-.31	.17	.73	-.12	.14	.88	-.10	.23	.91	.09	.21	1.10

Note. Dependent variable is academic success (stopped, failed, provisionally passed, passed). OR = odds ratio. Covariates were gender, ethnicity, SES, academic discipline, secondary school GPA. Model $\chi^2(45) = 107.79$, $p < .001$. Nagelkerke $R^2 = .33$.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion

The main objective of this study was to investigate non-cognitive pre-university predictors of first-year retention. In the section below, we discuss the results per research question (RQ), recommend directions for future research and practice, report our study limitations and conclude.

An important finding of this study is, the more effort during the last year at secondary school, the lower the chance of dropping out in the first year at university (RQ1). This finding is in line with results of Casillas et al. (2012) that effort seems to have a long term effect on academic performance, even during a period when students change school environment. An explanation of our result could be that students who drop out do not feel in control or do not have sufficient control over their level of effort (cf. Schmitz & Skinner, 1993): they might not have been able to increase their level of effort to attain the first year. This should be investigated in future research.

The finding that pre-university academic self-efficacy does not influence academic success contradicts our expectation (RQ2). Based on previous research (cf. Richardson et al., 2012), we expected that pre-university academic self-efficacy would explain some of the variance in first-year academic success. It may well be that the level of academic self-efficacy measured in the present study did not vary enough to find differences among students. Students who apply for a programme probably all think they can successfully complete it, otherwise they would not apply (Schunk & Pajares, 2009). For example, Dweck (2006) found that academic self-efficacy was less predictive of performance when students are in a transition phase during their academic career. We therefore recommend future research to conduct longitudinal studies to investigate students' academic self-efficacy during and after the transition to higher education, and to examine how this affects their performance.

The present study revealed six reliable constructs to indicate pre-university reasons for attending university: career perspective, personal development, compliance with the social environment, attractiveness of the institution, recommended by others and location. Personal development, compliance and career perspective are comparable to the reasons 'interest', 'compliance' and 'career' as found in the qualitative study of Kember et al. (2008), which may imply that these reasons are relevant before and after enrolment at university. Furthermore, the reasons we found in our study can be interpreted in terms of Ryan and Deci's (2000) distinction between intrinsic and extrinsic motivation in the following way. Students who attend university for personal growth and because they feel comfortable at the chosen university can be viewed as intrinsically motivated students. Those who attend university because it can

offer better career perspectives, because others recommend it and/or because it is expected of them (compliance), can be seen as extrinsically motivated.

Pre-university reasons for attending university were not related to first-year academic success (RQ3). In other words, academic success in the first year at university does not seem to be affected by students' initial motives to go to university, in contrast to reasons for attending university measured *during* university (Guay & Vallerand, 1996; Guiffrida et al., 2013; Vallerand et al., 1997). A first explanation for not finding a relationship between pre-university reasons and first-year retention may be the very fact that students are transitioning and going through important personal changes. Students' reasons for attending university might change or loose relevance because of recent experiences during the first year at university. Longitudinal qualitative research is needed to shed light on how reasons may change during the transition from secondary education to HE to improve first-year retention. In addition, a more profound conceptualisation of the pre-university reasons by integrating, for example, orientations from the SDT (Ryan & Deci, 2000; Vallerand et al., 1993) may result in an instrument with more predictive power.

Implications for Research and Practice

First, the results of our study partly support and extend previous research on predictors of first-year academic success (Casillas et al., 2012; Richardson et al., 2012). The present study shows that, besides the traditional pre-university predictors such as secondary school GPA, the non-cognitive factor pre-university effort could be relevant when interviewing or selecting prospective students. Secondary education staff could stimulate effortful learning behaviour in addition to performance behaviour when preparing students for university. Moreover, the finding that students who show more effort in their final year in secondary education have less chance of dropping out in the first year can be used in study choice and information events to inform prospective students about successful studying at university.

Second, we contribute to the literature on academic motivation by identifying six *pre-university* reasons for attending university (Guiffrida et al., 2013; Kember et al., 2008; Kennett et al., 2013; Vallerand et al., 1993). While past studies showed that students who are more intrinsically motivated to attend university seem to be more academically successful (Guiffrida et al., 2013; Kember et al., 2008; Kennett et al., 2013; Vallerand et al., 1993), we found that pre-university reasons for attending university were not related to first-year academic success. However, from these first results it cannot be concluded that study choice support is not relevant. It is necessary to (theoretically) improve the instrument and repeat the study to create more robust conceptualisations of the pre-university reasons and how they relate to first-year retention.

Limitations and Directions for Future Research

The sample in this study included students from several academic disciplines. Allen et al. (2010) recommend local research on the effectiveness of systems to identify students at risk, because this is necessary to develop effective intervention programmes. Unfortunately, the subsamples in our study were too small for discipline-specific predictions of first-year academic success. Future research should sample representative groups of students within academic disciplines to investigate the effects of pre-university effort, academic self-efficacy and reasons for attending university on first-year academic success per discipline. Particularly the relationship between reasons for attending HE and academic success per academic discipline could reveal some typical relationships.

The multinomial regression analyses showed that the covariates ethnicity, SES, secondary school GPA and chosen academic discipline were significant predictors of academic success. This could explain the limited number of found effects. In addition to differentiation by academic discipline as recommended above, future research should focus on specific groups of students to gain deeper insight in pre-university predictors of first-year academic success. Another explanation for the limited number of effects could be that we used first-year retention as our outcome variable. End-of-year GPA could be more sensitive to differences in pre-university effort, self-efficacy and reasons for attending university.

Another weakness in this study is that participation was voluntary. The sample might be biased in that only motivated or disciplined students responded to the questionnaire. This possible range restriction might result in lower variation compared to a situation where all students would have responded. Thus, we may have found stronger associations if there had been more response variation among the students on pre-university effort, self-efficacy and reasons for attending university. Therefore, we recommend that universities encourage student applicants to participate in questionnaires such as those used in this study, for example, by making the questionnaire part of their intake procedure. The benefits are twofold: this will increase representativeness of results, and policymakers and administrators will have tools to improve marketing, orientation interventions and selection procedures.

Lastly, in future research it would be interesting to investigate in more detail how pre-university effort, pre-university self-efficacy and pre-university reasons for attending university are related to each other, and how they relate to levels of effort, self-efficacy and performance during university. Can changes in this behaviour during the transition to HE explain why students succeed or fail the first year at university?

Conclusion

The present study showed that pre-university effort is a predictor of first-year academic success, whereas pre-university academic self-efficacy does not influence first-year academic success. Furthermore, we identified six pre-university reasons for attending university, namely, career perspective, personal development, compliance with the social environment, attractiveness of the institution, recommended by others and location. However, none of the reasons were related to first-year retention. The results are relevant for explaining how students experience the transition to higher education, and could help university policymakers and administrators to increase retention rates.

Chapter 3

Changes in effort, academic self-efficacy and performance during the transition into higher education: Four student profiles of academic adjustment[2]

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Abstract

This qualitative study examines how first-year students academically adjust to university by investigating changes in students' effort, academic self-efficacy and performance during the transition into higher education. Interviews before and after enrolment at university (*N* = 34) revealed four student profiles: Active Gliders, Passive Gliders, Passive Low Performers, and Negative Strugglers. Active Gliders adjusted proactively and positively to the demands of university. Passive Low Performers did not perform as well as Passive Gliders but shared a reactive, slow adaptation to university. Negative Strugglers felt substantially less confident and did not perform as well at university compared to the other three profiles. The results imply that different types of support could enhance the transition into university.

Introduction

The transition into higher education is a challenging period in students' educational careers (e.g. Harvey, Drew, & Smith, 2006). During this period, students are searching how to adjust effectively to the new learning environment at college or university. For example, in higher education there is less in-class contact with fellow students and teachers compared to secondary school, and students are expected to learn more independently (e.g. Hockings, Thomas, Ottaway, & Jones, 2018). These profound changes can cause students to feel insecure about their capabilities to succeed in higher education and in search of effective learning behaviour (e.g. Tett, Cree, & Christie, 2017). A difficult transition into higher education could undermine students' potential academic development and achievements (e.g. Lowe & Cook, 2003; Wagner & Brahm, 2017).

Previous studies have shown that next to student background characteristics and ability, academic self-efficacy and effort are important factors for academic achievement (Richardson, Abraham, & Bond, 2012; Robbins, Allen, Casillas, Peterson, & Le, 2006; Schneider & Preckel, 2017). However, these studies were mostly conducted when students had already been in higher education for one or more years. Moreover, they mainly applied a variable-focused approach reporting overall relationships between concepts, which provides insights into relations for *average* students across an *average set of features* but can conceal possible interplay between variables within persons across time (Kyndt, Donche, Trigwell, & Lindblom-Ylänne, 2017).

Our study applies a qualitative longitudinal person-oriented approach (see Bergman & Trost, 2006; Räisänen, Postareff, & Lindblom-Ylänne, 2016) as little is known about how effort and academic self-efficacy belief evolve during the transition into higher education. We identify student profiles based on within-person combinations of changes in effort, academic self-efficacy and performance, which can help to improve student support activities and ease the transition into higher education.

We first present an overview of recent literature on the process of academic adjustment in the transition to higher education and discuss three of the most relevant factors in this process: students' effort, academic self-efficacy and performance.

Transitioning into Higher Education

The transition from secondary education to higher education is a period of significant change in students' educational career (Gale & Parker, 2014). Students develop meaning of the new unknown learning environment in several stages (Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017a; Nicholson, 1990; Torenbeek, 2011). During the first stage, the so-called preparation stage (Nicholson, 1990) students

prepare for higher education. They graduate from secondary school and deliberate and finally choose where and what to study. By choosing their goal, students create an initial level of stability or reference point for themselves in the transition into higher education. During the second stage, students encounter their new chosen learning environment. This encounter stage is quickly followed by a third stage in which students try to adjust effectively to higher education. During this adjustment stage students develop a next level of stability (i.e. the fourth stage), in which they generally understand the demands of higher education and can cope and adapt continuously to perform well, i.e. function as self-regulated learners (Zimmerman, 1990a).

In this study, we focus on students' first encounter with higher education and their academic adjustment to higher education. Academic adjustment refers to how students cope with the academic demands of higher education (Baker & Siryk, 1984; Credé & Niehorster, 2012). It is a process or development in which students adapt their educational beliefs and behaviour to the demands of the new learning environment, with sufficient performance as the final goal (Nightingale et al., 2013; van Rooij, Jansen, & van der Grift, 2017). Prior research has consistently shown the pivotal role of academic self-efficacy and effort in academic adjustment (Chemers, Hu, & Garcia, 2001; Christie, Barron, & D'Annunzio-Green, 2013; Clark, 2005; Nightingale et al., 2013) and academic performance (Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017).

Many previous studies on student transition and student adjustment focus on relationships between variables measured during a single point in time. They do not clarify *how* students adjust to higher education, and thus give little information on how to enhance the transition into higher education. It seems plausible that students adjust differently, showing different patterns of change in effort, academic self-efficacy and performance and their interrelations (e.g. Nightingale et al., 2013). Our study takes a person-oriented approach to investigate student profiles of transitioning into higher education.

Former studies that employed a person-oriented approach have shown student profiles for homework behaviour (Flunger et al., 2015), learning behaviour (Heikkilä, Niemivirta, Nieminen, & Lonka, 2011), beliefs about task difficulty, ability and effort (Malmberg & Little (2007) and achievement goals (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012). Our study focuses on the transition to higher education and examines the most relevant factors for student success in higher education, namely effort and academic self-efficacy, to identify profiles explaining academic adjustment in this particular and vulnerable stage.

Effort

Several comprehensive studies (Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017) have demonstrated that effort is a relatively strong predictor of academic performance compared to institutional factors (e.g. enrolment size), demographic factors (e.g. race and gender) prior academic achievement (e.g. high school GPA) and other psycho-social factors such as emotional control and the ability to build relationships with others. Other studies have shown that effort positively influences academic performance (e.g. Credé & Phillips, 2011; Jung, Zhou, & Lee, 2017; Komarraju & Nadler, 2013).

Effort refers to trying hard, working hard, paying attention and showing persistence when faced with challenging tasks (Pintrich, 2004; Robbins et al., 2006; van Herpen, Meeuwisse, Hofman, Severiens, & Arends, 2017). It is an expression or indication of students' motivation to engage in academic tasks. Effort is closely related to learning strategies; it is a control strategy or regulation aspect in learning behaviour (Pintrich, 2004). Learning strategies such as elaboration, metacognition, deep learning and surface learning are cognitive processes which theoretically evolve before overt behaviour like effort. Effort is relatively visible, observable and conscious behaviour which can be controlled and thus changed by students (Pintrich, 2004; Skinner, Chapman, & Baltes, 1988). Next to their ability, difficulty of the task and luck, students commonly attribute their academic success or failure, i.e. how well they adjust to the learning environment, to their efforts to engage in tasks (see the work of Weiner as summarised in Schunk, 2012). Of these four attributes, effort is seen as the attribute that students themselves can influence most, as it is an internal and adaptable factor. Moreover, effort has been shown to be a malleable factor that changes by influences of teachers, peers and learning tasks (Skinner & Pitzer, 2012).

Despite the importance of effortful behaviour for academic achievement, little is known about effort when students transition from secondary school into higher education. We know that higher education institutions demand more independent learning, which implies more effort of students compared to secondary school, but we know relatively little about how students deal with this demand. Previous research has shown, for example, that students put less effort in their first year at college than they expected before entering college (Kuh, 2007). Other studies have reported on first-year students feeling overwhelmed by the institutional demands and in their search for effective learning strategies (e.g. Christie et al., 2013).

Given the importance of effort for coping with learning challenges and for academic performance, and the concern of many in the educational field about effective student learning behaviour to survive and thrive in higher education (Christie

et al. 2013; Harvey et al., 2006; Kuh, 2007), it seems relevant to more closely investigate effort in the process of student adjustment to higher education.

Academic Self-efficacy

Several reviews have shown convincingly that, next to effort, academic self-efficacy is an important predictor of academic achievement (Credé & Phillips, 2011; Richardson et al., 2012; Robbins et al., 2004). Academic self-efficacy refers to students' belief about their capabilities to learn or perform certain behaviour at a designated level (Bandura, 1997). In other words, academic self-efficacy refers to a student's perceived confidence to perform a task well, for example, passing the first year at university.

The transition from one school level to another can cause changes in students' academic self-efficacy (Schunk & Pajares, 2002). Previous studies on how students experience the transition into higher education have shown that students feel uncertain about what is expected from them about issues such as how to communicate with staff and how to learn effectively (e.g. Tett et al., 2017). Other findings suggest that students starting university are highly confident about their skills (Gibney, Moore, Murphy, & O'Sullivan, 2011; van Herpen et al., 2017), although this confidence can quickly fade when they face the challenges of studying at university (Putwain & Sander, 2016; Tett et al., 2017), increasing the risk of failing their first year (Wagner & Brahm, 2017). We use a person-oriented approach to investigate possible changes in students' academic self-efficacy during the transition into higher education to further clarify how students adjust to higher education. It might be that students' self-efficacy beliefs change differently, in interaction with effort and achieved performance, which are not highlighted in previous variable-focused studies.

The Present Study

This study examines students' academic adjustment to university to better understand how to enhance the transition into higher education. More specifically, we employ a person-oriented approach (cf. Bergman & Trost, 2006; Räisänen et al., 2016) to investigate changes in students' effort, academic self-efficacy and performance from secondary education to university to identify profiles of student adjustment. Our research question is: What profiles of academic adjustment can be identified based on combinations of changes in effort, academic self-efficacy belief and performance?

Method

Participants and Procedure

In the Netherlands, the context of the present study, students are eligible for university admission if they have graduated from a pre-university track at secondary school (VWO) or from higher professional education (HBO) (Nuffic, 2016). This study focuses on the largest enrolment group into university (75 per cent), i.e. students from VWO who start at university immediately after graduation. Thirty-four students (male *n* = 21) living in (the region of) the large urban city of Rotterdam, the Netherlands, participated in the study. All students were interviewed twice: three months before university enrolment and three months after starting at university.

The students were recruited while still at secondary school. The goal of the study was explained in all the graduation classes by the first author or by a teacher who had been informed by the first author. Students who were willing to participate were asked to fill in their contact information. They were then contacted by phone and interviewed three months before graduation from secondary education. These interviews lasted on average 55 minutes. All participants were contacted and interviewed again in the third month at university (the students were enrolled in 21 different course programmes at nine different universities in the Netherlands). These second interviews lasted on average 80 minutes.

Interview Protocol

In the first interview, students were asked about their effort for learning and about their performance (i.e. self-reported GPA) during the last year at secondary school. They were also asked about their personal beliefs in their capabilities to perform well in the first year at university, i.e. expected first-year academic self-efficacy. In the second interview, a similar set of questions was used to ask about their experiences at university (see Appendix B). Academic performance in the first trimester at university was based on average attained grades as described by the interviewees.

The interviews were semi-structured and used a topic list which meant that the respondents were free to describe their experiences and reflections about effort, academic self-efficacy and performance. Respondents were encouraged to explain their answers by clarifying and by answering follow-up questions.

Analysis

We applied a longitudinal person-oriented approach (cf. Bergman and Trost, 2006; Räisänen et al., 2016). This approach meant analysing *within person* patterns of students' reasoning about the three main factors as described in the introduction: effort, academic self-efficacy and performance and the change in these factors. All

interviews were recorded, transcribed verbatim and analysed using Atlas.ti (Friese, 2017). The data were analysed in three phases (Saldaña, 2015). In the first phase, the interview texts were coded according to the three main factors. In the second phase, coding was used to establish whether change had taken place in in these three factors during the transition to university. This was done firstly by coding the levels of performance, effort and self-efficacy before and after enrolment at university (see Appendix B). Secondly, we coded effort and academic self-efficacy belief before and after enrolment at university into three levels: limited, sufficient and high (see Appendix B). For example, in the first interviews students were asked about their studying behaviour at secondary school. If students answered "I'm lazy" or a similar phrase, effort was coded as limited. If students answered "I do a lot of studying" or a similar phrase, effort was coded as high. We also coded performance into three levels at secondary school (just sufficient, sufficient and good) and four levels at university (insufficient, just sufficient, sufficient and good), based on self-reported attained average grades. Insufficient performance at secondary school was not coded as all students had to have at least sufficient performance for university admission. The codes in this second phase (see also the Appendix B) were systematically developed into clearly discriminating categories based on students' explanations of how they perceived their study effort and self-efficacy belief (in relation to their performance) (Bogdan & Biklen, 2007; Saldaña, 2015). The performance levels were based on how grades are commonly considered and awarded to students in the Netherlands (Nuffic, 2016). This coding was done by the first and second author. The resulting code list was subsequently used by the first and second author to code the first and second interview of 18 respondents. We then tested interrater reliability - Cohen's Kappa was 0.82. The second phase resulted in an overview of possible changes in each of the three factors separately, i.e. the change matrix (see Table 1).

In the third phase, the person-oriented approach was employed to uncover patterns of reasoning within individual students. We used the change matrix as a tool to discover simultaneous changes in performance, effort and self-efficacy within each student (see Table 1). If students reported comparable levels of, for instance, effort during secondary school and university, their development in effort was identified as 'steady'. If they described a low effort during secondary school and high effort during university, their development of effort was identified as an 'increase', or vice versa as a 'decrease'. This procedure was also followed for academic self-efficacy belief and performance. Based on an analysis of respondents' positions in the change matrix combined with the way they reasoned about their experiences as recorded during the interviews, we identified four student profiles. This phase was conducted by the first author, but the results were discussed in-depth with the second and last author.

Table 1. The change matrix analysis tool

Effort		*Secondary school*		
		Limited	Sufficient	High
University	Limited	=	Δ	Δ
	Sufficient	Δ	=	Δ
	High	Δ	Δ	=
Academic Self-efficacy		*Secondary school*		
		Low	Sufficient	High
University	Low	=	Δ	Δ
	Sufficient	Δ	=	Δ
	High	Δ	Δ	=
Performance		*Secondary school*		
		Just Sufficient	Sufficient	Good
University	Insufficient	Δ	Δ	Δ
	Just Sufficient	=	Δ	Δ
	Sufficient	Δ	=	Δ
	Good	Δ	Δ	=

Note. = refers to no change, steady; Δ refers to change (increase or decrease). Definitions of the levels of effort, academic self-efficacy and performance are described in Appendix B.

Results

We identified four student profiles: (1) Active Gliders, (2) Passive Gliders, (3) Passive Low Performers, and (4) Negative Strugglers. Table 2 presents a summary of each profile. The profiles are explained in detail below.

Profile 1: Active Gliders

Students who described a positive and active adaptation to university were identified as *Active Gliders* (*n* = 16). These students showed no change in their performance level during the transition into higher education; they achieved good results at secondary school and at university. Their level of study effort increased or continued at a sufficient to high level. These students described a steady (strong) belief in their capabilities to pass their first-year exams, i.e. showed a steady positive academic self-efficacy belief. From the interviews, it was clear that Active Gliders displayed (increased) effort in the first trimester at university and took up the challenge to understand new knowledge and apply new skills. These students stated that they wanted to make a continuous effort to achieve good results and to study the learning materials on an on-going basis. The descriptions of their effort reflect that they studied systematically and did not procrastinate. They took their studies seriously and studied, revised and attended classes. Studying is not easy for them; they reported that they had to put in considerable effort to understand the learning material, but that material was not difficult, “it’s just right” (Respondent 23).

Table 2. Overview of student profiles of academic adjustment to university

	Effort	**Academic Self-Efficacy**	**Performance**
Active Gliders	Steady sufficient or increased towards high	Steady positive belief in ability to pass first year	Steady sufficient or Steady good
Passive Gliders	Steady limited	Steady positive or positively increased belief in ability to pass first year	Varying, mostly just sufficient at university
Passive Low Performers	Steady limited or Increased towards sufficient	Decreased but still positive belief in ability to pass first year	Decreased: insufficient at university or just sufficient at university
Negative Strugglers	Varying	Decreased towards negative, uncertain belief in ability to pass first year	Decreased: insufficient at university

One respondent described the academic adjustment as follows:

> *"I really had to get used to changing my studying skills. You don't just change immediately. You have to study a vast amount of study material and extract the important bits. […] When I started at university, I just studied like I did at school. But that doesn't work anymore. But it gives me a good feeling. […] I really want to take responsibility for my own learning." (Respondent 7)*

Active Gliders continued to have high academic self-efficacy beliefs during the transition into higher education. They noticed that they had effectively adjusted their learning strategies and received positive performance feedback. Active Gliders seemed to feel effective learners and were rewarded for their efforts by getting good grades.

Profile 2: Passive Gliders

Students who performed just sufficiently at university and described a passive and slow academic adaption tot university were identified as *Passive Gliders* (*n* = 5). Most students in this profile had made limited effort at secondary school and continued to do so at university.

One Passive Performer described his effort at secondary school as follows:

> *"Well, I always intend to start [studying for exams] early and read everything, but that doesn't always seem to happen. It usually comes down to the last minute. And, of course, I know it's really important to keep up with everything [i.e. course material]. But that doesn't always seem to happen either."* (Respondent 30)

At university, these students described that they wanted to make more of an effort by taking more time to study and learn more thoroughly but they have not yet done so.

> *"Interviewer: Are these courses difficult for you?*
> *Respondent: Well, not too difficult. I really should put in a little bit more time and effort. I'm making it a bit difficult for myself.*
> *I: Why isn't it difficult then?*
> *R: Well, it's quite tough, but it isn't impossible. If I just put in a bit more time, I really should be able to pass.*
> *I: How do you know?*
> *R: Well, for example, many people studied really hard for Accounting. I didn't actually study very hard, but I passed the exam. Well, only just, but I did pass. I think it's all pretty doable."* (Respondent 34)

Most of these students reported a stronger self-efficacy belief. Especially the Passive Gliders who said they did not do much studying for their exams at university but passed them anyway, showed an increase in their self-efficacy belief compared to secondary school. Their unaffected low effort for learning also paid off at university. They also mentioned that if they studied just slightly more, their academic results would increase to a personally more satisfying level, but also wondered whether they would be able to apply this studying discipline. This typical mechanism of thoughts and behaviour was not found among Active Gliders. Passive Gliders described that they did nothing more than necessary. They attended class, completed assignments and read the required course material. Their descriptions were different from the active learning attitude found among Active Gliders. Passive Gliders did not seem to want to intensify their study effort. They displayed procrastination behaviour, which was hardly ever mentioned by the Active Gliders. We therefore identified the students in this second profile as passive. They knew their level of effort was limited, but they were not willing to adapt.

Profile 3: Passive Low Performers

Students who performed insufficiently or just sufficiently at university and described a passive and slow academic adaption to university were identified as *Passive Low Performers* (*n* = 8). Three months after enrolment at university, they had not managed to adapt to the required level of study effort and study tempo. All students in this profile reported a decrease in their academic performance during the transition into higher education. Their performance changed from sufficient at secondary school to just sufficient at university, or from just sufficient at secondary school to insufficient at university. However, six out of eight Passive Low Performers showed steady positive self-efficacy beliefs. They were positive about their ability to pass the first year at university before enrolment and remained positive despite having received personally disappointing grades in the first trimester at university. Most Passive Low Performers showed a constant limited level of learning effort during the transition. They only increased effort when their course programme required them to do so.

> *"Interviewer: Do you study differently at university than when you were at secondary school?*
> *Respondent: No, not really, but I am going to have to! At secondary school, I didn't start studying until one or two days before my exams. I just read the material and passed. I tried that here at university, but it didn't work out so well, so now I'm going to do it differently.*
> *I: What do you want to do differently?*
> *R: As I said, the course programme is not that difficult, if you study regularly. So now I want to study more regularly – I don't want to postpone it until the end of term and then have to study it all at once. […] At secondary school, you didn't have to study so much, so you could leave it to the last few days before the exam. But at university, there's too much to study and you just can't start revising for the exam at the very last minute."* (Respondent 17)

The most prominent difference between Passive Low Performers and Passive Gliders is their academic success. Passive Low Performers showed procrastination behaviour, just as the Passive Gliders. However, students in the Passive Low Performers group performed worse than the students in the Passive Gliders group and reported a need to adjust their study behaviour. Passive Gliders did not feel this need, whereas Active Gliders adjusted proactively.

Profile 4: Negative Strugglers

Students who reported a decrease in their academic self-efficacy belief and felt that they were struggling to academically adjust to university were identified as *Negative Strugglers* (*n* = 5). They performed (much) worse at university compared to secondary school and felt uncertain about their ability to pass the first year. They thought that they were putting sufficient effort into their studies or even felt that they had increased their study efforts. Negative Strugglers described their confidence as two-sided; they thought that they should be able to pass their first year but felt it was going to be a tough job.

Negative Strugglers and Passive Low Performers described their study effort as externally required behaviour and not as intrinsically desired behaviour. In contrast, Active Gliders were intrinsically motivated. Negative Strugglers reported that their study behaviour changed after their first exams. They procrastinated studying and had to cram before exams. Several students said they realised that this was an ineffective study strategy and were willing to increase their study efforts by studying more and more consistently. They also changed or wanted to change their time management and said that in the future they wanted to make more time available for studying, and spend less time on leisure, sports, social activities or work. Students described this change in time management as a sacrifice for staying at university. Negative Strugglers thought their course programme was difficult and that the amount of learning material and the learning tempo was a challenge.

> *"Respondent: I thought it was tough from the very beginning. At secondary school I was at school from 9:30 to 2:00, now [at university], it's from 08:30 to 06:00, and I get lots information all the time and it's all difficult stuff. So, it's hard work. At secondary school you didn't have to work a lot but now it is work, work, work […]*
> *Interviewer: Is your course programme difficult?*
> *R: Yes, very difficult. It's a lot of work and you can't just rush through it in a few seconds. You really have to read it carefully, spend a lot of time on it, and really concentrate."* (Respondent 3)

Discussion

We employed a qualitative longitudinal person-oriented approach to examine how students academically adjust to higher education. Based on students' reported change in effort, academic self-efficacy and performance during the transition from secondary school into university, we identified four adjustment profiles: Active Gliders, Passive Gliders, Passive Low Performers and Negative Strugglers. We now discuss these profiles

in relationship to previous research and discuss implications for practice. We then discuss the limitations of our study, propose directions for future research and conclude.

Active Gliders comprised the largest group of students in this study. These students did not seem to experience significant hurdles in their academic performance, effort or self-efficacy during the transition into higher education. They coped actively and positively with the challenges of the transition, which reflects the theoretically described positive reciprocal relationships between academic self-efficacy, effort and performance (Bandura, 1997; Schunk, 2012). Besides this positive profile, the results revealed other student adjustment profiles, shedding a more nuanced view on how students adjust academically during the transition into higher education compared to previous variable-focused studies.

Passive Gliders showed a passive but effective adjustment to higher education. Noteworthy was that these students described they felt more academically confident, because they could meet the higher demands of university study despite their limited study effort. This profile is similar to the "indifferent" and "avoidance-oriented" achievement goal profiles described by Tuominen-Soini et al. (2012), the "non-academic" learning behaviour profile of Heikkilä et al. (2011), the "disengaged" students of Malmberg and Little (2007) and the "minimalistic" homework behaviour profile of Flunger et al. (2015). Our study contributes to these earlier student profile studies by showing that this type of behaviour seems to be grounded in students behaviour during secondary school.

Passive Low Performers showed a passive and ineffective adjustment to higher education. These students described a constant, limited level of effort during the transition combined with a decrease in their academic performance but a steady, positive academic self-efficacy belief. This combination of shown effort, performance and academic self-efficacy relates to previous research (see e.g. Schunk & Pajares, 2002). A lack of success or slow progress does not necessarily lower self-efficacy if learners believe they can perform better by adjusting their approach, such as spending more time and effort or using more effective learning strategies. Passive Low Performers typically mentioned these aspects as intended adjustment.

Negative Strugglers showed a substantial decrease in their performance and academic self-efficacy belief during the transition into higher education. This profile therefore reflects an ineffective and insecure adjustment to higher education. The early dip in academic confidence among first-year students has been found in other studies (e.g. Putwain & Sander, 2016). More importantly the concerns and variety in level of effort among the Negative Strugglers indicate that changing the quality of their study

efforts might be a more effective adjustment to fit in at university than just increasing their level of effort.

Across the profiles, effort and academic self-efficacy do not seem to change profoundly during the transition into higher education. Students' historical levels of effort and academic self-efficacy seem to reflect their effort and academic self-efficacy in the first trimester at university. These findings are similar to those of Hockings et al. (2018) on how students perceive independent learning in higher education. They found that first-year students seem to continue the learning strategies they applied at secondary school to shape their independent learning at university.

Our four student profiles show differences among students in their search for learning independently and performing effectively (Christie et al., 2013; Hockings et al., 2018; Tett, et al., 2017). Active Gliders described an active adjustment to the new learning situation and performed better compared to the other student profiles. An explanation for the differences in adjustment to higher education could be that some students understand the new learning environment better (Bandura, 2012; Walton & Brady, 2017) or are more willing to try to perform effectively than other students. This may, for example, depend on their motivation and the goals they are pursuing (Elliot & McGregor, 2001; Locke & Latham, 2006; Ryan & Deci, 2000). This subject requires further research.

Furthermore, our results shed a different light on the often-observed positive effect of academic self-efficacy on effort and achievement (Jung et al., 2017; Kassab, Al-Shafei, Salem, & Otoom, 2015; Komarraju & Nadler, 2013; Schunk & Pajares, 2002). In our study, almost all students felt efficacious about learning and performing before enrolment at university. This would lead us to expect an active learning attitude and positive academic achievements at university. However, our results showed that students in three of the four profiles did not translate their high self-efficacy to high levels of effort and sufficient or good performance. At the same time, our study showed that students who described limited levels of effort at secondary school usually continued to make little effort during the first period at university. Therefore, previous effortful behaviour at secondary school might be a better indication for how hard students are going to work in their first period at university. Our study has shown that the relationship between effort, academic self-efficacy and performance changes during the transition, and not always in the expected directions.

Practical Implications

Our results give directions for targeted interventions to enhance the transition into HE. Passive Low Performers and Negative Strugglers constitute students at risk, because they have an increased chance for dropping out of university (Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017; Wagner & Brahm, 2017). These

students might benefit from early support on effective learning behaviour, for example, by discussing with fellow students and teachers how to study for classes, how to work on assignments and how to prepare for exams on regular base during the first three months (e.g. Richardson & Radloff, 2014).

Furthermore, Passive Gliders might seem as a group of students that is not immediately in need of support as they still tend to perform well. However, interventions aiming to increase effortful behaviour in this specific group could improve their performance (see e.g. Dweck, 2006; Zimmerman, 2002). If these students can perform well with limited study efforts, what could they achieve when inspired? And more importantly; why are they not inspired to actively engage in academic learning? While this could be a local issue within Dutch higher education, similar conclusions have been drawn in Finnish and British research (Heikkilä et al. 2011; Hockings et al., 2018). Heikkilä and colleagues (2011) found that 34 per cent of their participants could be profiled as "non-academic", i.e. not focused on a thorough understanding of course material but showing average academic performance. Hockings and colleagues (2018, p.157) found that first-year students described learning in higher education mainly as "uninteresting and demanding little more than recall or reinforcement". Both studies call for a more critical look on how higher education challenges students to engage in high quality academic learning. If students should develop themselves as academic lifelong learners (Gale & Parker, 2014; Slavich & Zimbardo, 2012), higher education should make effortful academic learning behaviour more rewarding, e.g. with projects and assignments. This implies assessment methods focused on rewarding effort, i.e. teachers should reward students by giving regular feedback and not only by awarding a grade for a final exam (e.g. Brown, 2005).

Limitations and Implications for Research

The present study contributes to current research on adjustment to higher education and on the transition into higher education in several ways. First, by applying a longitudinal person-oriented approach, we found evidence for different student adjustment profiles based on effort, academic self-efficacy belief and performance. Second, this study sheds a different light on the relationships between effort, self-efficacy belief and performance. Variable-focused studies mostly explain academic self-efficacy and effort as predictors of performance. This person-oriented study highlights the reciprocal links between effort, academic self-efficacy and performance (e.g. Zimmerman, 1990b) even during a period of significant change in students' educational career. Further research on the transition into higher education taking this reciprocity into account would help to better understand how students adjust to university. We will describe possible directions for this further research below.

This study focused on two important predictors of academic performance, namely effort and academic self-efficacy belief (e.g. Richardson et al., 2012; Robbins et al., 2006). Our results enrich previous research on differences in students' academic behaviour (Flunger et al., 2015; Heikkilä et al., 2011; Malmberg & Little, 2007; Räisänen et al., 2016; Tuominen-Soini et al., 2012) by classifying how students' effort, academic self-efficacy and performance simultaneously develop over time during the transition into higher education. To further this research line, other relevant factors could be included. For example, Robbins et al. (2006) suggested that effort is an expression of goal orientations, motivations and learning strategies. Future research could investigate how changes in effort during the transition into higher education is related to changes in goal-orientations, motivation and learning strategies.

Another suggestion for future research is the replication of our profiles in larger samples and other educational contexts. In the present study, the student profiles were based on a small sample in one Dutch cohort. Future research could also investigate possible nuances in the adjustment profiles by background characteristics such as gender and socio-economic background. Moreover, it would be relevant to investigate the adjustment profiles by type of learning environment. More student-centred learning environments with relatively high levels of student-teacher interactions could facilitate a more efficient adjustment to university to enhance students' first-year performance.

Conclusion

This qualitative, longitudinal, person-oriented study revealed that students adjust to university in four different ways. Based on students' reported changes in effort, academic self-efficacy and performance during the transition from secondary school to university, students were profiled as *Active Gliders*, *Passive Gliders*, *Passive Low Performers* or *Negative Strugglers*. The differences in effort, academic self-efficacy and performance among the students give directions for targeted student support during the transition into higher education and for research and practice focused on (first-year) academic success.

Chapter 4

A head start in higher education: The effect of a transition intervention on interaction, sense of belonging, and academic performance[3]

[3] This chapter has been published 'open access' as:
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Abstract

Given the challenging transition from secondary school into higher education, this quasi-experimental study measured the effects of a pre-academic programme (i.e. before starting at university) on student–faculty interactions, student–peer interactions, sense of belonging, and first-year academic performance. Fifty-eight first-year students participated in a pre-academic programme (i.e. the experimental group) focused on changing their perceptions of effective learning behaviour to enhance high-quality interaction with peers and faculty, their sense of belonging, and academic performance. A control group comprised 237 first-year students who did not attend the programme. Participation in the programme enhanced formal student-faculty and student-peer interactions, as well as informal student-peer interactions. No effect was found on sense of belonging. Furthermore, participation in the programme enhanced students' attained grade during the first course and enhanced their first-year cumulative GPA. The results suggest that participation in the pre-academic programme could give students a head start in higher education.

Introduction

For many students, the transition to higher education (HE) is a difficult hurdle (Gale & Parker, 2014; Harvey, Drew, & Smith, 2006). They must learn how to deal with the new learning environment, build new relationships with peers and faculty, and grow into their new role as HE students (Wilson et al., 2014). Retention rates show that about 20 percent of students studying full time at higher education institutions (HEIs) in the United States and Australia fail to make the transition successfully; i.e. they do not continue into the second year (Australian Government, 2015; National Center for Education Statistics, 2015). In the United Kingdom, non-continuation rates from the first to the second year vary between 1.2 and 21.4 percent among HEIs (Higher Education Funding Council for England, 2016). In other European countries, such as the Netherlands, policymakers are also not satisfied with the number of students completing the first year (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2017). The transition into HE thus seems problematic for many students (Pascarella & Terenzini, 2005).

HEIs help students connect to peers and faculty, to feel at home in HE, and to perform well by setting up transition programmes (Hatch & Bohlig, 2016), such as summer bridge programmes (e.g. Cabrera, Miner, & Milem, 2013; Sablan, 2014), first-year seminars (e.g. Inkelas et al., 2007; Porter & Swing, 2006), and learning communities (e.g. Keup, 2005). Evaluations of transition programmes have shown that participating students felt adequately prepared to interact with peers about school-related subjects and personal matters (Ackermann, 1991), and that they took part in campus activities more often and had more informal contact with faculty over time (Walpole et al., 2008). Other studies have shown that transition programmes enhance a sense of belonging in HE (e.g. Walton & Cohen, 2011), contribute positively to the intention to persist in it (Porter & Swing, 2006), and improve first-year grade point averages (Cabrera et al., 2013). Transition programmes thus seem to improve student–faculty and student–peer interactions, while enhancing participants' sense of belonging in HE. However, much of this research is descriptive. Transition programmes also seem to have an effect on academic performance, but results vary according to type of transition programme, measures adopted, and group characteristics (cf. Cabrera et al., 2013; Porter & Swing, 2006). The current study, therefore, contributes to the knowledge regarding effective student transition support in HE by reporting on a quasi-experimental design study in which we investigated the effects of a Dutch, pre-academic (i.e. before starting at university) transition programme on first-year students' 1) interactions with faculty and peers, 2) sense of belonging, and 3) academic performance.

Transition to Higher Education

During the transition into HE, students seem to go through four phases (Coertjens, Brahm, Trautwein, Lindblom-Ylänne, 2017a; Nicholson, 1990): preparation, encounter, adjustment, and stabilisation. In the preparation phase, students think about their degree choice and choose where to enrol and for which course programme. Upon acceptance, students are confronted with a new learning environment and an academic culture. During this encounter phase, they may experience friction between their personal learning beliefs and behaviour and the new learning environment, with its own specific academic culture (Van Asselt, 2006). This friction influences the formation of their role as university student. Students develop their identity as university students, adopt their perceptions and behaviour regarding the new learning environment, and ideally create a supportive network to feel at home and successfully deal with the demands and opportunities in HE (Coertjens et al., 2017a; Gale & Parker, 2014). This encounter phase usually takes place during the first weeks at university. Adjustments in attitude and behaviour occur gradually during the first year, which represents the third phase of the transition process, the adjustment phase. Finally, when students experience broadly what kind of behaviour leads to satisfying social and academic outcomes, their attitudes and behaviour tend to stabilise (Christie, Tett, Cree, & McCune, 2016). Stabilisation is the fourth and final phase in the transition process (Coertjens et al., 2017a; Nicholson, 1990).

In the present study, we examined the effects of an intervention designed to support students during the encounter phase of the transition into HE. This seems to be a particularly vulnerable time, yet it also represents a window of opportunity. In their first confrontation with HE, students experience a significant change in educational context. While learning to cope with the social and academic realms of the new learning environment (Scanlon, Rowling, & Weber, 2007; Thomas, 2002), they simultaneously need to feel related to the university community (Wilcox, Winn, & Fyvie-Gauld, 2005; Wilson et al., 2014). Supporting students in coping with the HE community is important for successfully transitioning into HE (Coertjens et al., 2017a; Gale & Parker, 2014). The intervention is intended to enhance the encounter phase in the transition cycle by addressing students' beliefs and behaviour and by supporting their need to relate to the HE community (Slavich & Zimbardo, 2012). More specifically, we hoped to encourage higher quality interactions with peers and staff, an increased sense of belonging in HE, and improved academic performance.

Interaction, Sense of Belonging, and Academic Performance

Transitioning students seem to be particularly concerned about two aspects: developing a sense of belonging in HE and building relationships with peers and faculty within it (Gibney, Moore, Murphy, & O'Sullivan, 2011; Palmer, O'Kane, & Owens, 2009; Tett, Cree, & Christie, 2017; Walton & Brady, 2017). A sense of belonging refers to feeling at home at university and that you fit in, that you are a member of one or more communities there, and that you are supported at the university (Hausmann, Ward Schofield, & Woods, 2007; Hurtado & Carter, 1997). Developing a positive sense of belonging in HE seems crucial for the decision not to leave when one experiences difficulties in adapting to the new environment (Christie, Munro, & Fisher, 2004; Tinto, 2012). People develop a sense of belonging by giving meaning to experiences in a setting (Walton & Brady, 2017). In making sense of their belonging in HE, students seek to interpret both the new social context and themselves, including who they can be in that context (Walton & Brady, 2017). Parsing the academic world is difficult, because the cues are vague or implicit (as with many everyday situations). How students perceive and interpret these cues depends on their personal history. This personal perspective shapes the risks and opportunities one sees in situations at university. Students who worry that people like them do not belong in HE may see everyday experiences, such as peer group work struggles, as confirmation of that perception. As a result, these students may not take advantage of opportunities for learning, such as discussing unclear learning material with peers, and they might not build the relationships with peers and teachers necessary for belonging and success (Walton & Brady, 2017; Walton & Cohen, 2007). To promote a sense of belonging and thus academic performance, it seems important therefore to encourage first-year students to be aware of their personal perception of the academic context (which is fuelled with, or filtered by, personal history). Furthermore, it seems important to decrease feelings of uncertainty and consequently keep students' minds (or perceptions) open for positive cues and experiences of belonging in HE by informing them that such self-doubts are common in the transition into HE (Walton & Brady, 2017).

When people feel they belong in a setting, they tend to be more motivated to engage with others, as in making friends (Walton & Cohen, 2007). Previous studies have shown that students' interactions with peers and faculty are important for their experiences in HE. Such interactions can take place formally or informally, either inside or outside of a classroom setting (Hagenauer & Volet, 2014; Hommes et al., 2012; Pascarella & Terenzini, 2005). Studies by Brouwer, Jansen, Flache, and Hofman (2016) and Wilcox et al. (2005) showed, for example, that informal peer interactions (such as talking about personal matters) stimulate formal ones (i.e. talking about course-related issues) and vice versa, which both support academic performance at university.

Hommes et al. (2012) found first-year student performance to be positively influenced by social networks (i.e. friendships, or giving/receiving information on course-related matters to or from peers). As well as positive relationships between student–peer interaction and academic performance, establishing a social network also provides students with a sense of belonging, which helps them assume the role of HE student (Buote et al., 2007; Hommes et al., 2012).

Next to student–peer interaction, research clearly shows the importance of student–faculty interaction in HE. Formal interactions of students with faculty members focused on academic development and performance seem most beneficial for students (e.g. giving clear instructions and stimulating meaningful learning) (Pascarella & Terenzini, 2005; Schneider & Preckel, 2017). These types of interactions contribute to students' satisfaction with the HE experience (Kim & Sax, 2009), a stronger commitment to graduate (Pascarella & Terenzini, 2005), lower attrition rates (Richardson & Radloff, 2014), and higher college GPA (Kim & Sax, 2009). Little research has focused on informal student–faculty interactions, as they seem to occur less often in HE settings (Cotten & Wilson, 2006; Tett et al., 2017). However, Severiens and Wolff (2008) showed that when informal interaction does occur between students and staff (i.e. talking about personal matters or well-being), it relates positively to average first-year grades. Both types of student–faculty interaction are also important in helping students to feel at home in HE. High-quality, formal interaction with faculty affects students' sense of belonging at university positively (Brooman & Darwent, 2014; Kim & Lundberg, 2016; Meeuwisse, Severiens, & Born, 2010). Furthermore, feeling at home in HE is enhanced by informal contact with faculty outside the classroom, and by approachable tutors who are available to help students with personal and academic issues (Stephen, O'Connell, & Hall, 2008).

The Present Study: Investigating the Effects of a Dutch Transition Programme in a Quasi-Experimental Design

Earlier studies have shown that it is beneficial to support transitioning students in getting to know their peers and the university community, in feeling at home in HE, and in performing well there (Ackermann, 1991; Cabrera et al., 2013; Hausmann et al., 2009; Porter & Swing, 2006). However, more quasi-experimental research is needed to corroborate the evidence of the effectiveness of transition programmes offered to HE students (cf. Coertjens et al., 2017a; Pike, Hansen, & Lin, 2011; Porter & Swing, 2006; Sablan, 2014). We used a quasi-experimental design to investigate if participation in a pre-academic transition programme was related to differences in interaction, sense of belonging, and academic performance among first-year Dutch students.

In the transition programme, we focused on enabling students to 1) interact with peers and faculty proactively and constructively, 2) to make connections with peers and the university (and thus create a feeling of belonging), and 4) to perform successfully at university. By intervening before students started their academic year, we aimed to offer them a head start in HE. Early in the transition cycle, we invited students to reflect on their own personal learning beliefs and behaviour, as well as on the demands and opportunities at university.

We formulated the following three hypotheses on the effects of our intervention:

Hypothesis 1 (H1): Students who participated in the transition programme (i.e. participants) showed a higher quality of (in)formal interaction with peers and faculty compared to students who did not participate in the transition programme (i.e. non-participants).

Hypothesis 2 (H2): Participants experienced a higher level of sense of belonging at university compared to non-participants.

Hypothesis 3 (H3): Participants performed better academically compared to non-participants.

Method

Participants and Procedure

This quasi-experimental study was conducted at a law school at a large state-funded university in the Netherlands during the academic year 2013–2014. While applying for the full-time first-year bachelor programme in National Law, Financial Law, or Criminology, students could volunteer to participate in the intervention. Those who did (experimental group) were compared with students who did not (control group). The intervention was carried out two weeks before students started their first year at university.

The experimental group comprised 58 participants and the control group consisted of 237 participants (see Table 1). None of the participants had any previous experience in HE. Students in both groups completed a questionnaire while applying for the bachelor programme (pre-test) and during the last meeting of their first course (post-test). Questionnaire and academic results were linked through students' institutional identification number. Confidential use of the identification numbers was guaranteed.

Intervention[4]

The four-day intervention is based on contemporary student learning theories (Schunk, 2012; Slavich & Zimbardo, 2012; Valcke, 2010) and the interaction and sense of belonging theory as detailed above. The overall aim was to mitigate potential difficulties in transitioning into HE. More specifically, we tried to change students' perception of effective learning behaviour (such as high-quality interaction with fellow students and teachers) to increase their sense of belonging and academic performance. In addition, we tried to increase students' sense of belonging and thus the quality of their interactions by changing negative perceptions of the new learning environment, so that potentially unsettling social and academic experiences could be interpreted as normal difficulties of the transition into HE and not as evidence they did not belong or could not succeed there (cf. Walton & Cohen, 2011; Walton & Brady, 2017).

The intervention was designed using a two-step strategy, as suggested by Boersma, ten Dam, Wardekker, and Volman (2016). The first step consisted of formulating design principles on the basis of theoretical concepts deemed important in the literature (in our case interaction behaviour, sense of belonging, and academic performance). In the second step, these principles were translated to concrete work formats and activities. In the current intervention, the following design principles and related work formats and activities were formulated.

The first principle was that during the transition to HE, the development of student-–faculty and student–peer interactions, students' sense of belonging, and academic performance is coloured by students' backgrounds, previous experiences, and personal perceptions (Chemers, Hu & Garcia, 2001; Kahu, 2013; McInnis, 2001; Scanlon et al., 2007; Slavich & Zimbardo, 2012; Tett et al., 2017; Thomas, 2002; Tinto, 1993). The intervention therefore focused on a) participants' awareness of their personal background and identity and its influence on how they perceive current situations; b) their awareness of their subjective perceptions and the correlation with interaction behaviour, sense of belonging, and performance; and c) the possibility of influencing all of the above to enable them to be HE students and perform effectively (Erhard, Jensen, & Granger, 2012; Walton & Brady, 2017; Zaffron & Logan, 2009). This principle was incorporated in the activities during the programme. In the lectures and assignments, participants were encouraged to reflect on how they perceive situations in the transition into HE; for example, their degree choice, their social identity, their personal values, their experiences with stereotyping, personal, familial and institutional expectations, and interaction patterns (related to education) (Cohen et al., 2006; Craig, 1999; Slavich & Zimbardo, 2012). It was explained to participants that awareness of

4 Detailed content of all didactic sessions is available from the authors.

their existing perceptions of degree choice, identity, values, and methods of interacting with other people (in an educational setting) facilitate but can also hamper their performance in HE, and that they can adapt these perceptions to enhance it. Participants were encouraged to internalise these insights (cf. Walton & Cohen, 2011) by writing them down in a daily diary during the intervention and by sharing them during assignments and lectures.

A second design principle was that studying at university is a social process (Slavich & Zimbardo, 2012). Specifically, in this course programme the future learning environment of the students involved problem-based learning (PBL). In PBL, constructing the learning experience together stands central during learning activities, and teachers play a facilitating and coaching role (Severiens & Schmidt, 2009). This design principle was translated into collaborative activities throughout the entire week. These activities aim to encourage interaction between peers and between peers and staff. During the first two days, participants engaged in four or five assignments per day, in pairs or in groups of four participants. They were encouraged to work together in pairs with a person they did not know. The groups were formed randomly, with group compositions varying daily. During the last two days, participants also worked in larger groups of 12 participants maximum, with the guidance of their future tutors.

A third design principle was that studying at university means taking responsibility for one's learning experience (McInnes, 2001; Slavich & Zimbardo, 2012). This design principle was translated into collaborative work sessions with peers, reflection, and formulating a personal declaration. Students were asked to formulate a declaration that focused on creating a personal state of mind (or perception) that would stimulate them to reach unprecedented achievements (Erhard et al., 2012; Zaffron & Logan, 2009). The approach is comparable to the work on possible selves as described, for example, by Hoyle and Sherrill (2006) and Oyserman, Bybee and Terry (2006). Students were instructed and coached to formulate a declaration of being an HE student, which goes further than but still encompasses knowing how to be an effective HE student and studying (doing) effectively. For example, a student could state 'Discussing learning tasks with fellow students is important for academic performance' (knowing), or 'I discuss learning tasks with fellow students when I do not understand them' (doing). Students were coached to formulate declarations as a current state of mind, such as 'I am a student that discusses learning tasks with fellow students' (being); 'I stand for constructive discussions'; 'You can count on me for contributing positively and constructively to a discussion in class or outside class'; or 'I commit myself to be open for discussions'. By doing the above, we promoted a learning attitude that suited the student and could be fulfilled immediately (Erhard et al., 2012; Zaffron & Logan, 2009).

The intervention was conducted by two experienced trainers (MSc, with more than 10 years of experience with educational innovation in HE; PhD, with more than five years of experience with drop-outs and diversity issues in HE).

Measures

Interaction behaviour. In the problem-based learning context of the law school, we adapted established scales of interaction behaviour (Goodman, 1997; Meeuwisse, Severiens, & Born, 2010; Severiens & Wolff, 2008) to assess formal and informal student–faculty interactions as well as formal and informal student–peer interactions. Interaction behaviour was measured with four scales (see Appendix C). First, formal interaction with faculty was measured with seven items (α_{exp} = .69, α_{contr} = .82). A sample item is 'I go easily to my tutor if I have remarks or questions'. Second, informal interaction with faculty was assessed with five items (α_{exp} = .66, α_{contr} = .77), such as 'I have a positive relationship with at least one of my teachers in the course programme'. Third, formal interaction with peers was measured with eight items (α_{exp} = .60, α_{contr} = .80). A sample item is 'I invite fellow students to work together with me on assignments'. Fourth, informal interaction with peers was assessed with five items (α_{exp} = .71, α_{contr} = .81), such as 'I have close personal contact with fellow students'. The item responses for the scales ranged from 1 (*not true at all*) to 5 (*completely true*).

Sense of belonging. Based on the Sense of Belonging scale of the Meeuwisse, Severiens, and Born (2010), this aspect was measured with seven items (α_{exp} = .82 α_{contr} = .84) (see Appendix C). An example item is 'I feel accepted by fellow students'. The response categories ranged from 1 (*never*) to 7 (*always*).

Academic performance. The following performance measures per respondent were obtained from the student registry: first-course grade and first-year cumulative GPA (both on a scale from 1 to 10), first-course and first-year retention (both passed yes/no).

Analyses

We used multivariate analysis of variance (MANOVA) to test our hypotheses of whether participants would show a higher quality of (in)formal interaction with peers and faculty (H1) and whether they would experience a higher level of sense of belonging (H2) compared to non-participants. To test our third hypothesis (whether participants would perform better academically compared to non-participants), we used MANOVA to test if they attained higher first-course grades and first-year cumulative GPAs than non-participants, and we used chi-square tests to analyse if participants passed the first course and the first year more often than non-participants. Effect sizes (ES) were calculated when a significant effect of the intervention was found ($p < .05$). An ES

(Cohen's *d*) of about .10 is considered a small effect, an ES of about .30 a medium effect, and an ES of .50 or higher a large effect (Field & Hole, 2002).

Results

Preliminary Analyses

There were no significant differences between the experimental group and the control group on gender, ethnic background, first-generation HE, law school programme (see Table 1), and secondary school GPA (see *t*-test result in Table 2), which reduces the possibility of selection effects. Table 2 presents the mean scores, standard deviations, *t*-test results, and Spearman correlations of all dependent variables.

Table 1. Background information of respondents in the experimental group and control group

Background characteristics	Experimental group		Control group				
	N	*%*	*N*	*%*	*Chi Square*	*df*	*p*
Gender					3.07	1	.08
Male	14	24.1	86	36.3			
Female	44	75.9	151	63.7			
Total	58		237				
Ethnic background					.04	1	.84
Ethnic majority	40	72.7	157	71.4			
Non-Western ethnic minority	15	27.3	63	28.6			
Total	55		220				
Law school programme					.74	1	.39
National law / Financial law	43	74.1	162	68.4			
Criminology	15	25.9	75	31.6			
Total	58		237				
	N	*M (SD)*	*N*	*M (SD)*	*T*-test	*df*	*p*
Secondary school GPA	58	6.65 (.63)	62	6.59 (.52)	-.59	118	.56

Note. The *N* varies due to missing values

Table 2. Mean scores, standard deviations, *t*-values and Spearman correlations between all variables

Variables		*M (SD)* Experimental group	*M (SD)* Control group	*t*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Formal faculty interaction	3.68 (.52)	3.38 (.68)	-3.14**	(-)	.51**	.37*	.24	.22	-.05	.06	.13	.02
2.	Informal faculty interaction	3.31 (.69)	3.08 (.80)	-1.62	.70**	(-)	.45**	.38**	.49**	-.26	-.00	.08	-.09
3.	Formal peer interaction	4.00 (.42)	3.74 (.59)	-3.31**	.50**	.41**	(-)	.56**	.43**	-.20	-.06	-.08	-.08
4.	Informal peer interaction	4.31 (.51)	3.87 (.72)	-4.64***	.45**	.41**	.75**	(-)	.71**	-.35*	-.05	.02	.02
5.	Sense of belonging	5.72 (.73)	5.65 (.80)	-.50	.37**	.29**	.63**	.59**	(-)	-.19	-.01	.14	-.05
6.	First-course grade	6.36 (1.16)	5.69 (1.16)	-3.88***	.05	-.03	.01	-.03	.02	(-)	.64**	.75**	.51**
7.	First-year cum. GPA	6.44 (1.03)	6.07 (1.03)	-2.45*	.02	.05	.05	.02	-.02	.63**	(-)	.55**	.63**
8.	First-course retention	1.79 (.41)	1.59 (.49)	-3.07**	.10	.01	.08	.04	.06	.89**	.50**	(-)	.60**
9.	First-year retention	1.84 (.37)	1.74 (.44)	-1.92	.02	.03	.13*	.09	.06	.43**	.71**	.37**	(-)

Note. Correlations for experimental group are presented above the diagonal, correlations for the control group below the diagonal.
Variable 1 to 5: 1-5 scale. Variable 6 and 7: 1-10 scale. Variable 8 and 9: 1 = not passed, 2 = passed.
* $p < .05$; ** $p < .01$; *** $p < .001$

Formal and Informal Interaction with Faculty and Peers, and Sense of Belonging

The multivariate test regarding interaction behaviour and sense of belonging (Table 3) showed a statistically significant effect ($F = 3.95$, $df = 5$, $p = .002$). The post hoc analyses showed that participants reported a higher quality of formal faculty interaction, formal peer interaction, and informal peer interaction than non-participants. In comparison to non-participants, students who took part in the intervention had better formal interactions with teachers about the law course programme ($F = 6.66$, $df = 1$, $p = .010$, ES = .24), had better formal interactions with peers about matters related to it ($F = 6.70$, $df = 1$, $p = .010$, ES = .25), and had better informal, social interactions with peers ($F = 13.13$, $df = 1$, $p = .001$, ES = .33). All effects were small to medium, which means that participation in the intervention had a small to medium impact on these types of student–faculty and student–peer interactions. The post hoc analyses also showed that informal interaction with faculty was not statistically significant between the experimental and control group ($F = 2.63$, $df = 1$, $p = .106$), which indicates that students in both groups reported a comparative quality of informal interaction with their teachers. Finally, sense of belonging did not differ statistically significantly between the experimental and control groups ($F = .25$, $df = 1$, $p = .615$), suggesting that students in both groups felt equally at home at the university.

Table 3. Multivariate analyses of variance: differences in interaction behaviour and sense of belonging between the experimental group and control group

	Df	*F*	Partial η^2	*p*	*Adjusted* R^2	Effect size
Multivariate test[a]	5	3.95	.07	.002		
Between subjects						
Formal faculty interaction	1	6.66	.02	.010	.02	.24
Informal faculty interaction	1	2.63	.01	.106	.01	
Formal peer interaction	1	6.70	.02	.010	.02	.25
Informal peer interaction	1	13.13	.05	.001	.04	.33
Sense of belonging	1	.25	.00	.615	-.01	

[a] Observed power = .945

Academic Performance

Descriptive results of the average grades per course (see Figure 1) showed that participants seemed to have gotten a head start compared to non-participants. Participants attained higher average grades starting from the first course, and maintained them until the second to last course in the first year. More importantly, participants attained sufficient grades (6.0 or higher) right from the start, whereas non-participants, on average, attained sufficient grades only after two courses. However, Figure 1 shows that non-participants had better grades during the last two courses,

whereas participants more or less stayed at the same performance level during the last four courses.

A multivariate test showed that the intervention had a statistically significant effect on students' academic performance in the first year ($F = 47.71$, $df = 2$, $p = .001$; see Table 4). Participants attained statistically significantly higher grades in the first course than non-participants ($F = 15.03$, $df = 1$, $p = .001$, ES = .28), namely, 6.36 versus 5.69 on a scale from 1 to 10. The multivariate test also showed that first-year cumulative GPA differed significantly between the experimental and control students ($F = 5.26$, $df = 1$, $p = .023$, ES = .36), indicating that students in the experimental group attained higher cumulative GPA scores in the first year at university than those in the control group.

We conducted chi-square tests to analyse the chance of passing the first course (yes/no), and of passing the first year (yes/no). The results, as presented in Table 5, show that the chance of passing the first course was significantly different between the experimental and control groups (*chi square* = 7.46, $df = 1$, $p = .006$). Students in the experimental had a higher chance of passing the first course than students in the control group. A second chi-square test showed that the chance of passing the first year did not differ significantly between the groups (*chi square* = 2.94, $p = .086$).

In summary, our first hypothesis was confirmed for three of the four types of interaction behaviour. In contrast to non-participants, students who participated in the transition intervention reported a higher quality of formal interaction with faculty and peers and a higher quality of informal interaction with peers. The second hypothesis was not confirmed: participants did not experience a higher level of sense of belonging at university than non-participants. The third hypothesis was mostly confirmed. Participants seem to have received a head start in HE that lasted throughout the first year. They got higher grades in the first course, had a higher chance of passing the first course, and attained a higher cumulative GPA in the first year than non-participants.

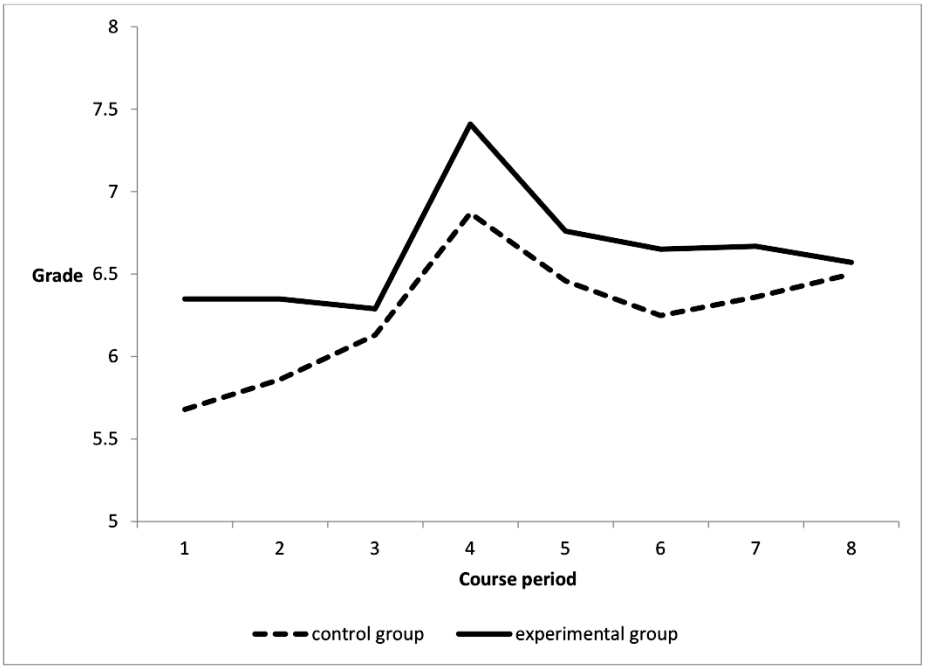

Figure 1. Attained average grade per first-year course in control and experimental group

Table 4. Multivariate analyses of variance: differences in first-course grade and cumulative GPA between the experimental group and control group

	Df	*F*	Partial η^2	*p*	*Adjusted* R^2	Effect size
Multivariate Test[a]	2	7.71	.05	.001		
Between subjects						
First-course grade	1	15.03	.05	.001	.05	.28
Cumulative GPA	1	5.26	.02	.023	.02	.36

[a] Observed power = .948.

Table 5. Chi Square test results of research group by first-course retention and first-year retention

	Experimental group		Control group				
	N	*%*	*N*	*%*	*Chi Square*	*df*	*p*
First course retention					7.46	1	.006
Not passed	12	21.1	94	40.5			
Passed	45	78.9	138	59.5			
Total	57		232				
First-year retention					2.94	1	.086
Not passed	9	15.5	62	26.3			
Passed	49	84.5	174	73.7			
Total	58		236				

The N varies due to missing values

Discussion

The present study investigated the effects of a transition intervention programme that aimed to enhance students' formal and informal interaction with peers and faculty, their sense of belonging in HE, and their first-year academic performance.

The intervention seems to have been successful in its goal of enabling students to engage more in peer interaction (H1) — that is, in approaching fellow students to study course material or work on assignments together. In addition to these formal forms of student¬–peer interaction, the results also showed that participants were more inclined than non-participants to initiate informal interaction. Previous research has shown that social interactions among peers is important for success in the first year of HE (Brouwer et al., 2016; Buote et al., 2007; Wilcox et al., 2005), and that transition programmes can enhance the feeling of being adequately prepared to interact with peers, which in turn positively impacts students' intention to persist (Porter & Swing, 2006). Our study strengthens the evidence base in this literature, by using a control group to compare the impact of the intervention on student–peer interaction among participants and non-participants.

In addition to more peer interactions, participants in the intervention reported more formal interaction with faculty than non-participants did (H1). Our intervention had a positive effect on the contact between students and their teachers on course-related matters. Although previous studies have shown the importance of student–faculty interaction for learning and performance (Schneider & Preckel, 2017), and the effect of transition programmes on academic outcomes (e.g. Cabrera et al., 2013; Porter & Swing, 2006), as far as we know no previous study has reported on the impact of a transition programme on course-related student–faculty interaction.

However, we found no significant difference between the experimental and the control group on informal interaction with faculty (H1). Apparently, the

intervention did not facilitate the relationship between the participants and the teachers enough to enhance informal contact between them. A possible explanation may be that our measure of informal student–faculty interaction was not accurate enough. As such interactions do not seem to occur frequently (Cotten & Wilson, 2006; Tett et al., 2017), a sensitive instrument is crucial. Another explanation could be that the curriculum of the course programme did not provide enough room to create a safe or inviting environment for students to share personal things with their teachers. Previous research has shown that class time is scarce in HE and that it is mainly focused on course-related interactions (Cotten & Wilson, 2006).

We found no support for our second hypothesis, that participation in the intervention leads to a higher sense of belonging at university. A ceiling effect due to the measurement moment may explain this result. Sense of belonging was measured at the end of the first five-week course. After five weeks of studying, scores on sense of belonging were above 5.5 on a scale from 1 to 6 in the experimental as well as in the control group. This parity indicates that all students felt quite at home in HE by that time. Additionally, as shown in earlier research (e.g. Walton & Cohen, 2011), not feeling at home in HE is more typically experienced among socially marginalised groups and the ceiling effect was possibly also due to the fact that our sample does not include sufficient percentages of these groups. Unfortunately, differences between groups according to social capital could not be investigated due to the small experimental group size in the present study.

Hypothesis 3 was mostly confirmed, as three of four expected effects were found. We found a positive impact of the intervention on first-course grades, as well as on the first-year cumulative GPA and first-course retention. As with many interventions, selection effects could have contributed to this difference. However, no significant differences emerged between the experimental and control groups on the background factors of gender, ethnic background, first-generation HE, law school programme, or secondary school GPA. Therefore, we conclude cautiously that the intervention contributed to a head start in the first year. Cautiously, because selection effects on the basis of other factors (e.g. motivational orientation) might still be at hand. Contrary to our expectations, we found no significant difference in first-year retention. The relatively high cumulative GPAs of participants did not result in more retention. This could suggest that non-participants took more time to adapt their performances and improved their performance during the first year to have an equal chance to pass the first year as participants by the end of the first year. In their systematic review of factors related to first-year students' success, van Rooij, Brouwer, Fokkens-Bruinsma, Jansen, Donche and Noyens (2018) explained various underlying processes of performance versus retention (or dropping out) and progress. For example, students with a high GPA

may choose to quit the programme deliberately due to dissatisfaction with it. Or psychosocial factors such as motivation may cause students to put in minimal effort - resulting in a GPA that is low but is nonetheless sufficient for them to continue. More research is warranted into these underlying processes, as they may explain why we observed different results with regard to different measures of study success.

Limitations and directions for future research

Our findings are limited firstly because our experimental group was relatively small and consisted of volunteer participants. Furthermore, as described above, self-selection may have happened to some extent. Future research should control for possibly relevant factors; preferably, it should assign interested students randomly to either an experimental or a control intervention. Secondly, the findings on interaction behaviour may be somewhat limited by the scale reliability found within the experimental group. Additional research should be conducted to confirm the consistency of our measures on formal peer interaction and (in)formal faculty interaction. Finally, it is worth noting that we found effect sizes between .24 and .36 of the intervention on student–faculty interaction, student–peer interaction, first-course grade, and first-year cumulative GPA. To improve the intervention further, and possibly increase its effects, it could be helpful to investigate the underlying mechanisms with a qualitative study. An interview and observation study could give deeper insights into 1) the effect of the intervention on participants' sense of belonging and perception/implementation of interaction behaviour and 2) how these elements affect their performance. Additionally, insight into how these connections differ among participants and non-participants would be valuable for educational research and practice.

Implications

Although this study focused on one school and one cohort only, the findings contribute to knowledge on the effectiveness of transition programmes in HE. As studies in this field are few, we applied a quasi-experimental research design to show the effect of our intervention on first-year academic performance more rigorously. Moreover, we explored the effect on interaction behaviour and sense of belonging among participants and non-participants. Notwithstanding its limitations, this study suggests that formal student–faculty interaction and (in)formal student–peer interaction can be enhanced by a short transition intervention. Although transition programmes offered during the academic year can also benefit students (e.g. Porter & Swing, 2006), a short, pre-academic programme as implemented in this study could work as a springboard to help students make useful connections with others.

Another implication of this study is the possibility of increasing first-year academic performance among students from the start of their academic career. In the Netherlands, but also in other countries around the world, performance-based state funding influences enrolment and degree completion policies at HEIs (Inspectie van het Onderwijs [Dutch Inspectorate of Education], 2017; Hillman, Tandberg, & Gross, 2014; European Commission, 2015). In other words, it is important for students to make a good start in HE. While further investigation is needed on processes underlying retention, our study suggests that an intervention early in the transition cycle, which is focused on enabling students to interact constructively and proactively with peers and faculty, does indeed give them a head start in HE.

Conclusion

This study showed that a four-day intervention to ease the transition of first-year students into HE enhances formal student–faculty and student–peer interactions, as well as informal student–peer interactions. In addition, participation in the intervention influenced the grades students' attained in the first course positively, as well as their first-year cumulative GPA. The head start in HE given these students by the pre-academic programme lasted throughout the year. The findings are relevant for developing effective transition programmes and for increasing academic performance in HE.

Chapter 5

Supporting students' academic self-efficacy and effort during the transition into higher education: Findings of a quasi-experimental study[5]

[5] This chapter is submitted for publication as:
van Herpen, S. G. A., Meeuwisse, M. Hofman, W. H. A., Severiens, S. E. (submitted). Supporting students' academic self-efficacy and effort during the transition into higher education: findings of a quasi-experimental study.

Abstract

Given the challenging transition from secondary school to higher education, we investigated with a pre-test – post-test design the impact of a pre-academic programme (i.e. before the start of the academic year) on first-year students' academic self-efficacy belief, effort and performance. In an experimental condition, students participated in the pre-academic programme (*n* = 58). This programme focused on making students aware of what influences their academic self-efficacy belief and learning efforts, and how they can enhance their academic self-efficacy belief and effort. In a control condition, students did not participate in the pre-academic programme (*n* = 62). Multivariate analyses of variance revealed that the experimental group performed better in the first course at university than the control group. The groups did not differ in academic self-efficacy belief and effort during the first course at university. Structural equation modelling analyses revealed that academic self-efficacy belief and effort during the first course had no impact on first course grade in both groups. Academic self-efficacy belief during secondary school had a positive impact on academic self-efficacy belief during the first course at university in both groups. The impact of effort at secondary school on effort during the first course at university differed between the groups. In the control group, secondary school effort had a positive impact on first course effort. In the experimental group, this relationship was nonsignificant, suggesting that participants' effortful behaviour at university was no longer related to students' historical, pre-university effortful behaviour.

Introduction

Students who transition from secondary school into higher education face significant challenges which may increase the risk of dropping out (Gale & Parker, 2014; Harvey, Drew, & Smith, 2006; Schunk, 2012; Tinto, 1993, 2012; Yeager et al., 2016). A major challenge is, for example, the different demand on students' learning. Students are expected to learn more independently (Hockings, Thomas, Ottaway, & Jones, 2018) which requires higher levels of autonomy, more initiative and more self-regulation than they were accustomed to during secondary school. These learning challenges can make first-year students feel insecure about their capabilities to perform well (Briggs, Clark, & Hall, 2012; Brooman & Darwent, 2012, 2014; Christie, Tett, Cree, Hounsell, & McCune, 2008; Gibney, Moore, Murphy, & O'Sullivan, 2011) and often require a search for the level of study effort needed to perform well (e.g. Christie, Barron, & D'Annunzio-Green, 2013; Hockings et al., 2018; Tett, Cree, & Christie, 2017). In other words, the transition into higher education affects students' learning efforts and their academic self-efficacy belief.

Many higher education institutions provide transition programmes such as first-year seminars, learning communities and/or summer bridge programmes to help students cope with the new learning demands (Cabrera, Miner, & Milem, 2013; Hatch & Bohlig, 2016; Inkelas, Daver, Vogt, & Leonard, 2007; Keup, 2005; Porter & Swing, 2006). However, these transition programmes mainly focus on learning skills such as note taking and time management, provide contextualised learning with peers and teach students how to use academic and student services at the institution (Hatch & Bohlig, 2016). Previous review studies have shown that effort and academic self-efficacy are two of the strongest factors explaining academic success (see the reviews of Honicke & Broadbent, 2016; Richardson, Abraham, & Bond, 2012; Robbins et al., 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006), and that effort and academic self-efficacy belief are malleable factors that can be improved (e.g. van Dinther, Dochy, & Segers, 2011; Skinner, Chapman, & Baltes, 1988; Wentzel & Wigfield, 2009). However, transition programmes do not often focus explicitly on effort and academic self-efficacy to enhance the transition into higher education, nor do they investigate the effects on self-efficacy and effort. This study examines the effects of a pre-academic (i.e. before starting at university) transition programme on first-year students' 1) academic self-efficacy belief, 2) effortful behaviour and 3) academic performance.

Students' Academic Self-Efficacy Belief and (early) Academic Performance

Previous studies suggest that first-year students are highly confident of their skills when they start higher education (Gibney et al. 2011; van Herpen, Meeuwisse, Hofman, Severiens & Arends, 2017). This confidence is based on their previous (successful)

experiences at secondary school, but also on how they perceive the new unknown learning context (Chemers, Hu, & Garcia, 2001; Hockings et al., 2018; Kahu, 2013; Scanlon, Rowling, & Weber, 2007; Slavich & Zimbardo, 2012; Tett et al., 2017; Thomas, 2002; Tinto, 1993). Several studies suggest that when entering an unknown learning environment like higher education, students may be overconfident (see Putwain & Sander, 2016). Bandura (1986, 1997) argued that some overconfidence is desirable to increase effort and persistence to learn new things. Other studies have shown that this confidence decreases when students are faced with the challenges of studying in higher education (Putwain & Sander, 2016; Tett et al., 2017), the so-called confidence dip. This dip increases the risk of not passing the first year (Wagner & Brahm, 2017). To ease the transition into higher education, it thus seems opportune to intervene in students' academic self-efficacy beliefs. Academic self-efficacy refers to students' beliefs about their capabilities to learn or perform actions at designated levels (Bandura 1986, 1997) and has one of the strongest relationships with academic performance, incremental to background characteristics and intellectual abilities (Multon, Brown, & Lent, 1991; Richardson et al., 2012; Robbins et al., 2004). Other studies have shown that students' academic self-efficacy belief is a relatively strong predictor of academic performance compared to, for instance, study choice aspects and learning strategies (De Clercq, Galand, Dupont, & Frenay, 2013) and student-institution integration and satisfaction with the higher education institution (McKenzie & Schweitzer, 2001).

By promoting students' academic self-efficacy, first-year students might cope better with the challenge to adapt their learning habits and learner identity to the demands of higher education (Briggs et al., 2012; Hockings et al., 2018). Students' academic self-efficacy belief can be promoted by several sources such as mastery experiences (e.g. receiving good grades during secondary school for math), vicarious experiences (e.g. knowing role models who went to higher education or having a close friend who one respects for his/her school achievements), social persuasions (e.g. encouragements from significant others on learning abilities), and physiological states (e.g. feeling anxious about math) (Usher & Pajares, 2008).

When students transition into higher education, these sources for academic self-efficacy (Usher & Pajares, 2008) are, however, less (well) available or not perceived as resources at all by students (Walton & Brady, 2017). Definitely at the start of their studies, students have new study content to master and new fellow students to get to know and respect for their achievements. Furthermore, students receive less feedback from teachers and fellow students on their performances or abilities compared to secondary school and feel more insecure about their abilities to perform well at high education (Briggs et al., 2012; Brooman & Darwent, 2012, 2014; Christie et al., 2008).

The intervention in the present study focused on providing sources for academic self-efficacy, making first-year students aware of the available sources for academic self-efficacy in the new learning environment and on training students to optimally use these sources to enhance their academic performance. We assumed that the intervention would prevent the expected decline in self-efficacy belief in the first period at university and give students a head start in higher education.

Students' Effort and (early) Academic Performance

Higher education institutions expect more independent learning from their students than secondary schools (Hockings et al., 2018), which implies that students need to take (more) responsibility for their learning experiences, put in effort and manage their time. Recent studies on how students experience the transition into higher education suggest that many (first-year) students feel overwhelmed by the demands of higher education to take responsibility for their own learning, to motivate themselves to study and to manage their time to study (e.g. Hockings et al., 2018; Gibney et al., 2011). Gibney and colleagues (2011) found that first-year students appeared to know what kind of academic learning behaviour was required for success at university after eight weeks, but that this did not mean they also acted accordingly. Hockings and colleagues (2018) reported that many first-year students initially continued to learn as they had learned at secondary school, which means doing homework when given, or focusing on assessment tasks when unsure what they should learn. To enhance the transition into higher education, it thus seems opportune, besides academic self-efficacy, to stimulate students' effortful behaviour.

Effort can be understood as an expression or indication of how motivated students are to engage in academic tasks. Effort is volitionally controllable and amenable to change (Schunk, 1982). It refers to action behaviour, i.e. working hard, paying attention and showing persistence when faced with challenging tasks (Pintrich, 2004; Robbins et al., 2006; van Herpen et al., 2017). Effort can thus be seen as observable conscious behaviour that can be managed and changed by students (Skinner, Chapman, & Baltes, 1988), and helps students to cope with challenges and setbacks at school or university (Skinner & Pitzer, 2012).

Effort is also a behavioural factor that is driven by beliefs of the student, for example, their self-efficacy belief (Schunk, 2012). Bandura (1986) argued that the stronger the self-efficacy belief, the more effort a student will make in fulfilling a learning task. Schunk (1982) theorised effort as a conveyer of efficacy information. Empirical studies showed that effort mediates the relationship between academic self-efficacy and academic performance (Jung, Zhou, & Lee, 2017; Kassab, Al-Shafei, Salem, & Otoom, 2015; Komarraju & Nadler, 2013) and is a relatively strong predictor of

performance in higher education (Credé & Phillips, 2011; Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017).

We hypothesised that by promoting students' self-efficacy beliefs and informing students about the expectations of university and about the implications of independent learning, we could positively affect their effortful behaviour during the first period at university, which could enhance the transition into higher education and lead to higher academic performance.

The Present Study

Figure 1 presents the conceptual model that guided this study. In a quasi-experimental pre-test – post-test design study, we investigated whether an intervention during the transition from secondary school into university positively affected students' level of academic self-efficacy belief, effort and performance. As academic self-efficacy and effort in higher education is coloured by previous experiences, and because effort seems to be driven by self-efficacy beliefs, the intervention also aimed to address this inter-relationship. We focus on the following two research questions (RQs):

RQ1: Do students in the experimental group and students in the control group differ in terms of academic self-efficacy belief, effort and performance during the transition from secondary school into higher education?

RQ 2: Do the relationships between academic self-efficacy belief, effort and academic performance differ between the experimental group and control group during the transition from secondary school into higher education?

Method

Participants and Procedure

The participants were 120 first-year law school students at a large, state-funded, four-year university in the Netherlands. They were recruited during the university's application procedure to participate voluntarily in a pre-academic programme. Students who participated in the intervention (i.e. the experimental group, $n = 58$) were compared with students who did not take part in the intervention (i.e. the control group, $n = 62$). All participants directly transitioned from a pre-university track at secondary school (in Dutch: VWO) to university, which means that none of the participants had any previous experience in higher education. The intervention was carried out during the university's summer period, two weeks before the official start of the academic year.

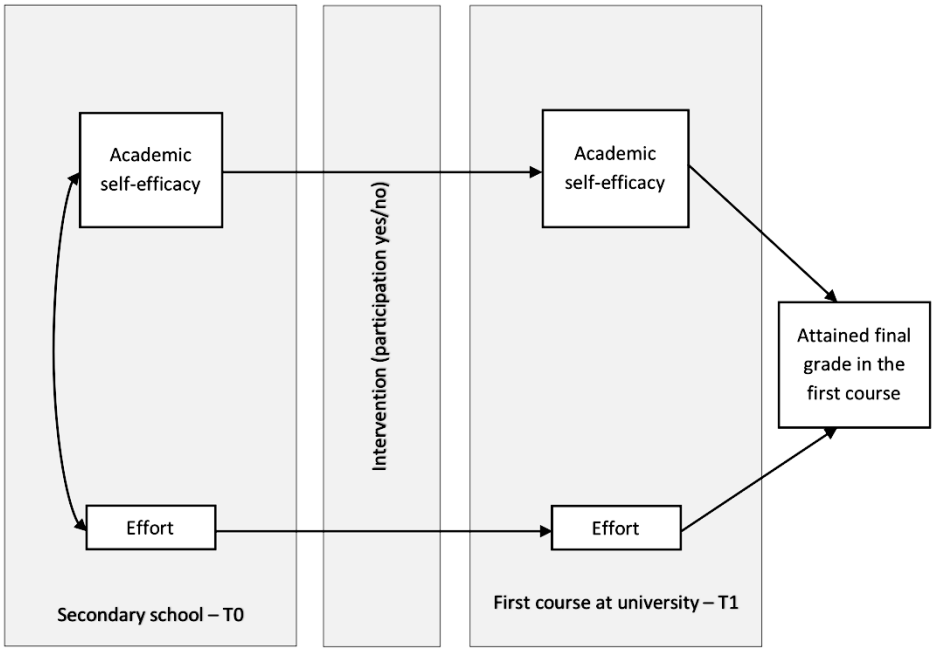

Figure 1. Conceptual model of academic self-efficacy, effort and academic performance during the transition into higher education

All students completed a questionnaire during application for university (i.e. T0), and at the end of the first course of their bachelor programme but before sitting the course exam (i.e. T1). Questionnaire results could be linked through students' institutional identification number. Confidential use of the identification numbers was guaranteed.

The intervention was conducted by two experienced trainers (MSc, with more than ten years of experience with educational innovation in higher education; PhD, with more than five years of experience with drop-out and diversity in higher education). During the first two days, participants made four or five assignments per day, in pairs or in groups of four participants. Participants were encouraged to work together in pairs with a person they did not know. The groups were randomly formed, and group compositions varied daily. During the last two days, participants also worked in larger groups of maximum 12 participants, guided by their future tutors.

Intervention[6]

The four-day intervention was based on contemporary student learning theories (Schunk, 2012; Slavich & Zimbardo, 2012; Valcke, 2010), including theory and empirical research on academic self-efficacy beliefs and effort as detailed above. The overall aim was to ease potential difficulties in studying at university. More specifically, we wanted to make students aware of what influences their academic self-efficacy belief and effort, what difficulties are normal during the transition into higher education and how they can cope with these influences and difficulties to promote their academic self-efficacy belief and effortful behaviour, to make a successful start at university.

The intervention was designed using a two-step strategy, as suggested by Boersma, ten Dam, Wardekker, and Volman (2016). The first step consisted of formulating design principles on the basis of theoretical concepts deemed important in the literature (in our case, academic self-efficacy belief and effort). In the second step, these principles were translated to concrete work formats and activities. In the current intervention, the following three design principles and activities were formulated.

The first principle was that students' academic self-efficacy belief during the transition into university is coloured by their background, previous experiences and their personal perception (Chemers et al., 2001; Hockings et al., 2018; Kahu, 2013; Scanlon et al., 2007; Slavich & Zimbardo, 2012; Tett et al., 2017; Thomas, 2002; Tinto, 1993). This principle was translated into the following activities during the programme. In an assignment, participants were encouraged to reflect on their motivation to attend university and the particular bachelor programme, and what factors, persons or situations affected their current confidence in being able to perform well at university (i.e. their academic self-efficacy belief). Next to this reflection assignment, participants attended two lectures on the influence of their history on their current perception, i.e. academic self-efficacy belief. Students were explained that their academic self-efficacy belief is filled with historical (positive and negative) perceptions which can facilitate but also hamper their efforts for learning and thus their performance in HE. Students were also explained that they themselves can adapt their perceptions or self-efficacy beliefs and thus their effortful behaviour to enhance their performance in HE (Bandura, 1997; Pajares & Schunk, 2001) by suspending their historical perceptions to spill over in their current academic self-efficacy belief (cf. Erhard, Jensen, & Granger, 2012; Walton & Brady, 2017; Zaffron & Logan, 2009). This adaptation towards a future-based self-efficacy belief was facilitated by making a personal declaration on the final day of the intervention. We explain this in more detail in the third design principle below.

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[6] Detailed content of all didactics sessions is available from the authors.

The second design principle was that students' self-efficacy beliefs could be promoted by social encouragements and by reducing feelings of anxiety and stress (Usher & Pajares, 2008). This design principle was translated into the following activities. Firstly, law school staff gave three lectures about their academic path and motivation to encourage students for choosing law school at university level. Secondly, participants were informed about the academic culture of the university, about what would be expected from them as independent learners (as reported for example in Hockings et al., 2018) in a problem-based learning context (as described by Hmelo-Silver (2004) and Schmidt (1993)), and about the dos and don'ts of effective studying (see e.g. Hattie, 2009) to reduce feelings of anxiety and stress.

The third principle was that successfully studying at university means taking responsibility for one's learning experience (McInnes, 2001; Slavich & Zimbardo, 2012), which implies that students make an effort to understand course material (i.e. create mastery experiences) and seek interaction with fellow students and teachers (i.e. create vicarious learning experiences, social encouragements and reduce negative emotions) to strengthen their academic self-efficacy belief. Internalisation of this awareness and a shift towards a future-based self-efficacy belief was facilitated by providing opportunities to interact with fellow students and staff during the intervention and by making a personal declaration on the final day of the intervention. Students were asked to make a personal declaration that focused on creating a personal state of mind or perception, which stimulated the student to reach unprecedented achievements (Erhard et al., 2012; Zaffron & Logan, 2009, which is comparable to the work on possible selves as described, for example, by Hoyle and Sherrill (2006) and Oyserman, Bybee, and Terry (2006)). Students were instructed and coached to making a declaration of *being* a higher education student, which goes further than but still encompasses *knowing* how to be an effective higher education student and studying (*doing*) effectively. For example, a student could state, 'Discussing learning tasks with fellow students is important for academic performance' (knowing) or 'I'll discuss learning tasks with fellow students if I don't understand them' (doing). In the assignment, students were coached to formulate it as a current state of mind, such as 'I'm a student who discusses learning tasks with fellow students' (being); 'I stand for constructive discussions'; 'You can count on me to contribute positively and constructively to a discussion in class or outside class'; 'I am committed to being open for discussions'. By doing this, we tried to promote a positive self-efficacy belief and effortful behaviour that suited the student, and which could be fulfilled immediately (Erhard et al., 2012; Zaffron & Logan, 2009).

Measures

Table 1 presents the descriptive statistics (means and standard deviations) and correlations among academic self-efficacy and effort in the pre-test (T0) and post-test (T1), and first course grade.

Academic self-efficacy belief. Academic self-efficacy belief was measured with an adapted version of the scale developed by Pintrich, Smith, Garcia, and McKeachie (1993) and reflected students' beliefs about their capacity to achieve adequate levels of academic performance in the first year at university. An example item was: 'I think I will receive good grades in the first year' (see Appendix D for all used items). The response categories ranged from 1 (*not true at all*) to 5 (*very true*). At T0, internal consistencies (Cronbach's α) were .84 for the experimental group and .87 for the control group. At T1, they were .91 for the experimental group and .90 for the control group.

Effort. Effort was measured with an adapted version of the scale developed by Butler (2007) and reflected students' effort during a specific course. An example item was: 'I make a high level of effort during class meetings' (see Appendix D for all used items). The response categories ranged from 1 (*never*) to 5 (*always*). At T0, internal consistencies (Cronbach's α) were .78 in both research groups. At T1, they were .73 for the experimental group and .75 for the control group.

Academic performance. Academic performance was measured as the attained final grade in the first course of the first year at university. Grades ranged from 1 *(lowest*) to 10 *(highest)*. This information was obtained from the student administration office of the law school.

Analyses

We used multivariate analysis to test whether there were any mean differences between the experimental group and control group in terms of academic self-efficacy belief, effort and performance during the first course at university (RQ1), controlling for academic self-efficacy belief and effort at secondary school. We calculated effect sizes (ES) when a significant effect of the intervention was found ($p < .05$). ES (Cohen's *d*) of about .10 is considered a small effect, ES of about .30 as a medium effect, and ES of .50 or higher as a large effect (Field & Hole, 2002).

We used structural equation modelling (Arbuckle, 2014) to test possible differences in the relationships between academic self-efficacy belief, effort and academic performance (RQ2). Indication of how well the conceptualised model fitted the data was based on Chi Squared test results, comparative fit index (CFI) and root mean square error of approximation (RMSEA). Model fit is considered as good if CMIN /df < 3.0, CFI > .95 and RMSEA < .05 (Kline, 2011). To obtain modification indices for

model fit, missing values were replaced by the linear trend at point (cf. Meeuwisse, de Meijer, Born & Severiens, 2017). Following Byrne (2004) and Bagozzi and Yi (1989), we first tested whether the conceptual model had a good fit for the full sample. Second, we tested model fit in the experimental group and the control group separately (i.e. within group models). Third, we tested if the model differed between the experimental group and control group when structural paths were estimated simultaneously (i.e. multi-group comparison).

Results

Preliminary Analyses

We found no significant difference between the experimental group and control group regarding gender (χ^2 = .97, *df* = 1, *p* = .32), ethnic background (χ^2 = .01, *df* = 1, *p* = .99), and secondary school GPA (*t* = -.59, *df* = 118, *p* = .56). In addition, the experimental group and control group did not differ in academic self-efficacy belief at T0 ($M(SD)_{exp}$ = 3.74 (.52), $M(SD)_{ctr}$ = 3.63 (.50), *t* = -1.16, *df* = 118, *p* = .25) nor in effort at T0 ($M(SD)_{exp}$ = 3.99 (.51), $M(SD)_{ctr}$ = 3.91 (.51), *t* = -.87, *df* = 118, *p* = .38).

The results in Table 1 show that, both in the experimental group as well as in the control group, students' average academic self-efficacy belief before enrolment at university (i.e. T0) correlated positively and statistically significantly with their average level of academic self-efficacy belief measured at the end of the first course at university (i.e. T1). Furthermore, Table 1 shows that effort at T0 correlated positively and statistically significantly with effort at T1 in the control group. However, in the experimental group effort during secondary school (T0) was not associated with effort at university (T1), indicating that historical effort did not influence current level of effort among the participants.

Furthermore, both in the experimental group as well as in the control group, students' average level of academic self-efficacy belief measured at the end of the first course at university (i.e. T1) did not correlate with first course grade. Students' effort at T1 within the experimental group correlated positively and statistically significantly with their first course grade. In the control group, no association was found between students' effort at T1 and their first course grade. These results indicate that students' first course grade was influenced by their effort during the first course only within the experimental group.

Table 1. Means, standard deviations and correlations for academic self-efficacy belief, effort and first course grade, per group

		M (SD) Exp. group	*M* (SD) Contr. group	1.	2.	3.	4.	5.
1.	Academic self-efficacy T0	3.74 (.52)	3.63 (.50)	(-)	.69**	.29*	.26	.03
2.	Academic self-efficacy T1	3.52 (.59)	3.35 (.59)	.55**	(-)	.04	.23	.19
3.	Effort T0	3.99 (.51)	3.91 (.51)	.50**	.23	(-)	-.15	-.06
4.	Effort T1	4.12 (.46)	3.92 (.62)	.50**	.47**	.56**	(-)	.46**
5.	First course grade	6.35 (1.16)	5.69 (1.15)**	-.05	-.05	.03	-.01	(-)

Note. Correlations for experimental group are presented above the diagonal, correlations for the control group below the diagonal. Variable 1 to 4 were measured on a 1-5 scale. Variable 5 was measured on a 1-10 scale.
* $p < .05$; ** $p < .01$; *** $p < .001$

Mean Differences Between Experimental Group and Control Group

The multivariate analysis (see Table 2) showed a statistically significant effect ($F = 5.03$, $df = 3$, $p = .00$), indicating that there was a difference between the experimental group and the control group at the post-test (T1). The between-subjects results (see Table 2) showed that the mean scores on academic self-efficacy belief and effort did not differ between the experimental group and control group. In other words, students in both groups reported on average comparable levels of academic self-efficacy belief and effort. We found a statistically significant difference between the experimental group and control group on first course grade, with students in the experimental group on average attaining higher grades (*M(SD)* = 6.35 (1.16)) than students in the control group (*M(SD)* = 5.69 (1.15)).

In sum, we did not find any evidence that students in the experimental group differ in terms of academic self-efficacy belief, effort and performance during the transition into higher education, except for the difference in academic performance.

Model Evaluation for the Full Sample

We used linear structural modelling analysis 1) to determine the relationships between academic self-efficacy belief and effort during the last year at secondary school and during the first course at university and first course grade at university, and 2) to test whether the relationships in the model are different for the experimental group and the control group (RQ2).

Table 2. Multivariate analyses of variance: differences according to participation in the intervention

	Df	*F*	Partial η^2	*p*	*Adjusted* R^2	Effect size
Multivariate test[a]	3	5.03	.14	.00		
Between subjects						
Academic self-efficacy at T1	1	1.36	.01	.25	.37	
Effort at T1	1	2.21	.02	.14	.20	
First course grade	1	13.83	.13	.00	.10	.57

[a] Observed power = .91. Covariates were academic self-efficacy at T0 and effort at T0.

The results showed that the conceptual model as described in Figure 1 had a good fit for the full sample (N = 120): χ^2 = 3.48, df = 4, p = .48; CFI = 1.00, RMSEA = .00, see Figure 2). During the transition into university, academic self-efficacy belief before enrolment (T0) had a statistically significant positive influence on students' academic self-efficacy belief during the first course (T1) (β = .56, p < .001). School effort at secondary school (T0) had a statistically significant positive impact on school effort at university (T1) (β = .25, p = .003). Students' self-efficacy belief during the first course (T1) was statistically positive related to school effort during the first course (T1) (β = .37, p < .001). Academic self-efficacy during the first course was, however, not significantly related to first course grade (β = .007, p = .94), and neither was effort (β = .16, p = .10).

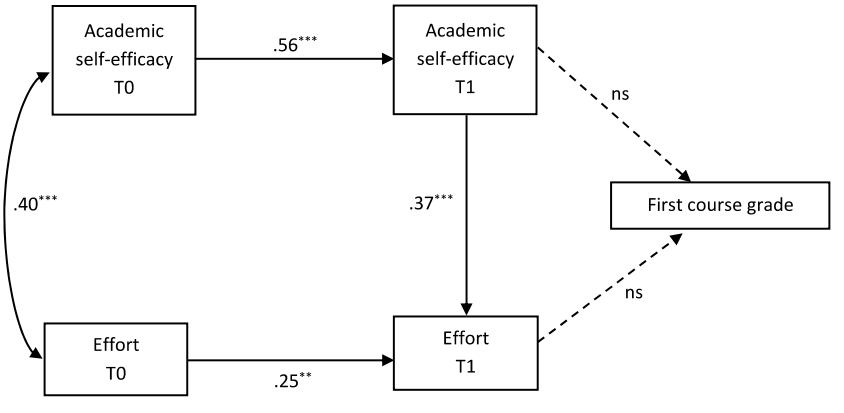

Figure 2. Full sample path model of academic self-efficacy belief and effort during the transition into higher education. Note. χ^2 = 3.48, df = 4, p = .48; CFI = 1.00, RMSEA = .00 (N = 120). Reported path values are standardised regression weights. p^* < .05; p^{**} < .01; p^{***} < .001

Next, we tested the accepted model for the full sample separately in the experimental group and the control group. We found good model fit in the experimental group (N = 58): χ^2 = 3.46, df = 4, p = .49; CFI = 1.00, RMSEA = .00) as well as in the control group (N = 62): χ^2 = 1.25, df = 4, p = .87; CFI = 1.00, RMSEA = .00). In other words, the model as fitted for the full sample holds true separately for respondents who participated in the intervention and for respondents who did not participate in the intervention.

Multiple Group Comparisons

To answer RQ2, we used multiple group comparison to test whether the relationships were statistically different for students who participated in the intervention (experimental group) and students who did not participate in the intervention (control group). Comparing the fit of the unconstrained model (Table 3, line 1) with the fit of the constrained model (Table 3, line 2), the between-group χ^2 - difference test was significant (Table 3, line 2). This indicates that the estimated relationships in the model were variant, i.e. one or more path estimates differed across the groups. Subsequently, we tested which parameter(s) appeared variant across the groups following the guideless as specified by Byrne (2004; see also Meeuwisse, Born & Severiens, 2014). Results of these tests (see Table 3, line 3 to 7) indicated that one path was variant across the groups. The relationship between school effort at secondary school (T0) and school effort during the first course at university (T1) was nonsignificant in the experimental group (β = -.14, p = .29), and statistically significantly positive for the control group (β = .47, p < .001). Thus, in the control group, the level of effort during secondary school had a positive impact on students' effort during the first course at university. This means that the higher (or lower) the level of effort before entering university, the higher (or lower) students' effort was during the first course at university. This relationship was not found in the experimental group. This means that students' level of effort during secondary school had no influence on their level of effort during the first course at university.

In sum, we did not find any evidence that the relationships in the model were different in the experimental group compared to the control group, except for the relationship between secondary school effort and university effort which was nonsignificant in the experimental group.

Table 3. Goodness-of-Fit Statistics for Tests of Invariance Across students in the experimental group and control group

Model description		χ^2	*df*	*p*	CFI	RMSEA	$\Delta\chi^{2a}$	Δ *df*	*p*
1.	Unconstrained between-group model	7.771	9	.56	1.00	.000			
2.	Constrained equal between-group model	36.577	14	.00	.771	.117	28.81	5	<.01
3.	Path from Academic self-efficacy at T0 to Academic self-efficacy at T1 constrained equal	8.33	10	.60	1.00	.000	.56	1	*ns*
4.	Path from Effort at T0 to Effort at T1 constrained equal	26.56	11	.01	.84	.109	18.79	2	<.01
5.	Path from Academic self-efficacy at T1 to effort at T1 constrained equal	10.18	11	.52	1.00	.000	2.41	2	*ns*
6.	Path from Academic self-efficacy at T1 to First Course Grade constrained equal	10.45	12	.58	1.00	.000	2.68	3	*ns*
7.	Path from Effort at T1 to First Course Grade constrained equal	16.55	13	.22	.964	.048	8.77	4	*ns*

[a] All models compared with model 1

Discussion

We investigated possible differences in academic self-efficacy belief, effort and performance during the transition into higher education between students who participated in a pre-academic programme (i.e. the experimental group) and students who did not participate in this programme (i.e. the control group). We now first summarise and explain the main findings. Next, we discuss implications for future research and practice, limitations and the main conclusion.

We found no difference in students' academic self-efficacy belief and effort at university, controlling for their academic self-efficacy belief and effort during secondary school. This means that the intervention did not affect students' average level of academic self-efficacy belief and effort during the transition into higher education. An explanation could be that students' academic self-efficacy belief and effort are highly related to context (Bandura, 1997; Schunk, 2012). The impact on students' academic self-efficacy and effort during the first course at university might have been greater if the intervention had been integrated with the first course at university. Moreover, an effect of the intervention on academic self-efficacy and effort might have been found if it had been measured immediately after the intervention, but not later in time, i.e. 6 weeks later at the end of the first course as was done in the present study.

We found a statistically significant difference in academic performance between the groups, indicating that students in the experimental group on average attained higher grades in the first course at university than students in the control group. This result confirms previous studies reporting that transition programmes can have a positive impact on first-year academic outcomes (e.g. Cabrera et al., 2013; Porter & Swing, 2006). This difference in academic performance could be due to a difference between the research groups regarding the relationships between academic self-efficacy, effort and performance. Structural equation modelling was therefore used to investigate possible differences in the relationships between the variables of this study.

The intervention affected the relationship between effort at secondary school and effort at university. Within the control group, secondary school effort had a significant impact on effort at university, which is similar to the findings of Hockings et al. (2018) that first-year students initially continue to study as they did at secondary school. However, in the experimental group, there was no influence of secondary school effort on effort at university, suggesting that the intervention might have changed students' learning effort. This effect on effort can be explained as follows. In the intervention, students reflected on their beliefs and behaviour related to education. At the end of the intervention, students were asked to declare what kind of a student they would be from then onwards. By doing this, we challenged students to take

responsibility for their own learning experience and thus stimulated them to show effort for learning (cf. Zimmerman, 2002). Although the average level of effort at the post-test was comparable in both groups (i.e. they all worked hard), the intervention could have reset students' effort in the experimental group, as effort in this group was no longer influenced by their historic secondary school effort. This resetting might have included adopting different learning strategies or different interactions with peers and teachers. These interpretations need further research.

Remarkably, and in contrast with findings of earlier studies (Richardson et al., 2012; Robbins et al., 2004, 2006; van Rooij, Jansen, & van der Grift, 2017) we found no evidence that effort at university influenced academic performance at university. Other studies have shown that transitioning students are in search of effective learning behaviour (cf. Christie et al., 2013; Gibney et al., 2011; Hockings et al., 2018; Tett et al., 2017), which could include showing effort for learning as investigated in this study. Our finding that effort is not related to academic performance might reflect the possibly ineffective trail-and-error strategies transitioning students apply (Hockings et al., 2018), resulting in a nonsignificant relationship between students' effort and academic performance. Further research is needed to clarify the relationship between effort and academic performance during the transition into higher education.

In line with earlier research (Phan, 2009), our study confirmed the importance of academic self-efficacy during secondary school for the development of academic self-efficacy at the beginning of university. Students' confidence in performing well before they actually started at university had a positive impact on students' confidence to perform well at university. Students' academic self-efficacy belief at university also has a positive impact on students' effort at university, confirming previous findings (cf. Bandura, 1986; Jung et al., 2017; Kassab et al., 2015; Komarraju & Nadler, 2013; Schunk, 1982). In other words, the more confidence students had in performing well at university, the more effort they reported during the first course at university.

Contrary to what was expected from earlier studies (Richardson et al., 2012; Robbins et al., 2004, 2006; van Rooij et al., 2017), academic self-efficacy in the first course did not influence the first course grade. An explanation for this finding might be as follows. Students' academic self-efficacy belief during the first course at university was measured before they sat their final first course exam. The level of self-efficacy belief thus reflects students' academic confidence before they had made a substantial performance assessment and received their first feedback on performing at university level. It could be that the students in our study at that particular point in time could not yet make an accurate (and thus reliable) estimation of their academic self-efficacy related to their academic performance (cf. Bandura, 1997; Honicke & Broadbent, 2016).

Implications for Research and Practice

The results show several important aspects for understanding (how to ease) the transition into university. First, our findings suggest that the intervention can change students' effort for learning by diminishing historical influences of effort. This result implies that targeted interventions on students with ineffective or low levels of effort might be helpful to ease the transition and increase first-year academic performance, but we have to be cautious with this conclusion. Further research is needed on the effect of the intervention on different levels of effort (high and low) and on the quality of effort.

Second, the intervention did not prevent the decrease in students' confidence to perform well at university, also known as the confidence dip (Putwain & Sander, 2016). In other words, students reported lower levels of academic self-efficacy during the transition than before the transition to university. Future research could investigate the development of academic self-efficacy and the effect of the intervention with more measurement points in time, for example, directly before and after the intervention, at the start of the course, mid-term and at the end of the first course. The intervention could have increased students' academic self-efficacy belief immediately after the intervention, but when taking the first course, experiences could have overruled this initial increase in confidence. In addition, support during the first course might be effective to keep students' academic confidence stable, for example, with regular feedback on their learning efforts and performances (Bandura, 1997).

Third, further work is needed to estimate the effects of the intervention on student learning and performance more precisely. A question raised by this study is, for instance, whether students' personal declarations might have a different impact on student learning behaviour and performance depending on what is declared. They could result in different levels of performance, academic self-efficacy or effort. More qualitative research is needed to clarify the precise change that eliminated the historical influence of student effort on current effort during the first course.

Limitations

Two important limitations should be acknowledged. This study was based on a relatively small sample size per research group, limiting the conclusions on the utility of the intervention. More experimental research with larger samples is needed to find out more about effects of interventions in the transition into higher education. Another limitation was the voluntarily participation in the intervention. Self-selection may have happened to some extent, although no differences were found between the experimental group and control group regarding gender, ethnic background, secondary school GPA, academic self-efficacy belief at T0 and effort at T0. Future interventions

should assign interested students randomly to either an experimental or a control intervention to investigate a possible effect more carefully.

Conclusion

We used a quasi-experimental pre-test – post-test design to determine the effect of a four-day intervention on students' academic self-efficacy belief, effort and performance during the transition into university. Participation in the intervention programme had a positive effect on students' academic performance, but not on academic self-efficacy belief or on effort. Structural equation modelling showed that the intervention seems to reduce the influence of students' effort during secondary school on their effort at university. More research is needed to explain this effect regarding students' effortful learning behaviour in relation to their self-efficacy and performance during the transition into higher education.

Chapter 6

Summary and discussion

Given the challenging transition from secondary school into higher education (HE), this dissertation focuses on how students can be supported to be academically successful in the first year at university. We investigate three challenges students are confronted with during the transition into HE and which could affect their academic success: 1) choosing a degree programme, 2) building relationships with peers and faculty and developing a sense of belonging in HE and 3) regulating their academic self-efficacy belief and effort for learning. This final chapter summarises and discusses the main findings, answers the research questions, examines the main limitations of this dissertation, provides directions for future research and presents implications for educational practice, in particular for HE. This chapter ends with a final conclusion of the main messages of this dissertation.

Summary of main findings

First, we summarise the results of the studies presented in Chapters 2, 3, 4 and 5 and then draw main conclusions related to the three challenges investigated in this dissertation.

Early, pre-university predictors of first-year academic success

The first study in Chapter 2 focuses on identifying early, non-cognitive predictors of first-year academic success. Besides examining two of the most important factors for academic performance, i.e. students' academic self-efficacy belief and effort (e.g. Richardson, Abraham, & Bond, 2012; Robbins et al., 2004), we explored students' reasons for attending university, as previous literature suggests that students' motivation to attend HE is related to academic achievement (cf. Guay & Vallerand, 1996; Guiffrida, Lynch, Wall, & Abel, 2013; Kennett, Read, & Stuart, 2013; Vallerand, Fortier, & Guay, 1997). More specifically, we investigated the academic self-efficacy belief, effort for learning and reasons to attend university of 453 students *before* they started at university and examined how these factors are related to their first-year academic performance at university, to identify early predictors of first-year academic success.

Multinomial logistic regression analyses revealed that pre-university effort positively predicts first-year retention, whereas pre-university academic self-efficacy does not. With exploratory factor analysis and confirmatory factor analysis, we identified six pre-university reasons for attending university: career perspective, personal development, compliance with the social environment, attractiveness of the institution, recommended by others, and location. None of these reasons appear to significantly predict first-year retention.

Although replication of this study in larger and other samples is warranted, our findings show that students' effort for learning during the last year at secondary school seems to be a pivotal factor of first-year academic success at university. However, students' pre-university academic self-efficacy, i.e. confidence in performing well at university before they actually start at university, does not affect academic success during the first year at university. The study contributes to the literature on academic motivation (e.g. Guiffrida et al., 2013; Kember, Hong, & Ho, 2008; Kennett et al., 2013; Vallerand et al., 1993) by identifying six pre-university reasons for attending university. Although past studies have shown that students' motivation to attend university, measured while they were enrolled at university, is related to academic success (Guiffrida et al., 2013; Kember et al., 2008; Kennett et al., 2013; Vallerand et al., 1993), our findings show that students' motivation measured before they start in HE does not affect their performance during the first year at university.

Changes in students' performance, effort and academic self-efficacy during the transition into university

Chapter 3 examines how first-year students adjust to university. We used a person-oriented approach (cf. Bergman & Trost, 2006; Räisänen, Postareff, & Lindblom-Ylänne, 2016) to investigate changes in students' performance, effort and academic self-efficacy from secondary education to university to identify profiles of student adjustment. Using qualitative analysis of semi-structured interviews with 34 students before and after the transition into university, we identified four student profiles: (1) Active Gliders, (2) Passive Gliders, (3) Passive Low Performers, and (4) Negative Strugglers.

Active Gliders show an active and positive adjustment to university. These students do not seem to experience significant hurdles in their academic performance, effort or academic self-efficacy belief during the transition into HE. For instance, they achieved good academic results at secondary school and at university; their level of study effort increased or continued at a sufficient to high level; and these students described a steady (strong) belief in their capabilities to pass the first year at university, i.e. showed a steady positive academic self-efficacy belief.

Passive Gliders show a passive but effective adaption to studying at university. Most students in this profile showed limited effort at secondary school and at university. Most of these students reported a stronger academic self-efficacy belief over time. Especially the Passive Gliders who described that they did not study much for their exams at university but passed them anyway, showed an increase in their self-efficacy belief compared to secondary school.

Passive Low Performers show a passive ineffective adjustment to university and reported a decrease in academic performance during the transition. Their

performance changed from sufficient at secondary school to just sufficient at university, or from just sufficient at secondary school to insufficient at university. Furthermore, most Passive Low Performers showed a steady limited level of effort for learning during the transition. However, most of these students showed steady positive self-efficacy beliefs. Before enrolment, they were confident they could pass their first year at university and remained confident after having received personally disappointing grades in their first trimester.

Negative Strugglers show a sharp decrease in their academic self-efficacy belief during the transition into HE. Although these students reported that they had put enough effort into their studies or felt that they increased their study effort, their academic results were disappointing, which resulted in low levels of academic self-efficacy belief. This profile therefore reflects an ineffective and insecure adjustment to HE.

To conclude, in contrast to variable-focused studies (e.g. Richardson et al., 2012; Robbins et al., 2004; Robbins et al., 2006), which mostly focus on linear relationships between variables measured during a single point in time, the current study uses a longitudinal person-oriented approach. This approach highlights within-person reciprocal relationships between performance, effort and academic self-efficacy (e.g. as described by Zimmerman (1990b)), and the between-person differences during an important period in students' educational career. As such, this study sheds a different light on first-year academic success by identifying four student profiles of adjustment to university.

The effects of an intervention during the transition into university

Chapters 4 and 5 examine the effects of a pre-academic intervention (i.e. before the start of the academic year) designed to support students in their first confrontation with HE, i.e. the encounter phase of the transition cycle (Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017a; Nicholson, 1990). The purpose of the intervention was to enhance the transition into university by addressing students' beliefs and behaviour and by supporting their need to relate to the university community (Slavich & Zimbardo, 2012). More specifically, we wanted to encourage students to have higher quality interactions with peers and faculty and increase their sense of belonging in HE and to stimulate students' academic self-efficacy belief and effort for learning to positively influence their first-year academic performance.

Chapter 4 focuses on the effects of the intervention on interaction behaviour and sense of belonging. Multivariate analyses revealed that in comparison to non-participants (n = 237), participants (n = 58) reported a higher quality of formal interaction with faculty as well as a higher quality of informal and formal interaction

with peers. Participants did not report a higher sense of belonging in HE than non-participants, nor did they show higher first-year retention rates. However, they did attain significantly higher grades in the first course, passed the first course more often, and attained higher first-year cumulative GPAs than non-participants. These findings indicate that participation in the pre-academic programme could give students a head start in HE that continues throughout their first academic year.

Chapter 5 focuses on the effects of the intervention on academic self-efficacy and effort in a pre-test – post-test design. Besides the difference in first course grades found in Chapter 4, multivariate analysis revealed that there was no difference in academic self-efficacy belief and effort between participants (n = 58) and non-participants (n = 62) in the post-test, when controlling for academic self-efficacy belief and effort during the pre-test. Structural equation modelling analyses showed that the influence of effort at secondary school on effort in HE differed between the research groups. In the control group, secondary school effort was positively related to current effort during the first course at university. In the experimental group, this relationship was non-significant, suggesting that participants' effortful behaviour at university might have been reset by the intervention as it was no longer related to students' historical, pre-university effortful behaviour. More research is needed to explain this effect regarding students' effortful learning behaviour in relation to their self-efficacy and performance during the transition into HE.

Main conclusions on the challenges: explaining how to support students for a successful transition into HE

We now discuss the results presented in Chapters 3, 4 and 5 in relation to the three challenges introduced in Chapter 1, namely choosing a degree programme, building relationships with peers and faculty and developing a sense of belonging in HE, and regulating one's academic self-efficacy belief and effort for learning.

Preparing for university: the role of pre-university reasons to attend university

Our results show that students' reasons to attend university measured before they start at university do not predict their first-year academic success at university. In other words, when asking students about their reasons (e.g. career perspectives or personal development) for applying to university during enrolment, their reasons do not seem to predict their first-year academic performance. Previous studies (Guay & Vallerand, 1996; Guiffrida et al., 2013; Vallerand et al., 1997) found a significant relationship between reasons to attend HE and academic success, but these studies measured reasons for attending HE when students were already enrolled in the first year, and not before students started HE as we did in our study. Kember et al.'s study (2008) showed

that students' reasons for starting HE change over time and are caused, for example, by how students experience their degree programme. One could therefore conclude that students' reasons starting an academic programme might have limited value for pre-university preparation policies and practices aiming to increase first-year retention rates. Especially during the transition into HE, students' reasons for attending university might change due to of the many new experiences during the first year at university.

The Dutch policy goal of "the right student in the right place" aims at increasing first-year retention rates (Ministerie van Onderwijs, Cultuur en Wetenschap [Ministry of Education, Culture and Science], 2015, p. 3) and suggests students' motivation for studying at university should be cultivated appropriately before enrolment at university. Dutch universities are required to offer applicants a so-called matching opportunity to find an optimal fit between the students' capacities, motivation, interests and the chosen degree programme. Vice versa, many Dutch universities oblige applicants to participate in the matching procedure and advise students on whether their capacities, motivation and expectations match with their chosen degree programme. Universities cannot, however, refuse applicants if they enrol in time (i.e. before 1 May). Findings on these matching procedures show weak evidence for improving first-year academic success (Bronkhorst, 2015; Nooij, Warps, Muskens, Kurver, & van den Broek, 2017). Yet faculty involved in the matching procedures feel that it helps students to transition more easily into university (Nooij et al., 2017). Further research is therefore needed to clarify how concepts in the matching procedures (such as pre-university motivation) are related to first-year academic performance.

Supporting students in building new relationships

This dissertation is one of few to use a quasi-experimental designed study (Chapter 4) to show that the quality of interaction between students and faculty, and the quality of (in)formal contact among students during the first course at university can be enhanced by a transition intervention conducted before students start HE. Although previous studies have shown the importance of student–faculty interaction for learning and performance (Schneider & Preckel, 2017), and the effect of transition programmes on academic outcomes (e.g. Cabrera, Miner, & Milem, 2013; Porter & Swing, 2006), as far as we know no previous study has reported on the impact of a transition programme on course-related student–faculty interaction. Our findings indicate that students can be empowered to constructively interact with teachers on course-related matters, to pro-actively and constructively approach fellow students for informal personal interaction, and to pro-actively approach fellow students to study or work together before starting their degree programme. This dissertation thus confirms previous

research that transition programmes can enhance interaction between students and peers, and between students and faculty (e.g. Ackermann, 1991; Walpole et al., 2008). More importantly, however, is that our findings suggest that the transition into HE can be eased for students by providing a momentum to learn and practice how to interact constructively with other people in the academic world before the start of the academic year. Practising during a pre-academic programme seems to support students' confidence to approach teachers with questions about course content and to discuss insights during the courses. These interactions contribute to their academic performance in the first year at university.

Transitioning into university: the role of academic self-efficacy belief

As students' academic self-efficacy belief is seen as one of the most important predictors of academic performance in HE (e.g. Hattie, 2009; Honicke & Broadbent, 2016; Richardson et al., 2012), we investigated its role during the transition into HE in several ways. Academic self-efficacy belief refers to a students' belief and confidence to perform well in the first year at university (Bandura, 1997). The study in Chapter 2 shows that students' pre-university confidence in their abilities to perform well at university does not predict how well they actually perform in the first year at university. In other words, pre-university academic self-efficacy does not seem to predict first-year academic performance. The qualitative study in Chapter 3 shows that students are initially confident that they will perform well at university based on their academic performance at secondary school. When starting at university, students' academic self-efficacy belief remains positive, but when they get poor results, their academic self-efficacy belief decreases. Despite our intervention (Chapter 5), we found a decrease in students' academic self-efficacy belief from secondary school to the first course at university, and that their academic self-efficacy belief was not related to their first-year academic performance, contradicting previous studies (Richardson et al., 2012; Robbins et al., 2004; van Rooij, Jansen, & van der Grift, 2017).

The varying results in the chapters of this dissertation might be explained by the time at which students' academic self-efficacy belief and academic performance were measured (Schunk & Pajares, 2009). The students in Chapter 3 reported their academic self-efficacy belief after having received their first course exam results, whereas the students in Chapters 2 and 5 reported their academic self-efficacy belief before sitting this exam. So perhaps the students in Chapters 2 and 5 could not accurately estimate their academic self-efficacy (cf. Bandura, 1997; Honicke & Broadbent, 2016), explaining the found nonsignificant relationship with first-year academic performance.

Our results show that students' academic self-efficacy belief is related to their displayed effort for learning (cf. Jung, Zhou, & Lee, 2017; Kassab, Al-Shafei, Salem, &

Otoom, 2015; Komarraju & Nadler, 2013). In Chapter 5, we found a positive relationship; the more academic self-efficacy, the more effort a student reported. The results in Chapter 3 revealed a more complex relationship between academic self-efficacy and effort, influenced by performance. For example, students showing low effort for learning and attaining relatively low but sufficient grades at university reported an increase in their academic self-efficacy belief, whereas students showing a substantial increase in effort for learning and attaining low grades reported a substantial decrease in academic self-efficacy belief. These results suggest that academic self-efficacy belief during the transition into HE might be viewed more as an outcome of an effective transition into HE than as a predictor of how well students will transition into, i.e. perform in HE.

Transitioning into university: the role of effort for learning

Our results show that effort plays a pivotal role in the transition from secondary school into university. Previous research has shown that, on average, there is positive relationship between students' effort for learning and academic performance at university (e.g. Honicke & Broadbent, 2016), implying the more effort, the higher academic performance. Our results reveal that students showed varying levels of effort during the first trimester. A substantial group showed a constant limited effort for learning but attained sufficient academic grades (Chapter 3). In other words, our findings reveal that the relationship between effort and academic performance could be less positive than assumed, at least during the transition into HE. A recent study of Coertjens, Donche, De Maeyer, van Daal and van Petegem (2017b) showed that during the transition from secondary education to HE students increased the use of learning strategies such as analysing, critical processing, relating and structuring, which are shown to be positively related to academic success (see Coertjens et al., 2017b). It could be that students show constant limited effort but change the quality of their effort depending on the requirements of the learning environment to succeed in the first year. Further research should be undertaken to investigate the relationships between level of effort, the quality of effort (i.e. learning strategies), academic performance and characteristics of the learning environment to clarify what makes a transition into HE successful.

Furthermore, our findings suggest that students' effort for learning could change during the transition. Students seem to hold on to their old learning habits (e.g. Hockings, Thomas, Ottoway, & Jones, 2018 and Chapter 3), but they are able to decrease the influence of their historical effort for learning as shown during secondary school on their current level of effort at university (Chapter 5). Put differently, it seems to be possible to reset students' effort for learning before they start at university, which

could ease the transition into HE. We found that our intervention enhanced the contacts students have with teachers and fellow students, and we found a correlation between interaction behaviour and performance (Chapter 4), but not between effort and performance (Chapter 5). Further research could investigate if the change in effort was due to students having better contact with fellow students and faculty, which, in turn could explain their academic performance.

Our results extend previous studies (e.g. Credé & Phillips, 2011; Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017) by showing that effort during secondary school affects effort during the first course at university (Chapter 3 and 5) and how well students perform during the first year at university (Chapter 2). Put differently, the amount of effort students put in during the last year at secondary school seems to be a relevant indication of how successfully students transition into university. The results in Chapter 3 suggest that a constant low level of effort during the transition into university might increase the chances of academic failure (i.e. Passive Low Performers profile), and that a constant sufficient level of effort might increase the chances of academic success (i.e. Active Gliders profile). The results in Chapter 5 reveal a significant relationship between pre-university effort and effort at university, but a nonsignificant relationship between effort at university and academic performance. Based on these results, we conclude that the relationship between pre-university effort and academic success at university might exist among specific groups of students. Future research should further investigate the relationship between pre-university effort, effort at university and academic performance at university. For example, students who do not show effort for learning during secondary school, and continue to do so at university, might experience a less successful transition into university. Further research could investigate why students who do not (have to) make an effort for learning during secondary school, continue to do little at the university. It can be a deliberate choice, but also an unconscious incompetence in not knowing how to learn. Especially the latter reason offers opportunities for support.

Strengths and weaknesses

The studies conducted in this dissertation contribute to the knowledge on how students transition into HE in several ways. Firstly, although extant research is available on important factors for first-year academic success (e.g. Credé & Phillips, 2011; Richardson et al., 2012; Schneider & Preckel, 2017), we highlight the dynamic character of transitioning into university and its effect on the important factors for academic success, such as effort for learning and academic self-efficacy belief. By applying a mixed-method research design, we developed a more in-depth and comprehensive

understanding of how students' effort for learning, academic self-efficacy belief, and performance evolves within individuals and between individuals during the transition into university (Kyndt, Donche, Trigwell, & Lindblom-Ylänne, 2017; Willems, Noyens, Coertjens, van Petegem, & Donche, 2018).

Secondly, this dissertation contributes to knowledge on relevant pre-university predictors of first-year academic success, valuable for HE selection or matching practices and governmental policies. Chapter 2 investigated students' reasons to attend university before they had enrolled and by doing so extended previous research on reasons to attend HE and the relationship with academic performance, which was previously only conducted among students who were already enrolled in HE (e.g. Guay & Vallerand, 1996; Guiffrida et al., 2013; Kennett et al., 2013; Vallerand et al., 1997). Our findings reflect that well-known relationships between non-cognitive factors (such as academic self-efficacy and effort) and academic performance during HE might be different during the transition from secondary school into HE.

Thirdly, Chapter 3 used a change matrix analysis tool to examine students' change in effort, academic self-efficacy and performance. This tool appeared to be an effective method to analyse longitudinal qualitative data on several concepts simultaneously and to identify different student profiles. The tool should be replicated in other qualitative studies to support or improve systematic longitudinal qualitative data analysis.

Chapters 4 and 5 of this dissertation are one of few quasi-experimental studies on the effects of a transition intervention on student behaviour and academic performance. The results shows that a transition intervention can change students' effort for learning, can improve interaction between students and faculty and between students and peers and can enhance first-year academic performance.

There are some limitations to this dissertation. A first limitation is the generalisability of the results. In all the studies in this dissertation, respondents participated voluntarily, and so self-selection may have happened to some extent. Although we found no differences between the experimental group and control group regarding background characteristics and pre-test variables in the quasi-experimental study (see Chapters 4 and 5), this does not completely rule out possible selection effects. Future quasi-experimental research on how to support students during the transition into HE should assign interested students randomly to either an experimental or a control intervention. Another limitation refers to the qualitative study (Chapter 3) in which all respondents came from the urban region of Rotterdam, the Netherlands. Although these students spread out over all Dutch universities, our findings cannot simply be generalised to all Dutch students and all universities. Furthermore, due to variability in educational systems across countries, and even within the Netherlands, it

is unknown to what extent the results found in this dissertation apply to students transitioning from secondary school into higher professional education (In Dutch: HBO) or to students outside the Netherlands transitioning into universities.

Second, this dissertation focused on investigating non-cognitive factors that could be improved by students during the transition into HE. This choice was based on previous research showing the importance of non-cognitive factors such as motivation, effort, self-efficacy belief and interaction behaviour for academic performance in HE (e.g. Hagenauer & Volet, 2014; Richardson et al., 2012; Robbins et al., 2006), next to traditional cognitive factors such as secondary school GPA and standardised ability test scores (Robbins et al., 2004). However, it should be kept in mind that our findings are part of a larger, more complex and dynamic puzzle of explaining student transition into HE (Kyndt et al., 2017).

Third, the scope of the intervention in Chapters 4 and 5 might have been too broad. The intervention considered several aspects, such as students' academic self-efficacy belief, effort for learning, interaction behaviour and sense of belonging. Although these constructs are important parts of the transition puzzle, the effects of the intervention may have been greater if the intervention had been more narrowly focused. As Walton (2014) argues, wise or impactful interventions seem to be simple and precise. Given our results, a future intervention could focus solely on enhancing students' effort for learning. However, to conduct a wise intervention, you need specific, well-founded theory on the underlying process of the intervention (Walton, 2014) - in this case on how students' effort for learning evolves during the transition into HE. Well-founded theory on the student transition into HE, including effortful behaviour is currently evolving (e.g. Kyndt et al., 2017; Tight, 2014), to which this dissertation makes an important contribution.

Practical Implications

The findings presented in this dissertation have several practical implications for how to support students during the transition into university. Below, four suggestions are given for policymakers, faculty and researchers involved in secondary education and in HE in the Netherlands to improve the academic success of first-year students. The suggestions are related to the phases of the transition cycle (i.e. preparation, encounter, adjustment and stabilisation).

The pivotal role of effort for learning

This dissertation reveals that students who show effort during the preparation phase (i.e. during secondary school) show a higher level of effort during the adjustment phase, adjust more easily and achieve higher academic results in the first year at university.

Secondary schools and higher education institutions (HEIs) should therefore promote the importance of showing effort for learning among students. In the last year of secondary school, the primary focus is on passing the final exams, which means that learning in the final year is a dull and repetitive exercise for some students. In addition, some students progress through secondary school relatively easily, a situation that can undermine the importance of showing effort for learning. In all cases, we suggest that secondary school students should be challenged and stimulated to show effort for learning. They should acknowledge that showing effort for learning is a positive attribute and that it is an indication that you are learning and growing (and not an indication that you are not smart enough) (Dweck, 2006).

For HEIs it seems opportune to intervene on students' effort for learning during the end of the preparation phase / start of the encounter phase. Our intervention took place two weeks before students started at university. In four days, the default manner of showing effort for learning seems to have been reset among students who participated in the intervention. Students can start more effectively in HE when they are asked to reflect on their reasons to attend university, on how they perceive their educational capabilities and performance and by asking them to write a personal declaration on their new, current state as an HE student.

Stimulate constructive interaction with fellow students and faculty

Previous research has convincingly shown that contact with faculty and peers contributes to students' academic success (e.g. Brouwer, Jansen, Flache, & Hofman, 2016; Schneider & Preckel, 2017). This dissertation adds that high quality contact with faculty and peers can be stimulated with an intervention at the end of the preparation phase / start of the encounter phase, giving students a head start at university. HEIs could consider an activity to make students aware that the quality of interaction with others and thereby their performance at university is influenced by their personal perceptions (Erhard, Jensen, & Granger, 2012; Walton & Brady, 2017; Zaffron & Logan, 2009). This awareness can decrease possible prejudice towards other students and faculty and can enhance students' ability to constructively establish contact with significant others in the academic learning environment, seek help and discuss course content and personal matters with fellow students and faculty. This activity can be done before students start at university to ease the transition into HE, similar to the pre-academic programme as conducted at Erasmus University Rotterdam (see Chapters 4 and 5) but could also be incorporated in the required professional competences of a degree programme to enhance further academic and professional performance. The impact of enhancing constructive contact with peers and faculty might even be greater if faculty were more involved in such interventions. Faculty could benefit by being more

aware of how they perceive the educational context and the students, how they interact with students, and their influence on the academic performance of students.

Give regular (formative) feedback to support students' academic self-efficacy belief and effort

Students' level of academic self-efficacy belief during the transition into university seem to decrease (Chapter 5) when students have not yet received any feedback on their performance. On the other hand, after students received their first-year results, a positive academic result supported or raised their confidence in their capabilities to perform well at university, while a negative academic result decreased their confidence to perform well (Chapter 3). Together these results show the importance of feedback during the encounter phase and adjustment phase of the transition. Previous research has shown that feedback has a high impact on how students learn and perform (e.g. Hattie & Timperley, 2007). HEIs and more importantly teachers should therefore consider giving first-year students (formative) feedback on a regular basis within each course, i.e. enhance high quality interaction with students, and not only grade them at the end of a course or at the end of a trimester or semester. Feedback gives students the best indication of what kind of effort is effective, which can enhance their confidence in their capabilities to perform well at university, which in turn stimulates effort for learning and performance (Schunk & Pajares, 2009).

What to prepare for a successful transition into HE

The results of the study on early predictors of first-year academic success (Chapter 2) did not show a relationship between students' motivation to attend university during the preparation phase and first-year academic performance at university. Current Dutch educational policy and practices at HEIs are partly based on the idea that students with the "right" motivation perform better in HE (Ministerie van Onderwijs, Cultuur en Wetenschap [Ministry of Education, Culture and Science], 2015, p.2). Our results call for more rigorous research on applied selection and matching procedures to create better evidence-based Dutch educational policy and practices on increasing (first-year) retention rates.

Furthermore, the question remains that if motivation is not a relevant predictor during the preparation phase of students' first year academic success at university, how can we ease the transition into HE? Looking at the significant effect of intervening in students' interaction skills, it might be more opportune to invest in these skills during the preparation phase of the transition cycle than in motivation. Students' motivation for studying at university might be best promoted during the adjustment phase when students are actually studying at university (see e.g. Guay & Vallerand, 1996; Guiffrida et al., 2013; Kennett et al., 2013; Vallerand et al., 1997).

Future Directions for Research

Based on the findings, limitations and implications of this dissertation, we now suggest several directions for future research. First, replication of the studies is needed to improve the generalisability of the results and reduce the possibility of self-selection bias in the results. For example, further research should be conducted on the relationship between pre-university reasons to attend university and first-year academic performance, including multiple cohorts and several indicators of academic performance such as GPA and obtained credits. In addition, qualitative research could be conducted to further clarify the nature of students' pre-university reasons to attend university and their role in the transition into HE.

Second, our qualitative longitudinal research design presented in Chapter 3 gave rich information on students' simultaneous development of effort, academic self-efficacy belief and performance during the transition into HE. It would be interesting to monitor students more closely, with more than two interviews as applied in this study, to get a better understanding of how students develop their learning behaviour and performance during the transition into HE. Longitudinal qualitative data combined with longitudinal quantitative data from a larger sample of students (see e.g. growth model analyses of Coertjens et al., 2017b) could clarify more precisely what combination of factors contributes to a successful transition into HE. This dissertation showed that effort plays a pivotal role in the transition into HE. In the literature, effort is seen as an overt expression of learning strategies, goal orientation and motivation in adjusting to HE (Robbins et al., 2006). The relationships between effort and learning strategies, goal orientation and/or adjustment to HE could be further investigated in a longitudinal mixed-method research design to shed more light on how students develop academically during the transition into HE.

Thirdly, we recommend an investigation into how the transition into HE takes place in different learning environments. Students make more study progress in a problem-based learning environment than in a more lecture-focused learning environment (Severiens & Schmidt, 2009), and students' effort for learning has a direct influence on academic success (credits and GPA) in a student-centred learning environment but not in a lecture-based learning environment (Severiens, Meeuwisse & Born, 2016). How can this be explained? It could be that more small-scale student-centred learning environments facilitate the transition better than large scale lecture-based environment. For example, that the quality of interaction with faculty and peers might be better in a student-centred learning environment than in a more lecture-based environment. And if there were better interaction with faculty and peers in

student-centred learning environments, would this also stimulate students' academic self-efficacy belief and effort for learning?

Several questions emerged from the intervention study. For example, in the intervention, students were asked to write a personal declaration on what kind of student they wanted to be. Students read out these declarations, which seemed to make an impact on themselves and their audience. What is the power of these written and spoken personal declarations? And how is this related to taking responsibility for their learning, i.e. students' effort for learning and seeking interaction with others? Besides these questions, further work needs to be done to explain what kind of activities affect what kind of factors relevant in the transition. The impact of specific assignments on students' interaction behaviour, academic self-efficacy belief and effort could be investigated to explain a possible effect on academic performance (see e.g. Dweck, 2006; Blackwell, Trzesniewski, & Dweck, 2007; Erhard et al., 2012; Walton & Brady, 2017; Zaffron & Logan, 2009).

Conclusion

Given the challenging transition from secondary school into university, we aimed to explain how students can be supported to be academically successful in the first year at university. An important result is that the transition from secondary education to university is experienced by students in different ways. Students were profiled as *Active Gliders*, *Passive Gliders*, *Passive Low Performers* and *Negative Strugglers*, based on their effort for learning, academic self-efficacy belief and performance. These results indicate that from the perspective of these different profiles, targeted support for students during the transition might be most effective for improving first-year academic success. In addition, this dissertation shows that effort for learning plays an important role during the transition to university. How engaged students are at secondary school determines to what extent they show effortful learning behaviour during the first months at university. This effortful learning behaviour seems to be influenced by a pre-academic programme intervention, aimed at giving students a head start. The pre-academic programme can improve student-faculty interaction and student-peer interaction of first-year students, and positively influence students' academic performance. Finally, the results in this dissertation indicate that students have different reasons to attend university (such as career perspective or for personal development), but that these reasons seem to have no influence on their academic success in the first year. The educational practice should take this into account when supporting the process of choosing a degree programme for prospective students.

Samenvatting
(summary in Dutch)

Dit proefschrift gaat over hoe studenten kunnen worden ondersteund om een succesvolle overstap te maken van het voortgezet onderwijs naar het hoger onderwijs (HO). Het aantal studenten dat start met studeren in het HO is wereldwijd de afgelopen decennia flink toegenomen. Hier in Nederland is in twintig jaar tijd het aantal HO-studenten verdubbeld: in 2016 startte 50.000 studenten met een bachelor opleiding aan een Nederlandse universiteit. Deze toegenomen deelname in het HO draagt bij aan economische groei en een betere concurrentiepositie, maar betekent echter niet dat ook meer studenten succesvol studeren in het HO. Eerdere onderzoeken wijzen uit dat de meeste studenten uitvallen in het eerste jaar van het HO (Barefoot, 2008; Gale & Parker, 2014; Harvey, Drew, & Smith, 2006; Tinto, 2012; Yorke et al., 1997). In Nederland zet ongeveer 33 procent van de eerstejaarsstudenten de initieel gekozen opleiding niet voort in het tweede studiejaar (Inspectie van het Onderwijs, 2016; 2017). In andere landen zoals de Verenigde Staten, Australië en het Verenigd Koninkrijk stopt ongeveer 20 procent van de studenten na het eerste jaar met hun gekozen opleiding (Australian Government, 2015; Higher Education Funding Council for England, 2016; National Center for Education Statistics, 2015).

Studenten ervaren verschillende uitdagingen als ze overstappen van het voortgezet onderwijs naar het HO, zoals het kiezen van de juiste opleiding, het opbouwen van een nieuw sociaal netwerk met medestudenten en docenten, het krijgen van vertrouwen in hun academische competenties en het leveren van de juiste inzet om te voldoen aan de eisen van de universiteit of hbo-instelling (Barefoot, 2008; Gale & Parker, 2014; Harvey et al., 2006; Tinto, 2012; Yorke et al., 1997). HO-instellingen willen hun eerstejaarsstudenten hierbij ondersteunen en bieden daarom verschillende soorten steun aan zoals studiekeuzevoorlichting, matchingsactiviteiten en overbruggingsprogramma's (Cabrera, Miner, & Milem, 2013; Hatch & Bohlig, 2016; Inkelas, Daver, Vogt, & Leonard, 2007; Keup, 2005; Porter & Swing, 2006). Er is echter meer onderzoek nodig om te beschrijven hoe de transitie naar het HO voor studenten verloopt en hoe in dit proces het studiesucces van studenten kan worden verhoogd (cf. Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017a; Pike, Hansen, & Lin, 2011; Porter & Swing, 2006; Sablan, 2014).

De focus van dit proefschrift is de transitie naar het HO. Deze transitie kan worden uitgelegd als een overgangsperiode met belangrijke veranderingen in de onderwijsloopbaan van studenten (Gale & Parker, 2014). Studenten leren de nieuwe leeromgeving te begrijpen in verschillende stappen of fasen (Coertjens et al., 2017a; Nicholson, 1990; Torenbeek, 2011). Tijdens de eerste transitiefase, de zogenoemde voorbereidingsfase (Nicholson, 1990), bereiden studenten zich voor op het HO. Ze voltooien hun eindexamens op het voortgezet onderwijs, oriënteren zich en kiezen uiteindelijk een studie aan een bepaalde instelling. Door een studie te kiezen, creëren

studenten voor zichzelf een eerste referentiepunt of houvast voor de andere uitdagingen tijdens de overstap naar het HO zoals het opbouwen van een sociaal netwerk, het krijgen van zelfvertrouwen in hun academische competenties en het leveren van de juiste inzet. Het kiezen van de juiste studie is dus zeer belangrijk voor studenten, omdat het verband houdt met andere belangrijke uitdagingen in de overstap naar het HO. Tijdens de tweede transitiefase, de kennismakingsfase, maken studenten voor het eerst kennis met de gekozen leeromgeving. Deze kennismakingsfase wordt snel opgevolgd door de aanpassingsfase waarin studenten zich aanpassen aan of zich verder ontwikkelen als HO student. Tijdens deze aanpassingsfase vormt zich bij studenten een bepaalde mate van stabiliteit waarin zij (de eisen van) de leeromgeving begrijpen en er mee om kunnen gaan. Dit helpt hen bij het goed presteren. Met andere woorden: in de laatste transitiefase, de zogenoemde stabilisatiefase, kunnen studenten het studeren zelf reguleren (Zimmerman, 1990a). De studies in dit proefschrift richten zich voornamelijk op de voorbereidings-, kennismakings- en aanpassingsfase in de transitie naar het HO.

In dit proefschrift bestuderen we drie uitdagingen waarmee studenten geconfronteerd worden tijdens de transitie en hun eerstejaarsstudiesucces kunnen beïnvloeden, te weten; 1) het kiezen van een studie, 2) het opbouwen van relaties met medestudenten en docenten en het ontwikkelen van een thuisgevoel op de universiteit, en 3) het reguleren van het geloof in eigen kunnen en studie-inzet. Het doel is om inzicht te krijgen in deze processen, zodat studenten beter kunnen worden ondersteund tijdens de overstap van het voortgezet onderwijs naar de universiteit. Dit kan hun academisch succes in het eerste jaar op de universiteit verbeteren.

In deze samenvatting presenteren we eerst de gebruikte onderzoeksmethoden. Vervolgens bespreken we de belangrijkste resultaten per uitdaging, en de implicaties hiervan voor de onderwijspraktijk. Tot slot volgt een conclusie.

Onderzoeksmethoden

In dit proefschrift worden vier studies beschreven. De volgende concepten zijn onderzocht: het geloof in eigen kunnen (in het Engels: academic self-efficacy belief), studie-inzet (in het Engels: effort for learning), student-docent interactie en student-medestudent interactie (in het Engels: student-faculty interaction / student-peer interaction), thuisvoelen (in het Engels: sense of belonging), en de studieprestaties van eerstejaarsstudenten (i.e. cijfers behaald in het eerste jaar, gemiddeld behaald cijfer in het eerste jaar en geslaagd of gezakt voor het eerste jaar). Er zijn verschillende

kwantitatieve en kwalitatieve onderzoeksmethoden gebruikt, wat een genuanceerd en verdiepend beeld over de transitie naar het HO oplevert.

In de eerste studie (Hoofdstuk 2) zijn kwantitatieve vragenlijstdata gebruikt gericht op studiekeuzemotieven van studenten, hun studie-inzet op het vwo, hun geloof in eigen kunnen om goed te presteren op de universiteit en hun studieprestaties in het eerste jaar op de universiteit. Deze data zijn verzameld via de Instroommonitor (de voorloper van de huidige Studiekeuzecheck-vragenlijst) van de Erasmus Universiteit Rotterdam en via de universitaire studentadministratie. Studenten vulden de vragenlijst vrijwillig in tijdens hun aanmelding voor de Erasmus Universiteit Rotterdam (EUR) en verstrekten hun studentnummer zodat studieresultaten konden worden gekoppeld aan de vragenlijstdata.

Aan de hand van longitudinale interviewdata van 'voor en na de poort', is in de tweede studie (Hoofdstuk 3) bestudeerd hoe de prestaties, studie-inzet en het geloof in eigen kunnen zich ontwikkelen bij eerstejaarsstudenten. Studenten zijn drie maanden voor het vwo-eindexamen geïnterviewd over hun studiekeuzegedrag en leergedrag, en dezelfde studenten zijn nogmaals geïnterviewd over dezelfde onderwerpen drie maanden na de start op een Nederlandse universiteit. Op basis van waargenomen veranderingen binnen individuele personen over tijd konden verschillende studentprofielen worden beschreven.

Voor de vierde en vijfde studie (Hoofdstuk 4 en 5) is een quasi-experimenteel onderzoeksproject uitgevoerd met eerstejaarsstudenten van de Erasmus School of Law. In deze studies zijn de effecten van een *pre-academic programme* (i.e. een transitie-interventie) onderzocht op enerzijds interactiegedrag, thuisvoelen en studieprestaties van de studenten (Hoofdstuk 4). Anderzijds zijn de effecten van het pre-academic programme op het geloof in eigen kunnen, studie-inzet en studieprestaties van de studenten bestudeerd (Hoofdstuk 5). Tijdens aanmelding voor de voltijds eerstejaars bacheloropleiding Nederlands Recht, Financieel Recht of Criminologie konden studenten zich vrijwillig aanmelden om deel te nemen aan het pre-academic programme. Degenen die deelnamen (experimentele groep) zijn vergeleken met studenten die niet deelnamen (controlegroep). De interventie vond plaats twee weken voordat de studenten hun eerste jaar op de universiteit begonnen. Alle studenten vulden een vragenlijst in tijdens aanmelding voor de EUR (i.e. de pre-test) en aan het einde van het eerste onderwijsblok op de universiteit (i.e. de post-test) en verleenden toestemming om hun studieprestatiegegevens te koppelen aan de door hen ingevulde vragenlijstgegevens.

Samenvatting van de resultaten

Voorbereiden op een succesvolle transitie: de rol van studiekeuzemotieven

Studiekeuzemotieven verwijzen in dit proefschrift naar redenen van studenten om te gaan studeren aan een universiteit. In Hoofdstuk 2 zijn zes motieven onderscheidden: carrièreperspectief, persoonlijke ontwikkeling, conformeren aan sociale verwachtingen, aantrekkelijkheid van de universitaire instelling, aanbevolen door anderen, en locatie. Vervolgens is onderzocht in hoeverre deze studiekeuzemotieven gerelateerd zijn aan de studieprestaties van studenten in het eerste jaar op de universiteit. Onze resultaten toonden aan dat de studiekeuzemotieven van eerstejaarsstudenten (gemeten voor de poort, i.e. voordat ze daadwerkelijk studeren aan een universiteit) niet voorspelden hoe goed ze presteerden op de universiteit. In andere woorden: aspecten die studenten bij aanmelding voor een studie van belang achten zoals bijvoorbeeld persoonlijke ontwikkeling, voorspellen niet hoe goed zij zullen presteren in het eerste jaar. Eerdere onderzoeken (Guay & Vallerand, 1996; Guiffrida, Lynch, Wall, & Abel, 2013; Vallerand, Fortier, & Guay, 1997) vonden wel een significant verband tussen studiekeuzemotieven en studiesucces, maar deze onderzoeken maten de studiekeuzemotieven op het moment dat studenten al studeerden aan de betreffende universiteit en niet voor de start in het HO zoals wij hebben gedaan. Een studie van Kember, Hong and Ho (2008) toonde aan dat de studiekeuzemotieven van studenten veranderen over de tijd en worden bepaald door bijvoorbeeld hoe studenten hun studie ervaren. Men zou daarom kunnen concluderen dat de motivatie van studenten om met een studie te starten van beperkte waarde is voor HO-beleid gericht op verhoging van het eerstejaars studierendement. Vooral tijdens de overgang naar het HO zouden de redenen van studenten om naar de universiteit te gaan kunnen veranderen als gevolg van de vele nieuwe ervaringen die zij opdoen in deze periode.

Het Nederlandse beleidsdoel van "de juiste student op de juiste plaats" is gericht op het verhogen van het eerstejaarsstudierendement (Ministerie van Onderwijs, Cultuur en Wetenschap, 2015, blz. 3) en suggereert dat de motivatie van studenten om te studeren aan de universiteit op de juiste manier moeten worden gecultiveerd voordat studenten zich inschrijven aan de universiteit. Aangemelde studenten hebben op basis van dit beleid wettelijk recht op een zogeheten matchingsactiviteit zodat een optimale fit kan worden bereikt tussen de capaciteiten, motivatie, interesses van studenten en de gekozen opleiding. Omgekeerd verplichten veel HO-instellingen aangemelde studenten om deel te nemen aan de matchingsprocedure en adviseren zij studenten of hun capaciteiten, motivatie en verwachtingen overeenkomen met de gekozen opleiding. Bevindingen over deze matchingprocedures tonen zwak bewijs voor het verbeteren van het

eerstejaarsstudiesucces (Bronkhorst, 2015; Nooij, Warps, Muskens, Kurver, & van den Broek, 2017). Toch zijn betrokkenen van de matchingprocedures van mening dat het studenten helpt gemakkelijker de transitie naar de universiteit te maken (Nooij et al., 2017). Verder onderzoek is daarom nodig om te verduidelijken hoe matchingsprocedures, inclusief de toegepaste concepten in die procedures zoals studiekeuzemotieven, gerelateerd zijn aan eerstejaarsstudiesucces.

Studenten ondersteunen bij het opbouwen van nieuwe relaties

In dit proefschrift is een studie beschreven die als één van de weinigen een quasi-experimenteel onderzoeksdesign heeft gebruikt om te onderzoeken of de kwaliteit van interacties tussen studenten en docenten, en de kwaliteit van interactie tussen studenten onderling kan worden verbeterd met een pre-academic programme (i.e. een transitie-interventie) uitgevoerd voordat studenten daadwerkelijk starten in het HO (Hoofdstuk 4). Eerdere studies hebben het belang aangetoond van interacties tussen studenten en docenten voor leren en presteren (Schneider & Preckel, 2017) en van het positieve effect van transitieprogramma's op studiesucces (bijvoorbeeld e.g. Cabrera et al., 2013; Porter & Swing, 2006), Onze bevindingen tonen aan dat studenten die deelnamen aan het pre-academic programme meer constructieve communicatie met docenten over studie-gerelateerde zaken rapporteerden, en pro-actiever medestudenten voor studie-gerelateerde samenwerking en voor informele interactie benaderden dan studenten die niet deelnamen aan de interventie. Deze resultaten bevestigen daarmee eerdere onderzoeksbevindingen dat transitieprogramma's de interactie tussen studenten en leeftijdsgenoten en tussen studenten en docenten kunnen verbeteren (bijvoorbeeld Ackermann, 1991; Walpole et al., 2008).

Onze bevindingen suggereren dat de overgang naar HO kan worden vergemakkelijkt voor studenten, i.e. dat hun studieprestaties in het eerste jaar verbeteren, door een momentum te bieden om te leren en te oefenen hoe constructief om te gaan met anderen in de academische wereld vóór het begin van de academische studie. Oefenen tijdens een pre-academisch programma lijkt het vertrouwen van studenten te ondersteunen om docenten te benaderen met vragen over cursusinhoud en om inzichten tijdens (werk)colleges te bespreken. Deze interacties dragen bij aan hun academische prestaties in het eerste jaar op de universiteit.

Overstappen naar de universiteit: de rol van het geloof in eigen kunnen

Omdat 'het geloof in eigen kunnen' van studenten wordt gezien als een van de belangrijkste voorspellers van studiesucces in het HO (bijv. Hattie, 2009; Honicke & Broadbent, 2016; Richardson, Abraham, & Bond, 2012), onderzochten we dit concept in de transitie naar het HO in verschillende hoofdstukken van dit proefschrift. Het geloof

in eigen kunnen verwijst naar het geloof en het vertrouwen van studenten in zichzelf om goed te presteren in het eerste jaar op de universiteit (Bandura, 1997). De resultaten uit Hoofdstuk 2 laten zien dat het vertrouwen van vwo6-ers in hun eigen academische capaciteiten niet voorspelt hoe goed deze studenten daadwerkelijk presteren in het eerste jaar op de universiteit. Met andere woorden, geloof in eigen kunnen gemeten voor de poort van de universiteit lijkt het studiesucces na de poort, in het eerste jaar, niet te voorspellen. Het kwalitatieve onderzoek zoals gepresenteerd in Hoofdstuk 3 laat zien dat studenten zich aanvankelijk zeker voelen over dat ze goed zullen presteren op de universiteit gebaseerd op hun vwo-prestaties. Bij het starten op de universiteit blijft hun geloof in eigen kunnen positief, maar wanneer studenten slechte resultaten behalen, neemt hun geloof in eigen kunnen af. Daarnaast stelden we in Hoofdstuk 5 vast dat het pre-academic programme niet kon tegenhouden dat het geloof in eigen kunnen van studenten daalde in de eerste periode op de universiteit. Tevens constateerden we in Hoofdstuk 5, in tegenstelling tot wat eerder onderzoek aantoonden (Richardson et al., 2012; Robbins et al., 2004; van Rooij, Jansen, & van der Grift, 2017), dat het geloof in eigen kunnen in die eerste periode geen invloed had op de studieprestaties in het eerste jaar.

De niet-eenduidige resultaten in dit proefschrift zouden kunnen worden verklaard door het tijdstip waarop het geloof in eigen kunnen en de studieprestaties zijn gemeten (Schunk & Pajares, 2009). De studenten in Hoofdstuk 3 rapporteerden hun geloof in eigen kunnen nádat ze hun eerste tentamens hadden gemaakt en de uitslag daarvan wisten, terwijl de studenten in Hoofdstuk 2 en 5 hun geloof in eigen kunnen rapporteerden vóórdat ze hun eerste tentamens maakten. Misschien konden de studenten in Hoofdstuk 2 en 5 hun eigen vertrouwen in academisch presteren nog niet goed inschatten (vergelijk Bandura, 1997; Honicke & Broadbent, 2016), wat de gevonden niet-significante relatie met eerstejaars studieprestaties verklaart.

Onze resultaten laten verder zien dat het geloof in eigen kunnen van studenten gerelateerd is aan hun inzet om te studeren (zie ook Jung, Zhou, & Lee, 2017; Kassab, Al-Shafei, Salem, & Otoom, 2015; Komarraju & Nadler, 2013). In Hoofdstuk 5 hebben we een positieve relatie gevonden; hoe meer geloof in eigen kunnen, hoe meer studie-inzet een student rapporteerde. De resultaten in Hoofdstuk 3 onthullen een meer complexe relatie tussen geloof in eigen kunnen en studie-inzet, beïnvloedt door de studieprestaties. Bijvoorbeeld studenten die weinig studie-inzet rapporteerden en relatief lage maar voldoende cijfers aan de universiteit behaalden, beschreven een toename van hun geloof in eigen kunnen. In andere woorden: met weinig inzet vakken halen verhoogde het academisch zelfvertrouwen van deze studenten. Daarentegen waren er ook studenten die een substantiële toename in studie-inzet rapporteerden en toch lage cijfers behaalden. Zij vermeldden een substantiële afname van hun geloof in

eigen kunnen. Deze resultaten suggereren dat het concept geloof in eigen kunnen tijdens de overstap naar het HO mogelijk meer als een uitkomst van een effectieve transitie naar het HO kan worden beschouwd dan als een voorspeller van hoe goed studenten zullen overstappen, dat wil zeggen, gaan presteren in het HO.

Overstappen naar de universiteit: de rol van studie-inzet

De resultaten in dit proefschrift laten zien dat studie-inzet een cruciale rol speelt in de overstap van de middelbare school naar de universiteit. Eerder onderzoek heeft aangetoond dat er gemiddeld gezien een positieve relatie bestaat tussen de inspanningen van studenten om te leren en academische prestaties aan de universiteit (bijvoorbeeld Honicke & Broadbent, 2016); hoe meer studie-inzet, hoe hoger de studieprestaties. Onze resultaten laten zien dat studenten in het eerste trimester op de universiteit verschillende mate van studie-inzet vertoonden. Een substantiële groep studenten vertoonden bijvoorbeeld langdurig beperkte studie-inzet, maar behaalden nochtans voldoendes (Hoofdstuk 3, zie het studentprofiel *Passive Gliders*). Met andere woorden, onze bevindingen onthullen dat de relatie tussen studie-inzet en studieprestaties tenminste tijdens de overgang naar het HO minder positief zou kunnen zijn dan tot nu toe is aangenomen. Een recente studie van Coertjens, Donche, de Maeyer, van Daal en van Petegem (2017b) toonde aan dat, tijdens de transitie van het middelbaar onderwijs naar het HO, studenten meer gebruik maken van leerstrategieën zoals analyseren, kritisch verwerken, relateren en structureren, waarvan is aangetoond dat deze strategieën positief samenhangen met studieprestaties (zie Coertjens et al., 2017b). Dit zou kunnen verklaren waarom studenten met langdurig lage studie-inzet tijdens de transitie toch voldoendes halen: de kwaliteit van hun inzet is mogelijk wel veranderd op basis van de eisen die worden gesteld om het eerste jaar op de universiteit te halen. Verder onderzoek zou moeten worden uitgevoerd om de verbanden te onderzoeken tussen de mate van studie-inzet, de kwaliteit van de studie-inzet (dat wil zeggen leerstrategieën), de academische prestaties en kenmerken van de leeromgeving om te verduidelijken wanneer de transitie naar het HO als succesvol kan worden beschouwd.

Onze bevindingen suggereren daarnaast dat de studie-inzet kan veranderen tijdens de transitie. In de resultaten van Hoofdstuk 3 en in een eerdere studie van Hockings, Thomas, Ottoway en Jones (2018) lijken studenten tijdens de overstap vast te houden aan hun oude leergewoonten. Maar zoals blijkt uit de resultaten in Hoofdstuk 5, kunnen studenten hun oude gewoonte ten aanzien van hun studie-inzet ook loslaten en een nieuwe mate van studie-inzet ontwikkelen. Anders gezegd, het lijkt mogelijk om de studie-inzet te resetten vlak voor de start van de opleiding middels een pre-academic programme, wat de overgang naar het HO zou kunnen vergemakkelijken.

Toekomstig onderzoek zou kunnen bestuderen of die verandering in inzet te danken is aan het feit dat studenten die het pre-academic programme hadden gevolgd beter contact hadden met docenten en/of medestudenten, en wat voor invloed dit heeft op hun studieprestaties.

Verder dragen onze resultaten bij aan de kennis over studie-inzet (zie bijvoorbeeld Credé & Phillips, 2011; Richardson et al., 2012; Robbins et al., 2006; Schneider & Preckel, 2017) doordat we hebben vastgesteld dat de mate van studie-inzet van studenten tijdens de middelbare school van invloed is op de mate van studie-inzet tijdens de eerste cursus aan de universiteit (Hoofdstuk 3 en 5) en op hoe goed studenten presteren tijdens het eerste jaar op de universiteit (Hoofdstuk 2). Anders gezegd, de mate van studie-inzet die studenten tijdens het laatste jaar op de middelbare school vertonen, lijkt een belangrijke indicatie te zijn voor hoe succesvol ze de overstap naar de universiteit zullen maken. De resultaten in Hoofdstuk 3 suggereren bijvoorbeeld dat een beperkte studie-inzet van studenten tijdens de transitie (dus zowel in het laatste jaar op het vwo als in het eerste trimester op de universiteit) de kans op academisch falen vergroot (zie het gevonden studentprofiel *Passive Low Performers*). En het vastgestelde studentprofiel *Active Gliders* laat zien dat studenten die zich tijdens de transitie continu met voldoende mate inzetten voor hun studie hun kansen op academisch succes in het eerste jaar op de universiteit vergroten.

Daarentegen profileerde een klein groepje studenten zich als *Negative Strugglers* in Hoofdstuk 3: zij rapporteerden dat ze naar hun idee zich voldoende inzetten of zelfs meer aan het studeren waren dan op het vwo, maar zij behaalden beduidend lagere of zelf te lage cijfers op de universiteit en verloren daarmee een substantieel vertrouwen in hun academische competenties. Ook vonden we in Hoofdstuk 5 een significant positief verband tussen inzet op het vwo en inzet op de universiteit, maar de inzet op de universiteit hield verder geen verband met de studieprestaties op de universiteit.

Op basis van deze resultaten uit de diverse hoofstukken concluderen we dat het verband tussen inzet op het vwo en studiesucces aan de universiteit mogelijk bestaat voor specifieke groepen studenten. Toekomstig onderzoek zou de relaties tussen studie-inzet op het vwo, studie-inzet op de universiteit en studieprestaties echter verder moeten bestuderen. Studenten die bijvoorbeeld weinig inzet tonen op de middelbare school, en weinig inzet blijven vertonen op de universiteit, zouden bijvoorbeeld een minder succesvolle overstap naar het HO kunnen ervaren. Ook zou toekomstig onderzoek kunnen bestuderen waarom studenten die geen moeite (hoefden te) doen op de middelbare school, nog steeds weinig inzet tonen op de universiteit. Het kan een bewuste keuze zijn, maar ook een onbewuste incompetentie

in het niet weten hoe te leren. Vooral de laatste reden biedt mogelijkheden voor ondersteuning aan studenten voor een succesvolle overstap naar het HO.

Implicaties voor de onderwijspraktijk

De bevindingen gepresenteerd in dit proefschrift hebben verschillende praktische implicaties voor het ondersteunen van studenten tijdens de overstap naar de universiteit. Hieronder geven we vier suggesties voor beleidsmakers, docenten en onderzoekers in het VO en HO die betrokken zijn bij verbeteren van het studiesucces van eerstejaarsstudenten. De suggesties hebben betrekking op de verschillende transitiefasen te weten, voorbereiden, kennismaken, aanpassen en stabiliseren.

De cruciale rol van studie-inzet

Dit proefschrift laat zien dat studenten die zich inspannen voor hun school tijdens de voorbereidingsfase (dat wil zeggen tijdens de middelbare school), tijdens de aanpassingsfase meer studie-inzet tonen, zich gemakkelijker aanpassen en hogere academische resultaten behalen in het eerste jaar op de universiteit. Middelbare scholen en hoger onderwijsinstellingen zouden daarom het belang van jezelf inzetten voor leren onder leerlingen en studenten moeten bevorderen. In het laatste jaar van de middelbare school ligt de nadruk vooral op het halen van de examens, wat betekent dat leren in het laatste jaar voor sommige leerlingen saai en repetitief is. Bovendien gaan sommige leerlingen relatief gemakkelijk door de middelbare school, een situatie die het belang van het tonen van inzet om te leren kan ondermijnen. In alle gevallen stellen we voor dat middelbare scholen hun leerlingen uitdagen en stimuleren om inzet te tonen voor leren. Bij voorkeur krijgen leerlingen het inzicht dat het tonen van inzet om iets onder de knie te krijgen een positieve eigenschap is, en dat jezelf inspannen om iets te leren een indicatie is dat je leert en groeit (in plaats van dat jezelf inspannen een indicatie is dat je niet slim genoeg bent) (Dweck, 2006).

Voor hoger onderwijsinstellingen lijkt het opportuun om te interveniëren op de studie-inzet van studenten gedurende het einde van de voorbereidingsfase / aan start van de kennismakingsfase. Onze interventie vond plaats twee weken voordat studenten op de universiteit begonnen. In vier dagen lijkt de standaardmanier om inspanning voor leren te tonen gereset te zijn bij studenten die hebben deelgenomen aan de interventie. Studenten kunnen effectiever starten in het HO wanneer hen wordt gevraagd te reflecteren op hun redenen om naar de universiteit te gaan, op hoe zij hun academische capaciteiten en prestaties tot nu toe hebben ervaren en door hen te vragen een persoonlijke verklaring te schrijven over wie zij willen zijn vanaf nu als HO-student.

Stimuleer constructieve interactie met medestudenten en docenten

Eerder onderzoek heeft overtuigend aangetoond dat contact met docenten en medestudenten bijdraagt aan het academisch succes van studenten (bijvoorbeeld Brouwer, Jansen, Flache, & Hofman, 2016; Schneider & Preckel, 2017). Dit proefschrift voegt daaraan toe dat constructieve interactie met docenten en medestudenten kan worden bevorderd middels een interventie aan het einde van de voorbereidingsfase / start van de kennismakingsfase, waardoor studenten een vliegende start maken op de universiteit. Hoger onderwijsinstellingen kunnen een interventie overwegen om studenten bewust te maken dat de kwaliteit van hun interactie met anderen en daarmee hun prestaties op de universiteit worden beïnvloed door hun eigen persoonlijke percepties op situaties (Erhard, Jensen, & Granger, 2012; Walton & Brady, 2017; Zaffron & Logan, 2009). Dit bewustzijn kan mogelijke vooroordelen jegens andere studenten en docenten verminderen en kan het vermogen van studenten vergroten om constructief contact te leggen met belangrijke anderen in de academische leeromgeving, om hulp te zoeken en om zowel studie-gerelateerde als persoonlijke zaken te durven bespreken met medestudenten en docenten. Deze interventie kan worden uitgevoerd voordat studenten op de universiteit beginnen om de overgang naar het HO te vergemakkelijken, vergelijkbaar met het pre-academic programme zoals uitgevoerd aan de Erasmus Universiteit Rotterdam in 2013 (zie Hoofdstuk 4 en 5). De impact van meer constructief contact met medestudenten en docenten zou mogelijk ook kunnen worden vergroot als docenten en staf van een opleiding meer betrokken zouden zijn bij een dergelijke interventie. De interventie zou bijvoorbeeld kunnen worden geïntegreerd in het onderwijs en de eindtermen van een opleiding. Het mes van de interventie snijdt dan aan twee kanten; studenten verbeteren hun netwerkcontacten en studieprestaties, en docenten profiteren door meer bewust te zijn van hoe zij de onderwijscontext en de studenten waarnemen, hoe zij omgaan met studenten, en hun invloed op de academische prestaties van studenten.

Geef studenten regelmatig (formatieve) feedback ter ondersteuning van hun geloof in eigen kunnen en studie-inzet

In dit proefschrift bleek dat het geloof in eigen kunnen van studenten tijdens de overstap naar de universiteit te dalen als studenten geen feedback op hun prestaties ontvangen. Als studenten wel feedback ontvingen, bijvoorbeeld in de vorm van cijfers, dan ondersteunde of verbeterde een positief cijfer het geloof in eigen kunnen bij studenten, terwijl een negatief cijfer het geloof in eigen kunnen verminderde. Samen laten deze resultaten het belang zien van feedback tijdens de kennismakings- en aanpassingsfase in de transitie naar het HO. Eerder onderzoek heeft aangetoond dat feedback een grote invloed heeft op hoe studenten leren en presteren (bijvoorbeeld Hattie & Timperley, 2007). Docenten in het HO zouden daarom moeten overwegen om

in elke cursus regelmatig (formatieve) feedback aan hun eerstejaarsstudenten te geven. Met andere woorden: verbeter het contact als docent met je studenten, geef ze niet alleen een cijfer aan het einde van de cursus, of pas aan het eind van een trimester of semester. Feedback geeft studenten de beste indicatie van wat voor soort inspanning effectief is, wat hun vertrouwen in hun eigen capaciteiten kan vergroten om goed te presteren op de universiteit, wat op zijn beurt hun inzet voor leren en prestaties stimuleert (Schunk & Pajares, 2009).

Voorbereiden op een succesvolle overstap naar hoger onderwijs

De resultaten uit Hoofdstuk 2 naar vroege voorspellers van eerstejaarsstudiesucces toonden geen verband aan tussen de studiekeuzemotieven van studenten ten tijde van de voorbereidingsfase en hun latere studieprestaties in het eerste jaar op de universiteit. Het huidige Nederlandse onderwijsbeleid en de daarbij horende praktijken binnen hoger onderwijsinstellingen (zoals de matchingsactiviteiten) zijn echter deels gebaseerd op het idee dat studenten met de "juiste" motivatie beter presteren in het HO (Ministerie van Onderwijs, Cultuur en Wetenschap, 2015, p.2). Onze resultaten vragen om meer diepgaand onderzoek naar de toegepaste selectie- en matchingsprocedures om goed onderbouwd beleid te voeren en effectieve activiteiten uit te voeren voor het verhogen van het (eerstejaars) studierendement. Want als motivatie voor de poort geen relevante voorspeller is van studiesucces in het HO, hoe zou de overstap naar het HO dan wel kunnen worden ondersteund aan studenten? Kijkend naar het significante effect van de door ons ontwikkelde pre-academic programme-interventie op de interactievaardigheden van studenten, zou het mogelijk effectiever kunnen zijn om te investeren in het ondersteunen van dit soort vaardigheden bij aankomende studenten dan te focussen op hun studiemotivatie. De studiemotivatie van studenten lijkt het best te kunnen worden bevorderd tijdens de aanpassingsfase wanneer studenten daadwerkelijk studeren aan de universiteit (zie bijvoorbeeld Guay & Vallerand, 1996; Guiffrida et al., 2013; Kennett, Reed, & Stuart, 2013; Vallerand et al., 1997).

Conclusie

Gezien de uitdagende overstap van de middelbare school naar de universiteit is in dit proefschrift bestudeerd hoe studenten kunnen worden gesteund om academisch succesvol te zijn in het eerste jaar op de universiteit. Een belangrijk resultaat is dat de overgang van voortgezet onderwijs naar universiteit op verschillende manieren door studenten wordt ervaren. Studenten konden worden geprofileerd als *Active Gliders*, *Passive Gliders*, *Passive Low Performers* en *Negative Strugglers*, op basis van hun inzet

om te leren, geloof in eigen kunnen en behaalde prestaties. Deze profielen geven aan dat ondersteuning op maat tijdens de transitie mogelijk het meest effectief is om het studiesucces van eerstejaarsstudenten te verbeteren.

Daarnaast laat dit proefschrift zien dat de studie-inzet van studenten een belangrijke rol speelt tijdens de overstap naar de universiteit. De mate van inzet op de middelbare school bepaalt in welke mate studenten zich inzetten tijdens de eerste maanden op de universiteit. De studie-inzet lijkt te kunnen worden beïnvloed met een *pre-academic programme* interventie dat erop is gericht studenten een vliegende start te geven aan de universiteit. Verder kan het pre-academic programme de kwaliteit van het contact dat studenten hebben met medestudenten en docenten verbeteren en hun studieprestaties verhogen. Tot slot geven de resultaten in dit proefschrift aan dat studenten verschillende redenen hebben om naar de universiteit te gaan (zoals loopbaanperspectief of voor persoonlijke ontwikkeling), maar dat deze redenen in het eerste jaar geen invloed lijken te hebben op hun academische succes. De onderwijspraktijk dient hier rekening mee te houden bij het ondersteunen van het studiekeuzeproces van aanstaande studenten.

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Appendices

Appendix A

Table A1. Varimax rotated exploratory factor analysis on pre-university reasons for attending university (*n* = 453)

	Kept factors						Dropped factors			
Items per factor	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Career perspective										
I want to have a good job later.	**.549**	.072	.201	-.032	.061	.216	-.140	-.397	.042	.192
This programme will offer me solid employment prospects on the labour market.	**.785**	.080	.029	-.037	.065	.127	-.022	.081	.092	.067
The programme will offer me access to professions with a good name.	**.782**	.103	.049	.039	.064	.122	.070	.151	.159	.044
This programme offers better prospects for a good job than other programmes.	**.708**	.003	.009	.289	-.055	-.024	.211	.056	-.237	.032
The programme enjoys an excellent reputation.	**.500**	.139	.139	.325	-.192	.016	.069	.137	-.131	.363
This programme will help me earn a good salary later on.	**.802**	.015	-.048	.125	.066	.026	.009	.011	.013	.101
2. Personal development										
I want to expand my knowledge.	.020	.101	**.789**	.077	-.009	-.022	.157	-.121	-.013	.112
I enjoy learning.	-.081	-.001	**.604**	-.065	-.132	-.001	.420	.239	-.069	-.020
I want to achieve further personal development.	.021	.262	**.770**	.068	-.078	.051	-.026	-.052	.134	-.054
I aim to continue on to a programme of the highest possible level.	.176	-.105	**.607**	.012	-.054	.204	.086	.074	.004	.072
The subjects of this programme intrigue me.	-.004	.175	**.524**	-.120	.039	-.058	-.270	.288	.220	.071
3. Compliance social environment										
Other members of my family have studied or will also be studying at university.	.089	.104	.009	.215	-.086	**.690**	.024	-.038	.025	.093
My friends already study or plan to study at university.	.018	.033	.041	.368	-.071	**.576**	.032	.252	-.050	.129
My parents/family/guardians expect me to go to university.	.117	-.042	.043	.091	.052	**.779**	.225	.072	.042	-.087
4. Attractiveness of the institution										
The atmosphere at this university is pleasant.	.066	**.684**	.133	.101	.067	.013	.072	.195	.102	.157
This university offers an appealing range of student activities, which focus on sports, culture, opportunities to socialise.	.020	**.605**	.018	.213	.007	.104	.234	.206	.077	.115
I like the city of [city name].	.080	**.702**	.060	.101	.034	.071	.052	-.180	-.048	-.196

(*continued on next page*)

Table A1 continued.

The campus of this university is appealing.	.078	**.654**	.057	.000	.132	-.046	.021	.157	-.087	.092
5. Recommended by others										
Others recommended this programme.	.162	.023	.035	**.715**	-.055	.039	-.061	.143	.009	-.024
I know students who are already enrolled in this programme.	.111	-.008	-.036	**.753**	.028	.141	.002	.015	.063	.023
Others recommended this institution.	.054	.281	.038	**.610**	.085	.136	.145	-.046	.108	.163
I know other students who want to go to this university.	-.019	.297	-.068	**.596**	.335	.166	.063	-.021	-.020	-.011
6. Location / stay living at home										
The university is located a reasonable distance from my current place of residence.	.042	.180	-.044	.131	**.831**	.006	-.039	.032	-.009	-.065
I want to live in lodgings. *(recoded)*	.006	-.283	-.057	-.165	**.658**	-.131	.173	-.192	.161	-.030
I can live or continue to live at home.	.032	.149	-.060	.099	**.858**	-.011	-.092	.073	-.061	-.008
Dropped items										
I am eligible for admission to university by virtue of my diploma.	.111	.020	.123	-.153	.176	.389	.001	.128	-.284	.432
With my current diploma, my job prospects on the labour market are extremely limited.	.326	.079	.085	-.127	-.026	.125	-.099	.005	-.576	-.084
I see a university education as a logical next step in my academic career.	.141	.057	.438	-.226	.037	.381	-.101	.062	-.126	.275
Student life appeals to me.	.049	.418	.255	.137	-.382	.449	-.169	-.017	.034	-.170
I want to practice a certain profession later.	.343	.094	.152	.013	.006	.171	.105	.097	.527	-.101
This programme is a good match for my competences and abilities.	.234	.196	.361	-.008	.016	.087	-.128	.471	.247	-.051
This programme offers me a broad basis for the future.	.425	.218	.373	.088	-.087	-.140	.093	.158	.015	-.104
This programme has a higher standing in my everyday life than the other programmes I considered.	.391	.084	.147	.244	-.117	.295	.335	.034	.000	-.170
It is a programme that I can handle.	.289	.275	.063	.102	.062	.262	-.011	.526	.085	.042
The programme will offer me access to professions that appeal to me.	.397	.169	.264	.002	.028	-.016	-.060	.091	.552	.161
I fit in with the other students of this programme.	.154	.199	.086	.399	-.068	.160	.186	.511	-.057	-.024
This university has an outstanding reputation.	.225	.191	.080	.192	-.173	.041	.119	-.165	.199	.655
This university offers other appealing bachelor's programmes.	.120	.241	.069	.182	.299	.102	.515	.071	.072	.215
This university is an international education institution.	.141	.450	.160	-.011	-.174	.061	.496	-.098	.172	.196
This university offers appealing master's courses as a follow-up to a bachelor's programme.	.212	.460	.149	.164	-.008	-.028	.088	.139	.163	.342
This university is a multicultural educational institution.	.085	.483	.127	-.022	-.013	.205	.589	-.001	.075	-.050

Note. Factor loadings greater than .500 and with a discriminant loading of at least .200 with other factors are shown in boldface.

Appendix B

Construct: Effort

Definition: Effort refers to trying hard, working hard, paying attention and showing persistence when faced with challenging tasks (Pintrich, 2004; Robbins et al., 2006; van Herpen et al., 2017).

Interview questions interview 1 – Secondary school: How do you learn? What do you do when you study? How do you prepare for your final exams? What is your goal when you learn?

Interview questions interview 2 – University: Did you study differently at secondary school than you do now at university? How successful do you feel in studying at university? How do you experience the learning environment?

Table B1. Coding of effort in interview 1

Code name	***Code definition***	***Examples of answers***
Limited effort at secondary school	Descriptions indicating that a student does not work hard for his/her studies during the last year at secondary school	I am lazy I (always) procrastinate studying I start (too) late with studying I do little / nothing for classes / tests I put in just enough effort to pass tests / assignments
Sufficient effort at secondary school	Descriptions indicating that a student puts sufficient effort in his/her studies during the last year at secondary school	I do enough for tests or class I start on time with studying for tests I do my best I try not to postpone studying until the very last minute
High effort at secondary school	Descriptions indicating that a student works hard for his/her studies during the last year at secondary school	I study hard for my exams I start studying in time I follow extra lessons for my exams I have extra tuition for … ; I put in a lot effort I do a lot of studying

Table B2. Coding of effort in interview 2

Code name	***Code definition***	***Examples of answers***
Limited effort at university	Descriptions indicating that a student does not work hard for his/her studies during the first trimester at university	I do just enough for tests / assignments to pass them I start (too) late with studying for exams I postpone studying until x days / a week before the exams I am a lazy student I do not put in enough effort I used only x percent of my ability
Sufficient effort at university	Descriptions indicating that a student puts sufficient effort in his/her studies during the first trimester at university	I study for tests / class I start studying for tests on time I do my best I study regularly during the week
High effort at university	Descriptions indicating that a student works hard for his/her studies during the first trimester at university	I study a lot for my tests It put in a lot of effort I study every day I study many hours a week I really study hard

Construct: Academic self-efficacy belief
Definition: Academic self-efficacy refers to students' belief about their capabilities to learn or perform certain behaviour at a designated level (Bandura, 1997).
Interview questions interview 1 – Secondary school: What are your expectations about your performance during your first year at university? How confident are you that you will pass your first year at university?
Interview questions interview 2 – University: What is your definition of a successful student? Are you a successful student? How confident are you that you will pass the first year at university?

Table B3. Coding of academic self-efficacy belief in interview 1

Code name	*Code definition*	*Examples of answers*
Low academic self-efficacy belief at secondary school	Descriptions indicating that a student has doubt, feels uncertain and/or expresses negative feelings about performing well during the first year at university.	I am not sure I hope I will do well I am not sure if I am smart enough
Sufficient academic self-efficacy belief at secondary school	Descriptions indicating that a student is confident and/or has a positive feeling about performing well during the first year at university.	I should be able to pass; I passed the pre-university track I should be able to pass; I'm going to do my best I think I can do it It should be possible
Strong or high academic self-efficacy belief at secondary school	Descriptions indicating that a student is very confident, feels positive and has no doubt about his/her abilities to perform well during the first year at university.	Yes, I am going to make it I am (very) confident I do not think I will have any problems Very sure

Table B4. Coding of academic self-efficacy belief in interview 2

Code name	*Code definition*	*Examples of answers*
Low academic self-efficacy belief at university	Descriptions indicating that a student has doubts, feels uncertain and/or expresses negative feelings about performing well during the first year at university.	No, I do not think I will pass all the courses this year I do not know yet I am not sure I will pass the first year
Sufficient academic self-efficacy belief at university	Descriptions indicating that a student is confident and/or has a positive feeling about performing well during the first year at university.	I think I will pass all the courses Yes, I am motivated to pass the first year Yes, I am going to work hard
High or strong academic self-efficacy belief at university	Descriptions indicating that a student is very confident, feels positive and describes no doubt about his/her abilities to perform well during the first year at university.	Yes, I will pass the first year Yes, sure Yes, no problem. I am really confident - no problem

Construct: Academic performance
Definition: Grades or Grade Point Average (GPA) attained by the student
Interview questions interview 1 – Secondary school: What was your GPA in the last year of secondary school?
What is the difference between your performance at secondary school and university?
Interview questions interview 2 – University: What are your exams results?

Table B5. Coding of academic performance in interview 1

Code name	***Code definition***	***Examples of answers***
Just sufficient performance at secondary school	Descriptions indicating that a student performed *just sufficiently* in tests / final exams during the last year at secondary school.	GPA between 5.5 and 6.9 on a scale from 1 (= low) to 10 (= high).[1]
Sufficient performance at secondary school	Descriptions indicating that a student performed *sufficiently* in tests / final exams during the last year at secondary school.	GPA between 7.0 and 7.9 on a scale from 1 (= low) to 10 (= high).[1]
Good performance at secondary school	Descriptions indicating that a student performed *well to excellently* in tests / final exams during the last year at secondary school.	GPA of 8.0 or higher on a scale from 1 (= low) to 10 (= high).[1]

[1] The distinction between just sufficient, sufficient and good is based on how grades are commonly considered and awarded to students in the Netherlands (Nuffic 2016). GPA was self-reported and indicates the general level of performance of a student during the last year at secondary school.

Table B6. Coding of academic performance in interview 2

Code name	***Code definition***	***Examples of answers***
Insufficient performance at university	Descriptions indicating that a student performed *insufficiently* and did not pass a test or assignment in the first trimester at university.	Grades lower than 5.5 on a scale from 1 (= low) to 10 (= high).[2]
Just sufficient performance at university	Descriptions indicating that a student performed *just sufficiently* in tests / assignments in the first trimester at university.	Grades between 5.5 and 6.9 on a scale from 1 (= low) to 10 (= high).[2]
Sufficient performance at university	Descriptions indicating that a student performed *sufficiently* in tests / assignments in the first trimester at university.	Grades between 7.0 and 7.9 on a scale from 1 (= low) to 10 (= high).[2]
Good performance at university	Descriptions indicating that a student performed *well to excellently* in tests / assignments in the first trimester at university.	Grades of 8.0 or higher on a scale from 1 (= low) to 10 (= high).[2]

[2] An average grade was calculated per student, based on the student's answers to indicate the general level of performance of the student during the first trimester at university.

Appendix C

Individual scale items

Formal faculty interaction

Interaction between students and faculty about study-related matters

1. I take my tutor's questions seriously.
2. I attract my tutor's attention if I have a question.
3. I go easily to my tutor if I have remarks or questions.
4. I learn a lot from the tutor.
5. I talk to the tutor about my gained insights.
6. I talk to my tutor about my progression in my studies.
7. My contact with the tutor has a positive influence on my academic performance.

Informal faculty interaction

Interaction between students and faculty with a personal approach

1. I say hello when I meet my tutor outside the classroom.
2. I sometimes share personal stories with the tutor.
3. I have a positive relationship with at least one of my teachers in the course programme.
4. I know the names of my teachers.
5. Sometimes I talk to my tutor about personal matters.

Formal peer interaction

Interaction among students about study-related matters

1. I talk to fellow students and discuss course material or assignments.
2. I mainly worked alone in this course (reverse scored).
3. I like getting feedback from fellow students.
4. I invite fellow students to work together with me on assignments.
5. I listen to the remarks of fellow students.
6. I find it difficult to find (a group of) fellow students with whom I can work together (reverse scored).
7. I think contact with fellow students helps me to get better grades.
8. I work well together with fellow students.

Informal peer interaction

Interaction among students with a personal approach

1. I am interested in my fellow students.
2. I hardly know anyone in my course programme (reverse scored).
3. I am engaged with my fellow students.
4. I invite fellow students to spend time together.
5. I have close personal contact with fellow students.

Sense of belonging

1. I feel I can be myself at this university.
2. I feel that I fit in with the other students at this university.
3. I can talk with fellow students about my interests and activities.
4. I feel that my family values are accepted by fellow students.
5. My appearance (language, accent, looks) is accepted by fellow students.
6. I feel accepted by fellow students.
7. I feel that I belong in this course programme.

Appendix D

Individual scale items

Academic self-efficacy

1. I believe I will receive excellent grades in the first year.
2. I am certain I can understand the material we have to read in the first year.
3. I am confident I can understand the basic concepts taught in the first year.
4. I am confident I can also understand the complex material presented by the teachers.
5. I am confident I can do an excellent job on the assignments and tests.
6. I expect to pass courses easily.
7. I am certain I can master the skills being taught in the first year.
8. Considering the requirements of this degree programme and what I already know and can do, I am confident to pass the first year.

Effort

1. I put forth a high level of effort in class
2. I concentrate hard in class
3. I let my mind wander in class (reverse scored)
4. I try to do my best on all assignments
5. I really study hard for exams
6. I do the best possible schoolwork I can
7. I do just enough schoolwork to get by (reverse scored)
8. I do all of the reading assigned for class
9. I turn in some assignments late (reverse scored)

Dankwoord

Dit proefschrift kwam tot stand omdat ik mij verwonderde over het verschil in studiesucces tussen eerstejaarsstudenten. Hoe kan het nou dat de ene student ontspannen door het eerste jaar komt en de andere met hangen en wurgen? Ik heb meer zicht gekregen op het antwoord op deze vraag (zie o.a. voorgaande hoofdstukken), en vooral ook zicht gekregen op wat we allemaal nog niet weten hierover. Dus dit proefschrift is dan eindelijk klaar, maar ik ben nog niet klaar met het onderwerp!

Dit proefschrift kwam ook tot stand omdat ik een nieuwe uitdaging zocht in mijn werk. En een uitdaging is het geworden!
Een aantal uitdagingen lagen in het onderzoekswerk, zoals een experiment proberen op te zetten in een situatie waarin naast gedegen onderzoek er ook marketingbelangen en beleidsmatige belangen waren. Of, het uitvoeren en verwerken van 200 interviews a 1,5 uur. Verouderde software voor kwalitatief onderzoek heb ik daadwerkelijk over de flos geholpen alsook de grenzen van de nieuwe software verkend. Maar Atlas.ti hield het, en nu 'atlast' zowaar menig student en collega aan de EUR. En ten slotte bleek voor mij het schrijven binnen de kadertjes van een academisch artikel ook een uitdaging te zijn. Die kadertjes zijn soms erg scherp (denk aan comments als 'Referentie hiervoor?' of 'dit hoort hier niet, dat moet in die sectie') maar op sommige punten ook vaag (comments als 'ik zou het iets anders opschrijven'), en al schrijvende ontwikkelde ik zo mijn eigen scientific story-telling stijl.
Maar de grootste uitdagingen lagen toch wel in het combineren van mijn 'promotietijd' met mijn baan als onderwijsadviseur en -onderzoeker bij Risbo, en later - toen het budget op was maar het boekje nog lang niet klaar was - met de tijd thuis. Tegelijkertijd werken in de semi-commerciële onderwijspraktijk en promoveren is uitdagend omdat het tempo (relatief snel vs. traag) en de focus (relatief kort vs. lang) zeer verschillend is. Desalniettemin was er ook vaak sprake van kruisbestuiving. Veel van wat ik leerde door het proefschrift heb ik kunnen toepassen in Risbo-projecten. En andersom gaf de praktijk mij regelmatig handvatten om de onderwijswetenschap nader te concretiseren.
Verder kan tegelijkertijd werken, promoveren én (stief)moeder worden van 3 kiddo's worden beschouwd als een vruchtbare periode in mijn leven, maar uiteindelijk zou ik dit toch niemand aanbevelen. Ik probeerde deze 'bermuda-driehoek' te trotseren door – zoals de onderzoeker in mij betaamd – mijzelf te verdiepen in recente wetenschappelijke inzichten over bijvoorbeeld timemanagement, (stief)ouderschap, ontwikkeling van het kind, slaapgedrag, jeugdreuma, en zelfs de liefde. Maar ik heb het vooral doorstaan *dankzij* de liefde die ik thuis en op het werk mocht ontvangen van anderen om mij heen, waardoor ik deze bijzondere tijd nu met een feestje kan afsluiten.

Ten eerste Berry, mijn lief, dank je wel voor duizend en een dingen! Dank je wel voor de (soms felle) discussies aan de keukentafel over wetenschap en onderwijs. Voor het delen van je creativiteit en (onze gedeelde) passie voor onderwijs en leren. Voor je veerkracht en flexibiliteit als ik weer een offer van je vroeg om dit boekje af te kunnen schrijven. Voor je muzikale begeleiding en afleiding. Het werkte zeer rustgevend op mij als ik boven zat te schrijven en jij beneden zat te zingen en pingelen op de gitaar of het keyboard. Maar bovenal dank ik je voor het geven van je vertrouwen in mij om dit onderzoek te doen en af te maken. Je hebt mij geïnspireerd bij het bedenken, uitwerken en opschrijven van vele aspecten in voorliggende studies. Dus ondanks dat onze beide namen niet op het boekje staan, sta je eigenlijk overal en is dit boekje ook een beetje van jou ☺. Dank je wel, en ik kijk uit naar de nog ongekende mooie dingen die we samen gaan maken.
Ook ben ik dankbaar voor de broodnodige afleiding gebracht door Job, Teun en Ella. Jullie aanwezigheid relativeerde een hoop proefschrift-gedoe. Dank jullie wel dat ik mag meegenieten van jullie onbevangen blik op de dingen in het leven en voor het uitbúndig meejuichen en dansen als ik weer een mijlpaal had bereikt!

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Yvonne, heel leuk dat je bereid was om even een hoofdstuk tegen te lezen tijdens je zwangerschapsverlof! Ik ben trots op onze vriendschap en heel blij dat je de rol van paranimf wilt vervullen.

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Welnu, let’s dance!

Sanne
Breda, maart 2019.

About the author

Curriculum Vitae

Sanne van Herpen was born in 's-Hertogenbosch, the Netherlands on 14 December 1984. She completed her secondary education in 2003 at the Sint-Janslyceum in 's-Hertogenbosch. She graduated in 2006 from the bachelor programme Pedagogical and Educational Sciences at the Radboud University of Nijmegen. She completed her education by obtaining a master degree in Educational Sciences in 2007 at the same university. During her degree, she was active in several policy forums such as the programme committee and the faculty committee. Since 2007, Sanne has worked as an educational consultant and researcher at Risbo – Erasmus University Rotterdam. She advises university teaching staff, programme directors and policy staff to help improve the quality of education. She also conducts research into education policy and study behaviour. Through her involvement in several education and research projects about study performance, she became interested in the transition from secondary education to higher education. She was able to develop this interest into her area of expertise by means of a PhD research project. From February 2011 she combined her job as an educational advisor and researcher at Risbo with this PhD research. In her PhD research she used various research methods, such as interviews, questionnaires and a quasi-experimental intervention, to examine how to make the transition from secondary education to university easier for students. Working at the intersection of adviser and PhD student, she also contributed to two products that are currently in use at Erasmus University Rotterdam: the degree choice check questionnaire and the Pre-Academic Programme.

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Awards

The dean's Award for Multidisciplinary Excellence (2016). Dean's Master Class on 'Migration': Rotterdam, the Netherlands.

Teaching, training and consultancy activities

2007 – current

- Transition into higher education
- Quality of assessment
- Research methods techniques
- Student learning behaviour
- Educational Design