Academic Procrastination among First-year Student Teachers

Visser, L.B.

2020

document version
Publisher's PDF, also known as Version of record

The influence of intrapersonal factors on academic achievements and the mediating role of academic procrastination

This chapter has been published as: Visser, L.B., Korthagen, F.A.J., & Schoonenboom, J. (2015). De invloed van intrapersoonlijke factoren op studieresultaten van eerstejaars pabostudenten en de mediërende rol van academisch uitstelgedrag. *Pedagogische Studiën, 92*(6), 394–412.

Abstract

Academic procrastination, i.e. the postponement of study activities, is a serious problem among higher education students. This quantitative study among 238 students focused on the question of how academic attributional style, dispositional optimism, self-efficacy, and self-esteem influence the academic achievements of first-year elementary teacher education students, and on the mediating role of academic procrastination. Academic procrastination is understood as a combination of the constructs of lack of motivation, fear of failure, and dilatory study behavior. The students completed three different questionnaires at three moments in time during the academic year. A structural model shows, contrary to expectations, that positive self-esteem has a direct negative influence on dilatory study behavior and a direct negative influence on academic achievements. Academic attributional style and self-efficacy, through lack of motivation and fear of failure, have an indirect influence on dilatory study behavior and thus also an indirect effect on academic achievement. This study highlights the impact of the influence of intrapersonal factors and dilatory study behavior on academic achievements. The results also show that in identifying and developing a remedial intervention for diminishing academic procrastination, it is important to consider intrapersonal factors in students.

2.1 Introduction

Worldwide, (low) education output and the (large) dropout rate of students in higher education are a source of concern (Hovdhaugen, 2009; Schneider, 2010). Each year, many students start a degree course in higher education, but a significant portion do not complete their first year successfully. Academic achievements remain lower than expected and a number of students drop out during or at the end of their first year in higher education This has financial consequences for educational institutions as well as for the students themselves. In addition, lagging behind in academic achievements and - in the worst case - prematurely discontinuing a degree course often is a personal tragedy for the student. It is well-known that the majority of students who are unsuccessful in higher education, already struggle in their first year of the program (Arulampalam, Naylor, & Smith, 2004; Bruinsma & Jansen, 2009; Schneider, 2010). Hence, research into poor academic achievements and its causes is of great importance for students, educational institutions, and society alike.

The purpose of our study was to gain insight into the question of how intrapersonal factors of students influence academic procrastination and academic achievements. The central question in this study was: How are the academic achievements of first-year elementary teacher education (ETE) students influenced by the intrapersonal factors of academic attributional style, dispositional optimism, self-efficacy and self-esteem, and what is the mediating role of academic procrastination in this, where the latter is understood as a combination of lack of motivation, fear of failure, and dilatory study behavior (Schouwenburg, 1994)? Such a study on the impact of both intrapersonal factors and academic procrastination on academic achievements during the first year in higher education has not been carried out before.

Academic achievements of first-year ETE students

In Dutch higher education, a distinction is made between research oriented education and higher vocational education. If a student wants to become a teacher in primary education, he or she has to attend a degree program at a higher vocational college for teacher training. The reason for the selection of ETE students in this study, is that the dropout rate among first-year ETE students in the Netherlands is higher than the national

dropout rate of first-year students in higher vocational education, while at the same time it is important for society to have more and better-trained elementary school teachers. It is therefore desirable that there are fewer dropouts in teacher education and that student teachers attain optimal academic achievements. The figures available on freshmen dropping out from higher vocational education in the Netherlands (Vereniging Hogescholen, 2014) show that in the years 2010-2012 an average of 16.4% of the students discontinued their degree course in the first year. For students at ETE degree programs, this percentage is higher, namely 18.5%. The international literature on academic achievements, educational success, and educational dropout shows that the role of academic procrastination is much researched (McCloskey, 2012; Schouwenburg, 1995; Steel, 2007; Wesley, 1994). Academic procrastination has an important impact on academic achievements, educational success, and educational dropout. Previous research into the role of academic procrastination has primarily been conducted among university students (outside the Netherlands). We chose first-year students for this study, as we expected that after the first year a considerable proportion of the students with academic procrastination would have left (or had been made to leave) education, making them hard to access for research. In addition, possible interventions in which students learn to regulate their procrastination behavior, would be most effective for freshmen, making it important to investigate this group.

Academic procrastination

Academic procrastination is defined as the repeated postponement of activities regardless of the consequences this leads to (Van Eerde, 2003). Academic procrastination can be understood as the difference between intention and behavior. The student does not manage to complete study activities within an intended time span, to the effect of under-performance and low grades at tests and final exams (Steel, Brothen, & Wambach, 2001) and an increased risk of dropping out (Wesley, 1994). Students with academic procrastination often experience negative emotions (Lay & Schouwenburg, 1993). Academic procrastination is a widespread problem, regularly affecting more than 70% of university students (Schouwenburg, 1995). Academic procrastination is a ‘modern disease’ and among students a problem that is probably on the increase (Kachgal, Hansen, & Nutter, 2001), the reasons for which are still not sufficiently understood (Katz,

Eilot, & Nevo, 2014). It is, however, clear that students today live in a digital world with mobile phones, iPads, WhatsApp and Facebook and that they have lots of social contacts. The combination of multimedia and social contacts is easily distracting when students are performing study-related tasks. We assume that because of this the chance of academic procrastination has increased.

The present study on the influence of intrapersonal factors on academic achievements takes into account the mediating role of academic procrastination. Concurrent with Schouwenburg (1994) and other researchers (Ossebaard, Korthagen, Oost, Stavenga-De Jong, & Vasalos, 2013; Van Essen, Van den Heuvel, & Ossebaard, 2004), academic procrastination is here considered as a combination of lack of motivation, fear of failure, and dilatory study behavior. If we were only considering dilatory study behavior as mediating construct between intrapersonal factors and academic achievement, certain (indirect) relationships might remain unnoticed. The importance of considering mediating constructs in research into academic procrastination is, for example, supported by research by Katz et al. (2014), who showed that motivation has a mediating effect on the influence of self-efficacy on academic procrastination.

Self-regulation

Academic procrastination is a prevalent and pernicious form of self-regulatory failure (Steel, 2007). Self-regulation is a process through which the student activates and maintains certain thoughts, feelings, and behavior, and uses these for the achievement of personal goals (Zimmerman & Schunk, 2011). Differences in self-regulation among students contribute significantly to differences in students' academic achievements (Zimmerman & Martinez-Pons, 1988). Three different phases in the self-regulation process can be distinguished when a student sets himself/herself to a given study activity (Pintrich & Zusho, 2002; Schunk & Ertmer, 2000). The first phase is the phase of forethought and planning. In this phase the student plans his or her study activity, while various thoughts regarding motivation, values and goals are active. The second phase is the phase of monitoring performance and motivation. In this phase the student has already started the study activity and tries to control his or her motivation and academic performance. For example, during the study activity the student can decide to change his or her learning strategy because it does not have the desired effect. The third

phase is the phase after completing the study activity. This is the phase of reflection on performance. During this reflection phase the student attempts to understand why a certain result occurred and manages his or her emotions with respect to this result.

In the course of this study we looked at the intrapersonal factors which have been shown to play an important role in the process of self-regulation and/or academic procrastination and academic achievements. For this purpose we chose academic attributional style (Buchanan & Seligman, 1995), dispositional optimism (Carver, Scheier, & Segerstrom, 2010), self-efficacy (Ferrari, Parker, & Ware, 1992; Klassen, Krawchuk, & Rajani, 2008), and self-esteem (Baumeister, Campbell, Krueger, & Vohs, 2003; Ferrari, 1994). The sources just mentioned examine the influence of either one or a combination of two of these factors on academic procrastination or academic achievements. Since in practice these factors appear in combination with each other, we are interested in how the combination of factors affect (the sub-variables of) academic procrastination and academic achievements. By examining the influence of this combination of intrapersonal factors on academic achievements throughout the year and the role in this of academic procrastination (understood as a combination of fear of failure, lack of motivation, and dilatory study behavior), we fill a gap in the research literature in this field.

Within this study we set out to find out how these variables, measured in the first two periods (out of four) of the first-year, influence academic procrastination and the results achieved in that period as well as later that year. A deeper insight into this phenomenon is important in view of the ability to offer the possibility of support to first-year students with academic procrastinating behavior.

We made a choice for intrapersonal factors, with an emphasis on intrapersonal factors that fall within the self-regulation phase of forethought and planning, because that is where academic procrastination becomes manifest first. The students in this study had embarked on what for them was a new degree course in which great emphasis is placed on forethought and planning. After the start of the course they sat for exams only eight weeks later, while the deadline for submitting assignments was 11 weeks after the start of the course. After about 11 weeks, they got their grades for the exams and three weeks later the results of the assignments. Compared to the situation in high school, where students face much more regular assignments and tests, this is a great difference.

We expect, therefore, that the long time span of preparing and taking exams to submitting assignments and waiting for results particularly affects the first phase of the self-regulation process. See Table 1 for an overview of the phases of the self-regulation process and the variables relevant within this study.

Table 1
Overview of the Phases of the Self-Regulation Process During Study Activities and the Variables Selected Within this Study

Phase in the self-regulation process	Forethought and planning	Monitoring of performance and motivation	Reflection on academic performance (study behavior and academic achievements)
Self-regulation activity	Planning study activities. Motivation, values and goals are activated.	Dealing with feelings of doubt, lack of motivation, and the inclination to procrastinate during the study activity.	Explanations about why the learning outcome was successful or not.
Relevant variables within this study	Dispositional optimism, self-efficacy, self-esteem.	Academic procrastination (seen as the combination of fear of failure, lack of motivation, and dilatory study behavior).	Academic attributional style.

Intrapersonal factors

When it comes to the positive or negative expectations that someone has about upcoming events in his or her life, in other words to being optimistic or pessimistic about life, the concept of dispositional optimism is important. Because optimistic persons see events in a more positive light, they are better at dealing with stressful conditions (Jackson, Weiss, & Lundquist, 2000). Optimistic people have effective coping mechanisms in dealing with adversity. Pessimistic people are doubtful about the future and rely on strategies based on avoidance and escape. If people have positive expectations about their future, they see their goals more often as feasible and they persist in achieving those goals. People who are less optimistic view their goals more often as unattainable and they are more inclined to give up (Peters, Rius Otten-Heim, & Giltay, 2013). Optimism is associated with higher academic achievements (Carver et al., 2010).

Self-efficacy is the belief in one's own ability to perform activities required to perform a task successfully (Bandura, 1997). It is about thinking "I can do it" in relation to a specific task. It is also about being

confident that one's actions are responsible for successful outcomes and the degree of control experienced when facing challenging external demands. Confidence in one's abilities has a strong influence on the choice of tasks, level of achievements, perseverance, resilience, and the way one functions (Bandura, 1997). Self-efficacy is strongly correlated with study success (Ferrari et al., 1992; Tuckman, 1991). Low self-efficacy is a predictor of academic procrastination (Klassen et al., 2008; Wolters, 2003). An important question in this respect is whether self-efficacy has a direct impact on academic procrastination or whether a mediating construct intervenes that would explain the influence of self-efficacy on academic procrastination (Katz, et al., 2014).

Self-esteem refers to how valuable someone experiences himself/herself as a person in general (Branden, 1994; Rosenberg, 1979). If someone perceives oneself as valuable, we speak of high self-esteem, regardless of whether his or her self-evaluation is supported by other persons or criteria (Donnellan, Trzesniewksi, & Robins, 2011). Self-esteem is an important aspect of one's social and cognitive development (Berndt, 2002). Self-esteem is considered a predictor of study success (Baumeister et al., 2003), because students with low self-esteem spend less effort in performing study activities and are more inclined to give up. Low self-esteem is thus a predictor of academic procrastination (Ferrari, 1994).

Academic attributional style refers to the way a student explains events that take place during his or her study. By attribution, we mean: 'the causes of outcomes one perceives' (Boyer, 2006). The assumption of the attributional style approach is that future expectations are based on attributions assigned to past events (Boman, Furlong, Shochet, Lilles, & Jones, 2009; Peters et al., 2013). A student who fails a test can have various explanations afterwards. A student with a pessimistic academic attributional style will ascribe failing a test to the following internal, stable, and global explanations: "I'm just dumb and therefore I didn't pass, that's me, there's nothing I can do about it." A student with an optimistic academic attributional style will ascribe failing a test to unstable, external, and specific causes, thinking for example that "the exam questions were simply not clear, it was a matter of bad luck." Some studies show that students with an optimistic attributional style are more successful in their studies (Buchanan & Seligman, 1995; Peterson & Barrett, 1987), but other studies do not show this effect (McKean, 1990; Schulman, 1995). It is not clear why attributional style is found to be a predictor of academic

achievement in some studies, while in others this is not the case (Buchanan & Seligman, 1995).

Research question

Many of the above-mentioned studies have taken one or more intrapersonal factors as influencing construct(s), analyzing the influence of that (those) construct(s) on academic procrastination and/or academic achievements over an entire academic year. Because in practice these intrapersonal factors occur together, in this study we examine the influence of the four above-mentioned intrapersonal factors in connection. By taking this combination of intrapersonal factors and observing their influence on the academic achievements at different times in the academic year while considering the mediating role of academic procrastination, this study contributes to the research knowledge in this field as well as to practice. In short: we want to examine how academic attributional style, dispositional optimism, self-efficacy and self-esteem through academic procrastination (understood as a combination of lack of motivation, fear of failure and dilatory study behavior) influence academic achievements in the course of the academic year (see the research question in the introduction section).

Our research question is divided into three sub-questions: (1) What is the influence of the intrapersonal factors, academic attribution, dispositional optimism, self-efficacy and self-esteem of first-year ETE students on academic procrastination (understood as a combination of lack of motivation, fear of failure, and dilatory study behavior)? (2) What is the influence of academic procrastination (understood as a combination of lack of motivation, fear of failure, and dilatory study behavior) of first-year ETE students on academic achievements? (3) What is the internal structure of academic procrastination (the relationship between lack of motivation, fear of failure, and dilatory study behavior)? See Figure 1 for the conceptual model of the expected relationships.

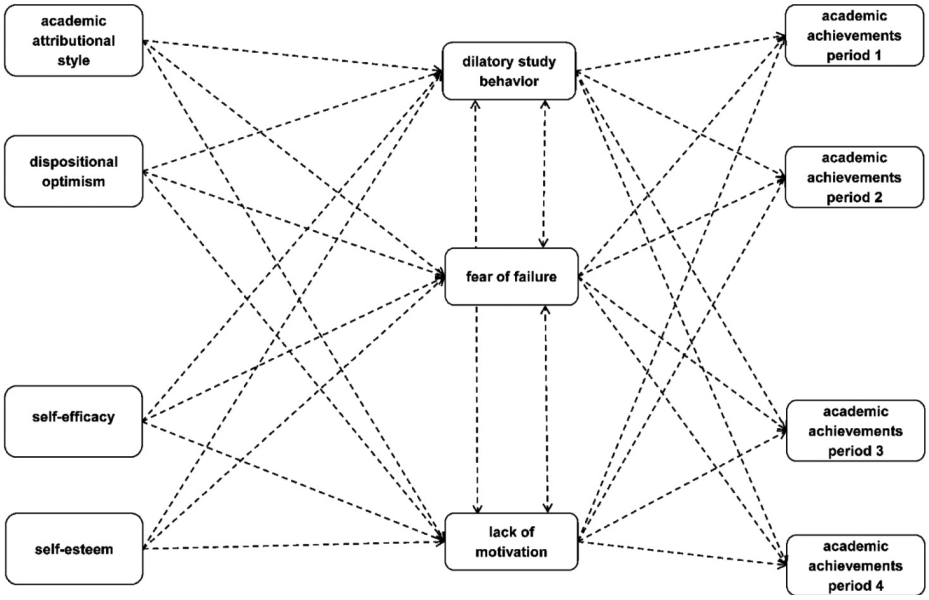

Figure 1. Conceptual Model.

2.2 Method

Participants

This quantitative study included the first-year students (*N* = 238, 40 men, 198 women, aged between 16 and 47; average age 18.48 years) enrolled at the four-year elementary teacher education program at a small Christian teachers' college with approximately 1,500 students, situated in the western part of The Netherlands.

Data collection

After receiving permission from the college management board, questionnaires for measuring (the sub-variables of) students' academic procrastination and the intrapersonal factors of academic attribution, dispositional optimism, self-efficacy, and self-esteem were distributed three times during the first two periods of the first-year year. See Table 2 for a summary of the measuring instruments used and the times of conducting. An academic year at this teacher college is divided into four terms of nine weeks. A term consists of six weeks of classes, followed by an examination week and then two weeks of internship. In order to prevent

the students from having to answer too many questions at one time which might influence the outcomes, different questionnaires were conducted on three separate occasions. In our design of the questionnaires we also took into account whether it was necessary to have actually attended class and have knowledge of the courses' content. Because the questionnaires to measure self-esteem and dispositional optimism are not specifically aimed at experiences during their study, these were conducted first, namely in the first week at an introductory meeting where students met their new class. And since measuring academic attributional style involves asking how students would respond to certain negative events that may occur during their studies, some experience with the degree course was required. The questionnaire on academic attributional style was therefore conducted with all students in the same week halfway during period 2, after a randomly-chosen lecture. Lastly the students completed the questionnaires for measuring general self-efficacy as well as the sub-variables of academic procrastination, namely lack of motivation, fear of failure, and dilatory study behavior. This happened during the first two days of the exam week at the end of period 2. When students had finished the exam, they all accepted the invitation to fill in the questionnaire before leaving the examination room. All questionnaires were completed in the examination room, where the students were not allowed to talk to each other and so could not influence one another. The role of the teachers or monitors present was limited to the distribution and collection of the questionnaires.

The variable of academic achievements was determined by the number of ECTS-credits attained by the student at the reference dates. ECTS stands for European Credit Transfer System and it is an indication of study load. A full-time study year at a European bachelor or master's degree program is equivalent to 60 ECTS, divided over several study modules. In the Netherlands, one ECTS represents a study load of 28 hours. The reason why we chose the number of ECTS-credits is that we think this provides the most objective picture of a student's academic achievements at a given moment in the academic year. The number of credits obtainable is proportionally divided over the year, meaning that each student could have acquired an equal number of credits at the measurement moments. The number of ECTS-credits earned in periods 1, 2, and 3 were measured on the last day before the exam period of the relevant period. The number of ECTS-credits earned by period 4 was measured on the last day of the

academic year. With the consent of the student, the ECTS-credits were retrieved from the digital academic achievements monitoring program named Traject Planner.

At all three measurement moments the respondents were informed by the written introduction of the questionnaire that participation was voluntary. They were also informed about the purpose of the research, the expected duration and the procedure, the confidentiality and that data would be processed anonymously. If the student had any questions, they could contact the first author of this study.

Measures

The instruments used in this study are existing questionnaires (see Table 2) which meet the requirements of internal reliability and validity. When no (good) Dutch version of the questionnaire was available (this was the case for the AASQ), we translated the English questionnaire into Dutch. The first author translated the questionnaire, after which this was presented to the other two authors for checking. They in turn back-translated the questionnaire into English to test the translation's correctness. In consultation with the first author, the translation was adjusted if necessary. Details about the questionnaires can be found in the Appendix.

We used the Academic Attributional Style Questionnaire (AASQ) developed by Peterson and Barrett (1987) to measure students' academic attributional style. We translated the questionnaire into English and adjusted a number of questions according to the context of the first-year program in elementary teacher education. The AASQ consists of 12 negatively formulated statements that refer to situations students may experience during their studies. For each statement, four questions are asked. The first question focuses on the cause of the negative event. This question is intended only for the student to reflect on a possible explanation. The question does not count in the data processing. On a seven-point Likert scale (1-7), the student then indicates whether, according to the student (question b) the cause of the incident is due to factors outside him/herself or to factors in him/herself, (question c) the cause is permanent or temporary; and (question d) the cause relates only to this specific incident or will occur on more than one occasion. To determine the academic attributional style, the scores to questions b, c, and d are added up.

Table 2
Overview of Measuring Instruments Used and Time of Conducting

Concept to measure	Measures	Time of conducting
Self-esteem	Dutch version of the Rosenberg Self-Esteem Scale Revised (RSESR) (Franck, De Raedt, Barbez, & Rosseel, 2008), α = .86	At the start of the academic year.
Dispositional optimism	Dutch Life Orientation Test Revised (DLOTR) (Ten Klooster et al., 2010), a translation of the LOTR (Scheier, Carver, & Bridges, 1994), α = .78	At the start of the academic year.
Academic attributional style	Authors' translation of the Academic Attributional Scale Questionnaire (AASQ) (Peterson & Barrett, 1987), α = .84	Halfway in period 2.
General self-efficacy	English version of the General Self-Efficacy Scale (GSES) (Teeuw, Schwarzer, & Jerusalem, 1994), α = .85	At the end of period 2.
Academic procrastination	Academic Procrastination State Inventory (APSI) (Schouwenburg, 1994). Total scale α = .94, sub-scale fear of failure α = .85, sub-scale lack of motivation α = .83, sub-scale dilatory study behavior, α = .91	At the end of period 2.
Academic achievements	Number of ECTS-credits earned according to the digital student tracking system.	Last day of the first, second and third period and the last day of the academic year.

Note: The displayed α is the original reliability coefficient in the above-mentioned literature.

The variable of self-efficacy was measured with the Dutch General Self-Efficacy Scale. This is a Dutch translation of the original General Self-Efficacy Scale developed by Schwarzer and Jerusalem (1995). This questionnaire measures how someone handles stressors/difficult situations in his or her life in general. The respondent is asked to respond to ten statements (optimistic *'self-beliefs')* which ask about how the respondent thinks and acts in general. On a four-point Likert scale from completely wrong (1) to fully correct (4) respondents indicate to what extent the statement is applicable to them at that moment.

In order to determine the degree of dispositional optimism, the Dutch Life Orientation Test Revised (DLOTR) (Klooster et al., 2010) was used. This is a Dutch translation of the English Life Orientation Test Revised (Scheier et al., 1994). Dispositional optimism is measured by asking the respondents whether they have positive or negative expectations about their future. The questionnaire consists of ten questions. The questions are scored on a five-point Likert scale from completely disagree (0) to fully agree (4).

The variable self-esteem is measured with the Dutch translation of the Rosenberg Self-Esteem Scale Revised (RSESR) (Franck et al., 2008), which focuses on positive or negative perceptions about oneself. The Rosenberg Self-Esteem questionnaire consists of five negatively posed and five positively posed items, to be scored on a four-point Likert scale from strongly disagree (1) to fully agree (4).

The degree of academic procrastination is measured with the original Dutch questionnaire Academic Procrastination State Inventory (APSI) (Schouwenburg, 1994). The total score of the APSI is obtained by summing the scores for the three sub-scales: lack of motivation, fear of failure, and dilatory study behavior. By means of 31 items the student is asked about his or her study behavior during the week prior to completing the questionnaire. Each item begins with the question "How often did you … last week?" On a five point Likert scale from never (1) to always (5) the student indicates his or her assessment of how often something happened.

Analysis

A confirmatory factor analysis confirmed the structure of these scales and of the three subscales of the APSI, with a p-value < .001 for the standardized factor loads of virtually all items of all scales. The AASQ proved to consist of three reliable sub-scales, one for each collection of b-, c-, and d-items respectively. Of the 36 items in the four sub-scales, 32 had a loading with a p-value of <.001 on its sub-scale. The data from the AASQ, GSES, DLOTR, RSESR and APSI questionnaires and the ECTS-credits obtained were analyzed in Mplus version 7. A structural model was set up with the achieved ECTS-credits during the four periods as dependent variables; academic attributional style, dispositional optimism, self-efficacy, and self-esteem as independent variables; and the three sub-scales of the APSI (fear of failure, lack of motivation, and dilatory study behavior) as mediating variables. Possible correlations between the dependent variables were included in the model. Correlations between independent variables were not included in the model, as the group we examined was not large enough for such a complex model. Non-significant regression coefficients were removed one by one. In addition, Modification Indices given in Mplus were used for adapting the model. Adapting the model was seen as an improvement if as a result the Akaike's Information Criterion (AIC) decreased by at least two points (Akaike, 1974).

2.3 Results

Descriptive data

238 students completed one or more questionnaires. The average response rate was 90% (response rate to T1: 96%; to T2: 86%; to T3: 89%). In the case of 75 of the 238 respondents (32%), one or more of the questionnaire's items were missing. Altogether 14.8% of the scores were missing. The missing scores were imputed by using information from all other questionnaires in SPSS version 20, according to the method of multiple imputation. Altogether, 20 imputation sets were created. The reliabilities calculated by SPSS (standardized Cronbach's alpha's) of the questionnaires AASQ (α = .78), GSES (α = .75), RSES (α = .82), APSI (α = .93), as well as those of the sub-variables of the APSI questionnaire, namely fear of failure (α = .86), lack of motivation (α = .79), and dilatory study behavior (α = .93) were acceptable to excellent. The reliability of the DLOTR questionnaire turned out to be low (α = .62). See Table 3 for the descriptive statistics of the conducted questionnaires and academic achievements. See Table 4 for a summary of the correlations among the various variables.

Table 3
Descriptive Statistics of the Conducted Questionnaires and Academic Achievements

Variable name	*M*	*SD*	*Min*	*Max*
Academic attributional style	153.06	19.54	95.00	207.00
General self-efficacy	28.03	3.56	17.00	37.00
Dispositional optimism	15.00	2.84	6.00	24.00
Self-esteem	20.00	3.22	11.00	29.00
Academic procrastination: Fear of failure	26.37	7.63	10.00	47.00
Academic procrastination: Lack of motivation	16.82	4.54	8.00	30.00
Academic procrastination: Dilatory study behavior	38.20	11.47	18.00	71.00
Academic achievements in period 1	4.01	2.72	0.00	11.50
Academic achievements in period 2	11.70	5.99	0.00	24.75
Academic achievements in period 3	22.41	11.43	0.00	48.00
Academic achievements in period 4	40.84	20.38	0.00	60.00

Table 4
Correlations between the Different Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Academic attributional style											
2. General self-efficacy	-.20*										
3. Dispositional optimism	-.21*	.47**									
4. Self-esteem	-.15	.47**	.55**								
5. Ac. Procrastination: Fear of failure	.27**	-.58*	-.41*	-.40*							
6. Ac. Procrastination: Lack of motivation	.37**	-.20*	-.15	-.12	.43**						
7. Ac. Procrastination: Dilatory study behavior	.25**	-.18*	-.09	.03	.39**	.63**					
8. Ac. achievements period 1	-.01	.06	-.03	-.10	-.13	-.22*	-.26*				
9. Ac. achievements period 2	-.20*	.14**	-.06	-.11	-.18*	-.33*	-.39*	.63**			
10. Ac. achievements period 3	-.19*	.14	.02	-.08	-.21*	-.36*	-.44*	.53**	.81**		
11. Ac. achievements period 4	-.18*	.17**	.03	-.08	-.25*	-.38*	-.43*	.52**	.81**	.89**	

Note: *p<.05, **p<.01.

Answering the research question

The influence of the intrapersonal factors on the sub-variables of academic procrastination

In respect of the influence of the intrapersonal factors on the sub-variables of academic procrastination (fear of failure, lack of motivation, and dilatory study behavior), we see that academic attributional style has a positive influence on fear of failure (b = 0.06, p = .016, β = .14) and lack of motivation (b = 0.07, p < .001, β = .27). The influence of academic attributional style on lack of motivation is, in comparison with the impact on fear of failure, the strongest. With self-efficacy we see a negative influence on both fear of failure (b = -1.17, p < .001, β = -.57) and lack of motivation (b = -0.23, p = .003, β = -.19), with the impact on fear of failure being the strongest. Self-esteem, as the only intrapersonal factor, has a direct impact on dilatory study behavior (b = 0.40, p = .038, β = .13). Dispositional optimism has no influence on any of the variables.

Influence of the sub-variables of academic procrastination on academic achievements

With regard to the sub-variables of academic procrastination we see that only dilatory study behavior has negative impact on the academic achievements of each academic period. Up to period 3 the impact of dilatory study behavior increases. In period 4 it has less influence. (Period 1: b = -0.07, p < .001, β = -.26; Period 2: b = -0.20, p < .001, β = -.36; Period 3: b = -0.44, p < .001, β = -.42; Period 4: b = -0.70, p < .001, β = -.38). The influence of fear of failure and lack of motivation on academic achievements is indirect via dilatory study behavior.

The internal structure of academic procrastination, the relationships between lack of motivation, fear of failure, and dilatory study behavior

Looking at the mutual relationships of the sub-scales fear of failure, lack of motivation, and dilatory study behavior on the total scale of academic procrastination, we see that both fear of failure and lack of motivation influence dilatory study behavior. The impact of lack of motivation (b = 1.39, p < .001, β = .56) is the highest in comparison to the impact of fear of failure (b = 0.30, p = .001, β = .21). See Figure 2 for the final structural model.

2.4 Discussion

This study reports the influences on academic achievements of the intrapersonal factors of academic attributional style, dispositional optimism, self-efficacy, and self-esteem of first-year students in Elementary Teaching Education (ETE). The mediating role of academic procrastination (understood as a combination of a lack of motivation, fear of failure, and dilatory study behavior) is also analyzed.

The influence of the intrapersonal factors on (the sub-variables of) academic procrastination

The results of this study show that the intrapersonal factors of academic attributional style and self-efficacy have, through fear of failure and lack of motivation, an indirect influence on students' dilatory study behavior. Regarding academic attributional style we can conclude that students with a pessimistic academic attributional style experience more fear of failure and lack of motivation, which increases the chance of dilatory study behavior. The mediating function of fear of failure can be explained from the perspective of attributional styles (Buchanan & Seligman, 1995). Based on the literature on academic attributional styles, we expect that students, through their pessimistic academic attributional style, blame themselves for the negative event of unsuccessful or failing study activities at that time and in the future. In their perception the cause is of stable nature and this cause will have an influence on multiple events during the course of studies in the future. To avoid these feelings of fear and uncertainty, study activities are avoided and academic procrastination becomes a fact. It is noteworthy that we were able to obtain these results despite the fact that our confirmatory factor analysis showed that for our random sample the three sub-scales of the AASQ-questionnaire did not form a single scale together.

The reason for lack of motivation as a mediating construct between academic attributional style and dilatory study behavior may, here too, be found in the pessimistic academic attributional style of the student when explaining negative events during his or her studies. The negative study event, such as the failure of achievement at an examination, is in the mind of the student to be blamed on himself/herself and can hardly be influenced. This has the consequence that the student will take little effort to change this, convinced that he or she just cannot do it, thus

putting control over academic achievements beyond himself/herself. In the mind of the student therefore, study activities make little sense. According to Lay (1992) it can be safer for a student with lack of motivation not to embark on the study tasks, so that being in arrears in academic achievements can be attributed to lack of motivation rather than to lack of intellect. A relevant question is what causes lack of motivation. Causes may be negative events such as disappointing academic achievements or low self-efficacy. However, from the perspective of the theory of academic attributional style, such causes can only play a role in the course of the year, because academic experiences first have to occur. At the start of the degree, therefore, lack of intrinsic motivation could play a role. The question then is whether the student is genuinely motivated to take the degree and become a teacher, thereby recognizing the value and importance of all tasks and tests. It may also be of importance whether the choice for teacher education originates from an ideal of the student (for example: "I want to become a teacher in order to be able to do something for children") or whether this choice is less articulate (e.g.: "The degree course seems nice"). The role of intrinsic motivation and ideals in academic procrastination could be further explored in future research.

With regard to self-efficacy, the impact on dilatory study behavior is mediated by the constructs of fear of failure and lack of motivation. This means that students with positive self-efficacy show less fear of failure and lack of motivation and thus have a lower risk of dilatory study behavior. The explanation for this is that they are less likely to defer or give up study activities, because they believe in themselves and their own abilities to successfully perform these activities. According to Bandura (1997) they have more resilience and perseverance in difficult (study) situations. Students with lower self-efficacy will tend to have thoughts of fear of failure prior to and during the execution of study tasks. They believe less in their own capabilities, enhancing negative thoughts such as "I can't do it" or "I won't succeed", which may in turn have impact on lack of motivation and/or fear of failure. As a result, academic procrastination is more likely to occur. The mediating role of fear of failure and lack of motivation in the relationship between self-efficacy and dilatory study behavior corresponds with research by Katz et al. (2014). They showed that motivation, in addition to a direct effect of self-efficacy on academic procrastination, has a mediating effect on the relationship between self-efficacy and academic procrastination.

Dispositional optimism was shown to have no influence on the sub-variables of academic procrastination and/or academic achievements in our study. This is in contrast to previous research (Carver et al., 2010) where dispositional optimism was found to have a positive influence on academic achievements. Despite the fact that the DLOTR questionnaire as used in earlier research was found to be a valid and reliable measurement tool (Ten Klooster et al., 2010), the present research found the reliability of the DLOTR questionnaire for measuring dispositional optimism to be low (α = .62). This means that in this study dispositional optimism is measured with insufficient precision for the determination of effects.

We see that self-esteem is the only intrapersonal factor with direct impact on dilatory study behavior. This is interesting, because it means that the more positively the student perceives himself/herself, the higher the risk he or she runs of dilatory study behavior. This is a surprising finding because other research (Steel, 2007) shows that students with high self-esteem suffer less from academic procrastination. Positive self-esteem means that the student perceives himself/herself as valuable, respecting and accepting himself/herself. So it was to be expected that students with low self-esteem are more likely to show actual academic procrastination, because they value themselves negatively, rejecting and despising themselves, which causes them to exert less effort and to give up earlier (Baumeister et al., 2003). With students who experience positive self-esteem, the influence of self-esteem on dilatory study behavior is possibly exerted directly, different from the influence of academic attributional style and self-efficacy. Fear of failure and lack of motivation then have no mediating role in this. An explanation for this influence of self-esteem on dilatory study behavior could be that students with positive self-esteem have more social contacts (Berndt, 2002) and spend a lot of time on them, which leaves less time for study activities. Another possible explanation is that students with high self-esteem want to maintain their self-esteem when facing difficult situations, and thus tend to avoid such situations (Lupien, Seery, & Almonte, 2010; Strunk & Steele, 2011). This avoidance strategy is called self-handicapping.

Influences on academic achievements

The influence of academic attributional style on academic achievements works indirectly through fear of failure and lack of motivation. Both these factors affect actual academic procrastination. The mediating effect of

fear of failure and lack of motivation through dilatory study behavior on academic achievements could be a possible explanation for the findings of previous research (Buchanan & Seligman, 1995) showing that attributional style is no direct predictor of academic achievements.

In our study, both self-efficacy and self-esteem were found to have direct effect on academic achievements in three of the four periods studied. Here too, self-esteem has a negative effect. In other words: the more positively students perceive themselves, the lower their academic achievements. We can conclude that self-esteem both in the case of indirect effect through dilatory study behavior and a direct effect on academic achievements, has a major impact on academic achievements. Continued research on the negative influence of high self-esteem on dilatory study behavior and on academic achievements may shed more light on the results of the present study. For dilatory study behavior, we can observe a direct influence on academic achievements, for each period. Based on the explained variance of academic achievements, all intrapersonal factors and sub-variables of academic procrastination have the least influence at the start of the academic year. The low explained variance of 11% at the start of the year may indicate that this is a period in which the students have to get used to the degree course and the state of affairs in the program. After this acclimatization period, the explained variance for academic achievements doubles, with intrapersonal factors and academic procrastination becoming decisive for academic achievements.

Limitations

This study has a number of limitations. The first limitation is that the intrapersonal factors and (the sub-variables of) academic procrastination are measured at different times during the first half of the academic year. Our study does not clearly indicate whether academic achievements conversely influence (the sub-variables of) academic procrastination and/or intrapersonal factors. Further research could examine how academic attributional style, dispositional optimism, self-efficacy, self-esteem, and (the sub-variables of) academic procrastination modulate in the course of the academic year in conjunction with changes in academic achievements. The model in Figure 2 shows that the influence of procrastination at the start of the year explains as much as a quarter of the variance in academic achievements for periods 2-4. If academic attributional style, dispositional

optimism, self-efficacy, self-esteem, and (the sub-variables of) academic procrastination substantially change during the academic year, one would expect that the effect on study achievements of the relevant scores at the start decreases in the course of the academic year. However, this does not seem to be the case. In addition, there is the question of how the variables studied here, develop in the following years of the degree course. Follow-up multi-year research may provide further answers.

A second limitation is that we have examined a small number of intrapersonal factors. It is likely that a different combination of intrapersonal factors provides additional insight in the influence of these factors on academic procrastination and academic achievements.

A third limitation is that this research is carried out on students at an elementary teacher education program, of whom most are women. Possibly the results cannot be generalized to students at other degree courses. Therefore, follow-up research among students taking other degree courses in higher education is important.

Relevance for research

The present study has relevance for research since it concerns the combination of intrapersonal factors of academic procrastination (understood as a combination of fear of failure, lack of motivation, and dilatory study behavior) and academic achievements for various periods throughout the first-year year within higher (vocational) education. Such research with the combination these variables has not been performed before. Our research is in line with the approach in the 1980s and 1990s, when much research was done on academic procrastination. Our study fills in a gap in the research which currently emphasizes organizational measures and is less focused on interpersonal factors in the student. Our research shows that a psychological focus yields more insight into the question of how students' academic behavior and performance are determined.

It is also important that our study analyzed the size of the impact of intrapersonal factors and academic procrastination (understood as a combination of fear of failure, lack of motivation, and dilatory study behavior) on academic achievements, thereby highlighting the importance of intrapersonal factors. Our study reveals that when researching the influence of intrapersonal factors on academic procrastination, the functioning of mediating constructs should be taken into account and the

interaction of constructs should receive more attention. The influence of the intrapersonal factors of academic attributional style and self-efficacy on dilatory study behavior can only be observed through the mediating function of fear of failure and lack of motivation. The importance of mediating constructs also applies to obtaining an understanding of the influence of academic procrastination on academic achievements. We showed that only dilatory study behavior has a direct impact on academic achievements.

Our study underlines that academic procrastination is no standalone phenomenon, but the result of the influence of the intrapersonal factors of academic attributional style and self-efficacy, which lead to fear of failure and lack of motivation. Fear of failure and lack of motivation can therefore be considered as important causes of dilatory study behavior. The process of direct negative impact of self-esteem on dilatory study behavior has not become clear from this research. Follow-up research into one or more of the mediating constructs seems needed.

The present study is also relevant for research because it shows the impact on academic achievements of intrapersonal factors as well as dilatory study behavior in the course of the academic year. The start of the year seems to be a kind of habituation phase, but over time more than 20% of the academic achievements are affected by intrapersonal factors like attributional style, academic self-efficacy, and self-esteem and/or academic procrastination.

Practical relevance

This research has practical relevance because educational dropout in higher vocational education is an important issue, in particular for teacher education, as discontinuation in this area is relatively high in comparison to other sectors in higher education. This study showed that if educational institutions wish to influence academic achievements, an early approach aimed at the intrapersonal factors and the sub-variables of academic procrastination may be important. The explained variance of 36% in the case of fear of failure shows that academic attributional style and self-efficacy strongly influence fear of failure. Hence, it seems important that students learn how they can deal with these factors. If students are more in control and better aware of themselves, we expect a positive effect on the intrapersonal factors and thereby also on the students' academic behavior. This can only be done by a person-centered approach in a setting

in which the student feels safe and is challenged to reflect on his or her (negative) thought patterns and learns how to deal with them. Future research into the effect of such an approach seems of great importance, especially considering the high costs often involved in obtaining a degree.

References

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control,19*, 716–723. http://dx.doi.org/10.1109/tac.1974.1100705

Arulampalam, W., Naylor, R. A., & Smith, J. P. (2004). A hazard model of the probability of medical school drop-out in the UK. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 167*, 157–178. http://dx.doi.org/10.1046/j.0964-1998.2003.00717.x

Bandura, A. (1997). *Self-efficacy.* New York, NY: W. H. Freeman and Company.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does High Self-Esteem Cause Better Performance, Interpersonal Success, Happiness, or Healthier Lifestyles? *Psychological Science in the Public Interest, 4*, 1–44. http://dx.doi.org/10.1111/1529-1006.01431

Berndt, T. J. (2002). Friendship Quality and Social Development. *Current Directions in Psychological Science, 11*, 7–10. http://dx.doi.org/10.1111/1467-8721.00157

Boman, P., Furlong, M. J., Shochet, I., Lilles, E., & Jones, C. (2009). Optimism and the school context. In R. Gilman, E.S. Huebner, & M.J. Furlong, *Handbook of Positive Psychology in Schools* (pp. 51-64). New York, NY: Routledge.

Boyer, W. (2006). Accentuate the Positive: The Relationship Between Positive Explanatory Style and Academic Achievement of Prospective Elementary Teachers. *Journal of Research in Childhood Education, 21*, 53–63. http://dx.doi.org/10.1080/02568540609594578

Branden, N. (1994). *The six pillars of self-esteem.* New York, NY: Bantam Books.

Bruinsma, M., & Jansen, E. P. W. A. (2009). When will I succeed in my first-year diploma? Survival analysis in Dutch higher education. *Higher Education Research & Development, 28*, 99–114. http://dx.doi.org/10.1080/07294360802444396

Buchanan, G., & Seligman, M. (1995). *Explanatory style.* New York, NY: Routledge.

Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review, 30*, 879–889. http://dx.doi.org/10.1016/j.cpr.2010.01.006

Donnellan, M. B., Trzesniewski, K. H., & Robins, R. W. (2011). Self-esteem: Enduring issues and controversies. In T. Chamorro-Premuzic, A. Furnham, & S. von Stumm (Eds.), *Handbook of individual differences* (pp. 718-746). Oxford, UK: Wiley-Blackwell.

Ferrari, J. R. (1994). Dysfunctional procrastination and its relationship with self-esteem, interpersonal dependency, and self-defeating behaviors. *Personality and Individual Differences, 17*, 673–679. http://dx.doi.org/10.1016/0191-8869(94)90140-6

Ferrari, J. R., Parker, J. T., & Ware, C. B. (1992). Academic procrastination: Personality correlates with Myers-Briggs types, self-efficacy, and academic locus of control. *Journal of Social Behavior and Personality, 7*, 495–502.

Franck, E., De Raedt, R., Barbez, C., & Rosseel, Y. (2008). Psychometric Properties of the Dutch Rosenberg Self-Esteem Scale. *Psychologica Belgica, 48*, 25–35. http://dx.doi.org/10.5334/pb-48-1-25

Hovdhaugen, E. (2009). Transfer and dropout: different forms of student departure in Norway. *Studies in Higher Education, 34*, 1–17. http://dx.doi.org/10.1080/03075070802457009

Jackson, T., Weiss, K. E., & Lundquist J.J. (2000). Does procrastination mediate the relationship between optimism and subsequent stress? *Journal of Social Behavior and Personality, 15,* 203–212.

Kachgal, M. M., Hansen, L. S., & Nutter, K.J. (2001). Academic procrastination prevention/intervention: Strategies and recommendations. *Journal of Developmental Education, 25*, 14–24.

Katz, I., Eilot, K., & Nevo, N. (2014). "I'll do it later": Type of motivation, self-efficacy and homework procrastination. *Motivation and Emotion, 38*, 111–119. http://dx.doi.org/10.1007/s11031-013-9366-1

Klassen, R. M., Krawchuk, L. L., & Rajani, S. (2008). Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology, 33*, 915–931. http://dx.doi.org/10.1016/j.cedpsych.2007.07.001

Lay, C. H. (1992). Trait procrastination and the perception of person-task characteristics. *Journal of Social Behavior and Personality, 7*, 483–494.

Lay, C. H., & Schouwenburg, H. (1993). Trait procrastination, time management and academic behavior. *Journal of Social Behavior and Personality*, *8*, 647–662.

Lupien, S. P., Seery, M. D., & Almonte, J. L. (2010). Discrepant and congruent high self-esteem: Behavioral self-handicapping as a preemptive defensive strategy. *Journal of Experimental Social Psychology, 46*, 1105–1108. http://dx.doi.org/10.1016/j.jesp.2010.05.022

McCloskey, J. (2012). *Academic procrastination: The development of a scale.* Saarbrücken, Germany: Lambert Academic Publishing.

McKean, J. J. (1990). *An investigation of academic procrastination as a behavioral manifestation of learned helplessness.* Unpublished doctoral dissertation. South Orange, NJ, Seton Hall University.

Ossebaard, M. E., Korthagen, F. A. J., Oost, H., Stavenga-De Jong, J., & Vasalos, A. (2013). A core reflection approach to reducing study procrastination. In F. A. J. Korthagen, Y. M. Kim, & W. L. Green, *Teaching and learning from within: A core reflection approach to quality and inspiration in education* (pp. 148–161). New York/Londen: Routledge.

Peters, M. L., Rius-Ottenheim, M., & Giltay, J. (2013). Optimisme [Optimism]. In E. Bohlmeijer, L. Bolier, G. Westerhof, & J. A. Walburg, *Handboek positieve psychologie* (pp. 153–168). Amsterdam: Boom.

Peterson, C., & Barrett, L. C. (1987). Explanatory style and academic performance among university freshman. *Journal of Personality and Social Psychology, 53*, 603–607. http://dx.doi.org/10.1037/0022-3514.53.3.603

Pintrich, P. R., & Zusho, A. (2002). The development of academic self-regulation: The role of cognitive and motivational factors. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 249–284). San Diego, CA: Academic Press.

Rosenberg, M. (1979). *Conceiving the self.* New York, NY: Basic Books.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*, 1063–1078. http://dx.doi.org/10.1037/0022-3514.67.6.1063

Schneider, M. (2010). *Finishing the first lap: The cost of first year student attrition in America's four year colleges and universities.* Washington DC: American Institutes for Research.

Schouwenburg, H.C. (1994). *Uitstelgedrag bij studenten* [Procrastination among students]. Unpublished dissertation, University of Groningen, The Netherlands.

Schouwenburg, H. (1995). Academic procrastination: Theoretical notions, measurement, and research. In J. R. Ferrari, J. L. Johnson, & W. G. McCown (Eds.), *Procrastination and task avoidance: Theory research and treatment* (pp. 71–96). New York, NY: Plenum Press.

Schulman, P. (1995). Explanatory style and achievement in school and work. In G.M. Buchanan, & M. E. P. Seligman (Eds.), *Explanatory style* (pp. 159–171). Hillsdale, NJ: Lawrence Erlbaum Associates.

Schunk, D. H., & Ertmer, P. A. (2000). Self-regulation and academic learning: Self-efficacy enhancing interventions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 631–649). San Diego, CA: Academic Press.

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In S. Weinman, & M. Johnson*, Measures in health psychology* (pp. 35–37). Windsor, UK: NFER-NELSON.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133*, 65–94. http://dx.doi.org/10.1037/0033-2909.133.1.6

Steel, P., Brothen, T., & Wambach, C. (2001). Procrastination and personality, performance, and mood. *Personality and Individual Differences, 30*, 95–106. http://dx.doi.org/10.1016/s0191-8869(00)00013-1

Strunk, K. K., & Steele, M. R. (2011). Relative contributions of self-efficacy, self-regulation, and self-handicapping in predicating student procrastination. *Psychological Reports, 109*, 983–989. http://dx.doi.org/10.2466/07.09.20.pr0.109.6.983-989

Teeuw, B., Schwarzer, R., & Jerusalem, M. (1994). *Dutch adaptation of the general Self-Efficacy Scale.* Retrieved from http://userpage.fu-berlin.de/~health/dutch.htm

Ten Klooster, P. M., Weekers, A. M., Eggelmeijer, F., Van Woerkom, J. M., Drossaert, C. H. C. M., Taal, E., Rasker, J. J., & Baneke, J. J. (2010). Optimisme en/of pessimisme: factorstructuur van de Nederlandse Life Orientation Test-Revised. [Optimism and/or pessimism: Factor structure of the Dutch Life Orientation Test-Revised] *Psychologie en Gezondheid, 38*(2), 89–100.

Tuckman, B. W. (1991). The Development and Concurrent Validity of the Procrastination Scale. *Educational and Psychological Measurement, 51*, 473–480. http://dx.doi.org/10.1177/0013164491512022

Van Eerde, W. (2003). A meta-analytically derived nomological network of procrastination. *Personality and Individual Differences, 35*, 1401-1418. http://dx.doi.org/10.1016/s0191-8869(02)00358-6

Van Essen, T., Van den Heuvel, S., & Ossebaard, M. (2004). A student course on self-management for procrastinators. In H. C. Schouwenburg, C. H. Lay, T. A. Pychyl, & J. R. Ferrari (Eds.), *Counseling the procrastinator in academic settings* (pp.59–73). Washington, DC: American Psychological Association.

Vereniging Hogescholen. (2014). *Uitvalcijfers hbo na 1 jaar* [Data on drop-out higher vocational education after the first year]. Retrieved from http://cijfers.hbo-raad.nl/QvAJAXZfc/opendoc.htm?document=4_Uitval.qvw&host=QVS@cloudbox10232&anonymous=true

Wesley, J. C. (1994). Effects of Ability, High School Achievement, and Procrastinatory Behavior on College Performance. *Educational and Psychological Measurement, 54*, 404–408. http://dx.doi.org/10.1177/0013164494054002014

Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology, 95*, 179–187. http://dx.doi.org/10.1037/0022-0663.95.1.179

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology, 80*, 284–290. http://dx.doi.org/10.1037/0022-0663.80.3.284

Zimmerman, B. J., & Schunk, D. H. (2011). Self-regulated learning and performance. In B. J. Zimmerman and D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 1–12). New York: Routledge.

Appendix

Questionnaire on academic attributional style

The Academic Attributional Style Questionnaire consists of 12 negatively formulated statements that refer to situations that students may experience during their studies. Sample questions for situation 2 (You fail an examination): question 2a: Write down what was, in your opinion, the major cause; question 2b: Is the cause of this due to something about you or something about other people or circumstances? On a seven-point Likert scale (1 = totally due to others or circumstances, 7 = totally due to myself), the respondent indicates where he or she locates the cause. Question 2c is: In the future, will this cause again be present? On a seven-point Likert scale (1 = will never be present, 7 = will always be present), the respondent indicates whether the cause is expected to be present in the future. Question 2d is: Is this cause something that affects just this type of situation, or does it also influence other areas of your life? On a seven-point Likert scale (1 = only this situation, 7 = all situations), the respondent indicates whether the cause influences other situations.

Self-efficacy questionnaire

The Dutch General Self-Efficacy Scale consists of 10 statements (optimistic *'self-beliefs')*. Sample questions: Question 1: I can always manage to solve difficult problems if I try hard enough. Question 3: It is easy for me to stick to my aims and accomplish my goals. On a four-point Likert scale from not all true (1) to fully true (4), the respondent indicates to what extent the statement is applicable to him or her at that time.

Dispositional optimism questionnaire

The Dutch Life Orientation Test Revised consists of 10 questions. The respondent is asked whether he or she has positive or negative expectations about the future. Three questions are formulated in a positive way, three in a negative way, and four questions are so-called *'filler'* items, which to some extent hide the purpose of the test from the respondent. The questions asked in a negative manner are mirrored during the processing of the results. The filler items are not used during the processing of the data. Sample questions: Question 4: I am always optimistic about my future. Question 7: I hardly ever expect things to go my way. On a five-point Likert scale from strongly disagree (0) to

strongly agree (4), the respondent indicates to what extent the statement is applicable to him or her.

Self-esteem questionnaire

The Rosenberg Self-Esteem Scale consists of five questions asked in a negative manner and five questions asked in a positive manner. The questions asked in a negative manner are mirrored during the processing of the results. Sample questions: Question 1: On the whole, I am satisfied with myself. Question 2: At times I think I am no good at all. On a four-point Likert scale from strongly disagree (1) to strongly agree (4), the respondent indicates to what extent the statement is applicable to him or her.

Academic procrastination questionnaire

By means of 31 items, the Dutch Academic Procrastination State Inventory (APSI) asks the student about his or her academic behavior during the week prior to filling in the questionnaire. Each item begins with the question "How often did you … last week?" On a five-point Likert scale from never (1) to always (5) the student gives his or her assessment of how often something happened. The 15 questions of the procrastination subscale measure dilatory study behavior. Sample questions: Question 2: How often during last week did you not study the material that you had planned to study? Question 25: How often during last week did you do so many other things that you had too little time left for your studies? The 10 questions on the fear of failure subscale are aimed at emotions. Sample questions: Question 5: How often during last week did you have a sense of panic during your studies? Question 27: How often during last week did you feel tense during your studies? The seven questions on the lack of motivation subscale are aimed at motivation. Sample questions: Question 10: How often during last week did you have a sense that you dislike the subject? Question 22: How often during last week would you rather have done something else than study? The total score of academic procrastination is obtained by adding up the scores for the sub-scales lack of motivation, fear of failure and dilatory study behavior.