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## Development of motivation in first-year students in Dutch senior secondary vocational education

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### ABSTRACT

This study examined the development in motivation for school in students in senior secondary vocational education and factors related to this development. There have been many concerns about a decline in motivation after school transitions. Little about this subject is known in relation to the transition to senior secondary vocational education. Knowledge about this is necessary, as the decline is expected to be more extensive in this type of school because the percentage of dropouts is high. For this research, 614 first-year students filled out a questionnaire four times. The results showed little average change in motivation during the first school year, although there was a decrease in students' academic delay of gratification after the transition. Associations with motivation similar to those found in studies of secondary schools were found, but only at the start of the school year, not with changes in it during the remainder of the year.

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### KEYWORDS

Achievement goals; motivation; growth curve modelling; self-efficacy; senior secondary vocational education

There has been a concern in the education sector about a decrease in motivation following school transitions for many decades. The decline has been found among young adolescents in numerous countries (Peetsma, Hascher, van der Veen, & Roede, 2005) and also occurs later in the school career (Van der Veen, de Jong, van Leeuwen, & Korteweg, 2005). However, less is known about the development of motivation for school in students in senior secondary vocational education and about factors related to this development. The decline in school motivation is expected to be greater in this type of school, as the percentage of dropouts is higher in this population: more than ten times higher than it is generally in Dutch secondary education (Dutch Education Administration, 2016). Dropping out leads not only to the loss of qualified future workers but also to the time and commitment of both teachers and students being wasted. In order to better understand the background to these higher dropout

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rates, we investigated senior secondary vocational education students' development with regard to motivation for school and attempted to explain this development.

## Theoretical background

### *Motivation for school*

Before delving into the literature on explanations of motivational developments, it is necessary to explain different aspects of motivation. With regard to school motivation, motivational beliefs and motivated behaviour can be differentiated.

Value and expectancy components are part of motivational beliefs (e.g. Wigfield & Cambria, 2010).

The value component pertains to the reasons that students have to perform a task and the goals that can be achieved. A distinction is often made between mastery (focus on one's prior achievements) and performance goals (focus on the comparison of one's achievement with the achievements of others) (Schunk, 1996) and between approach and avoidance orientation within these goals (e.g. Elliot & Church, 1997). An individuals' performance-avoidance orientation entails preventing others from seeing his or her failure. Mastery goals have been related to favourable results (Urda & Midgley, 2000), while the performance approach and avoidance goals have been associated with less favourable results (Payne, Youngcourt, & Beaubien, 2007; Yeo, Sorbello, Koy, & Smillie, 2008), although high-performance approach goals combined with high mastery goals can be as favourable or more favourable than are mastery goals alone (Pintrich, 2000; Van der Veen & Peetsma, 2009).

The expectancy component refers to what students think are capable of and includes students' self-efficacy, such as whether students believe they are capable of successfully completing a school task. The more self-efficacious students are, the more likely it is that they will choose challenging tasks and persist when experiencing adversity (Schunk & Zimmerman, 1997), and the greater their achievement will be (Lee, Lee, & Bong, 2014).

Motivated behaviour concerns behaviour intentions and includes self-regulated learning strategies and the effort students put into schoolwork. Motivational beliefs turned out to be positively related to motivated behaviour, which has found to be positively associated with achievement (e.g. Lee et al., 2014). For example, Lee et al. (2014) found that individual interest, which can be regarded to be a motivational belief (value component), was not directly related to achievement, but via the reported use of self-regulation strategies. In this study, one important aspect of motivated behaviour was included, namely academic delay of gratification. This aspect regarding behaviour intentions concerns resisting attractive activities not related to school in favour of pursuing valuable future academic goals (Bembenutty & Karabenick, 1998). The capability to delay gratification is a prerequisite for pursuing long-term educational goals (Bembenutty, 2011). Students' ability to delay gratification has been found to be associated positively with other aspects of motivated behaviour, such as effort regulation and the use of self-regulated learning strategies and has been found to be related favourably to motivational beliefs (task value) (Bembenutty & Karabenick, 1998, 2004). Furthermore, it can be assumed to be highly sensitive to context (for example, out-of-school activities).

## ***Development in motivation for school in students in senior secondary vocational education***

### ***Developments in school motivation***

Developments in the motivation of students in senior secondary vocational education have not been studied often. One study investigated the mastery goal adoption of students transiting from secondary school to further education (either vocational training, university studies or a higher secondary school track) and found increased mastery goal adoption following the transition (Meier, Reindl, Grassinger, Berner, & Dresel, 2013).

We found a few studies on the differences between learning in a company and learning at school among students in a dual-track system (apprenticeship scheme). Krapp and Lewalter (2001) studied the development of intrinsic and extrinsic motivation orientations of students in a dual-track system in senior secondary vocational education in Germany and found a decline in both motivation orientations. Intrinsic motivation orientations appeared to be more dependent on context than were extrinsic motivation orientations. Differences in motivation in the school and in the company contexts were greater, with for school, the lowest motivation for intrinsic motivation. Gurtner, Gulfi, Genoud, de Rocha Trindade, and Schumacher (2012) studied developments in motivation over three years in students in a dual-track system in Switzerland. Overall, Gurtner et al. (2012) found a decline in motivated behaviour (in learning intentions, such as readiness to work hard), motivational beliefs, self-efficacy beliefs and the perceived utility of the learning context. Gurtner et al. (2012) also found a dependence on context. At the beginning of their apprenticeship, the apprentices were evidently more motivated to learn when they were at the company than when they were at school. This difference was also found for self-efficacy beliefs. However, this changed over the next few years, as the perceived usefulness of the general courses increased when students sat for exams and the perceived usefulness of the workplace decreased when students experienced being given repetitive work that was not sufficiently complex to challenge them as they gained experience. Overall, Gurtner et al. (2012) found that developments (decreases) from the first to the second year were much smaller than they were from the second to the third year. In general, few studies have addressed the development of students' motivation in vocational schools, particularly with regard to different aspects of motivation.

### ***Senior secondary vocational education***

Students in the Netherlands can attend three different levels of further education after completing secondary school, namely senior secondary education, higher vocational education and university. The lowest level in the Dutch secondary education system, pre-vocational education is intended as a preparation for senior secondary vocational education. Almost half of the students attend pre-vocational education after primary school and most of them continue senior secondary vocational education (Neuvel & Westerhuis, 2013). Senior secondary vocational education includes four levels, of which completion of only the highest level provides access to tertiary education (higher professional education). In the Netherlands, students with poorly educated parents and students from ethnic minorities are overrepresented in senior secondary vocational

education, as these students have lower grades on average at secondary school (e.g. Driessen, Elshof, Mulder, & Roeleveld, 2015). The first-year students in our study had mainly attended school and had only gained work experience during internships for short periods of a few months.

### ***Factors explaining school motivation developments***

Various explanations for the decrease in motivation after students begin secondary school have emerged, which might also explain developments in motivation in senior secondary vocational education.

Firstly, poor person-environment fit has been suggested as an explanation, this refers to a social environment of students that does not fit in well with their needs (Eccles et al., 1993). For example, Midgley, Feldlaufer, and Eccles (1989) found that a decrease in students' valuing of mathematics was connected with a decline in perceived support from teachers. In addition to the support experienced from teachers, peer social support is related to the development in school engagement from middle to high school (Wang & Eccles, 2012). Students experiencing poor person-environment fit are expected to experience a qualitatively less positive relationship with both teachers and classmates. As senior secondary vocational schools in the Netherlands are quite large, particularly when compared to secondary schools, the risk of poor person-environment fit might be even higher for students in senior secondary vocational schools than it is for students in secondary schools.

Secondly, students' future goals can provide an explanation of the decline. Peetsma and Van der Veen (2011) found that the relevance of secondary school students' future time perspectives changed over time. Students' future time perspectives concerning school and professional careers became less important and were related negatively to the future time perspective of leisure, which increased in importance. Thus, it would appear that perspectives regarding other domains of life can interfere with perspectives regarding school. As students in senior secondary vocational education are in a later phase in life and are much more focussed on work than are students in secondary education, students at this type of school might experience less interference from perspectives concerning life domains not related to school, such as leisure.

Thirdly, van der Veen and Peetsma (2009) explained a decrease in Dutch lower level secondary school students' motivated behaviour by the extent to which school work was intrinsically valued by the students, which also decreased (Van der Veen & Peetsma, 2009). As students in senior secondary vocational education are much more focussed on working in a chosen occupation than are students in secondary education, students at this type of school might value schoolwork more than do students attending secondary school.

Factors that might compensate for a decline in motivation are parental expectations and the degree to which friends value schooling. As stated previously, students from ethnic minorities are overrepresented in senior secondary vocational education in the Netherlands. It has often been found that parents of students from ethnic minorities have high expectations for their children's school careers than do native Dutch parents (Van der Veen, 2003). These high expectations are probably related to their reasons for migrating to the Netherlands, such as the acquisition of a better socioeconomic

position. For students from ethnic minorities, fulfilling their parents' high expectations has found to be an important motivator to achieve (e.g. Verkuyten, Thijs, & Canatan, 2001). As students grow older, friends become more important. When friends value schooling, this might also compensate for a decrease in motivation. Significant number of students attending senior secondary vocational schools have risk factors associated with dropping out, such as financial problems, pregnancy and having to care for a family member (Allen & Meng, 2010). For these reasons, relationships with non-educational risk factors also have to be considered.

### ***The present study***

It is of importance to investigate the development of motivational beliefs and motivated behaviour in students in senior secondary vocational education and to attempt to explain the developments in their motivated behaviour, as students who become less motivated can be expected to change course or drop out. As with dropping out, a change, of course, can be considered problematic, as it often results in delayed graduation. For some students, the risk of dropping out of school as a result of a delay is higher than for other students. If developments in students' motivated behaviour could be explained better, this could provide clues regarding how to improve it. A smaller average decline in motivated behaviour may result in more students obtaining a qualification. In this study, the developments in motivation of first-year students in senior secondary vocational education were described and related to background factors. Motivational beliefs that had been found to be associated with a decrease in motivation after school transitions in previous studies, such as value orientation, poor person-environment fit (quality of relationships between teacher-student and among students), and future time perspective concerning leisure, were found to be related to an important aspect of the development in motivated behaviour, namely, academic delay of gratification. In addition, potentially compensating factors (parents' and friends' expectations of schooling) and risk factors not related to school were included and course dropout was related to developments in motivation and risk factors. The presence of only a few studies on the development in students' motivation in vocational schools led to the formulation of the following research questions instead of hypotheses:

How does senior secondary vocational students' motivation develop during the first year of school? To what extent do these developments vary according to age, vocational level, gender, and social and ethnic background?

To what extent do developments in motivated behaviour assessed as academic delay of gratification relate to developments in motivational beliefs, the quality of the relationship with teachers and students, future time perspectives on school, professional career and leisure, parents' expectations of their children's schooling, the degree to which friends value schooling and non-school-related risk factors, and what is the relationship among these factors and students dropping out of courses?

**Table 1.** Information on the sample.

	%	<i>N</i>		%	<i>n</i>
Ethnic background			Gender		
Netherlands (=ref)	33.6	206	Female	60.1	369
Morocco	18.7	115	Male (=ref)	39.9	245
Turkey	8.0	49	Students' age		
Surinam	9.1	56	16 years old or younger (=ref)	23.0	141
Other non-western country	19.7	121	17 or 18 years old	41.7	256
Unknown	10.9	67	19 years old or older	24.3	149
Parental education			Age unknown	11.1	68
Max. lower vocational education	29.5	181	Level of senior secondary vocational education		
Max. senior secondary vocational education (=ref)	21.3	131	Level 2	7.3	45
Higher education	16.1	99	Level 3 (=ref)	20.7	127
Unknown	33.1	203	Level 4	72.0	442

column %, total  $n = 614$ ; (=ref): reference category in analyses.

## Method

### Data

The participants were 614 students in the first year of senior secondary vocational education from two institutions in different large cities in the Netherlands. The students were spread over 43 classes and 10 courses in three domains: administration (commerce, entrepreneurship and legal services), technical (engineering, technology and construction) and care and welfare. The students in the care and welfare courses were almost all female (60 compared to two males). Table 1 shows background information about the sample.

At wave 1, the average age of the students in the sample was 18. Almost a quarter of the students were 16 years of age or younger and almost a quarter were 19 years' old or older. Forty per cent of the students were male and 60% female; 34% had a Dutch background and most of the students were attending the highest level (4) of senior secondary vocational education.

Data were collected in four waves:

1. The beginning of year 1 (November 2011),
2. March 2012,
3. June 2012, and
4. the beginning of year 2 (November 2012).

The students' participation in the four waves was as follows: 21.7% of the students participated in all four waves, 25.7% in three, 27.9% in two and 24.8% in one. The most frequent reason for not participating in a particular wave was that the management of a particular college was temporarily not participating in the study. Another frequent reason was that a student had dropped out of the course: 21% of the 614 students.

### Instruments

A self-reporting questionnaire with a five-point Likert-type scale was submitted to the students during regular class time. Table 2 shows the scales included in this study. For



**Table 2.** The scales in the questionnaire..

Concept	Example item	Number of items	Alpha m1	Alpha m2	Alpha m3	Alpha m4
Motivation						
Academic delay of gratification	I do school work before I meet with my friends	3	0.79	0.82	0.85	0.85
Academic self-efficacy	Even if the work is hard, I can learn it	6	0.83	0.86	0.87	0.86
Mastery approach goals	I feel satisfied when I have learned something that makes sense to me	5	0.77	0.80	0.81	0.77
Performance approach goals	I enjoy getting a better grade than my classmates	6	0.87	0.88	0.89	0.78
Performance-avoidance goals	I feel embarrassed when I have to ask for help	6	0.84	0.85	0.89	0.88
Explanatory factors						
Quality of teacher-student relationships	With my teachers I can talk about personal problems	5	0.68	0.71	0.73	0.69
Quality of student-student relationships	I get along well with my classmates	5	0.76	0.77	0.76	0.77
Long term FTP on school and professional career	I have a good chance of going to college or university or getting a good job when I leave school	6	0.61	0.66	0.61	0.62
Long term FTP on leisure time	In future, leisure time will mean a lot to me	6	0.70	0.65	0.69	0.69
Parents' expectations of their children's schooling	My parents think I will achieve a lot	4	0.77	n.a.	n.a.	n.a.
Extent friends value schooling	My friends think it is important that I attend school	5	0.80	n.a.	n.a.	n.a.

For each scale, the scores range from 1 (not at all) to 5 (completely).

each scale, a factor analysis (principal axis factoring) and a reliability analysis were carried out using SPSS 24. The results of the factor analysis for the academic delay of gratification scale indicated that only one item did not have a sufficiently high loading on one factor. This item was omitted from the scale. The analyses did not lead to other changes to the scales. To determine whether variables that were measured more than once assessed the same construct over time, confirmatory multi-group factor analysis was conducted for each of these variables in which the groups were the measurement occasion. For each variable, a model fit of a model in which the factor loadings were held equal across the measurements was compared to the model fit of a model in which the factor loadings were estimated freely. For all models, the difference in the model fit index CFI was smaller than 0.01, which shows that the variables that were measured more than once reflected the same construct over time.

### *Motivation variables*

A short, adapted version of Bembenutty and Karabenick's (Bembenutty & Karabenick, 1998) academic delay of gratification scale was used to assess the students' perceptions of this aspect of their motivated behaviour. Items concerned giving priority to schoolwork over other non-school related activities. In the original instrument, students were offered two alternatives per item from which they could choose. In this study, this two-fold answering option was not offered, as this deviated too much from the other questions in our questionnaire. For motivational beliefs, one scale for academic self-efficacy and three scales for goal orientation were included. To measure students' academic self-efficacy, the subscale academic efficacy from the Patterns of Adaptive Learning Scales (PALS; Midgley et al., 2000) was used. Goal orientations were assessed using three scales from Seegers, van Putten, and de Brabander's (2002) Goal Orientation Questionnaire. Their scale task orientation assessed mastery approach goals, the scale self-enhancing ego orientation measured performance approach goals and the scale self-defeating ego orientation assessed performance-avoidance goals.

### *Explanatory factors*

To explain students' developments in motivated behaviour, the following scales were included in the study. To measure the quality of the relationship with teachers and students, the scales 'well-being connected with teachers' and 'well-being connected with fellow students' developed by Peetsma, Wagenaar, and de Kat (2001) were included. Two scales from the Time Perspective Questionnaire by Peetsma (TPQ; 1992) were used to measure long-term time perspectives concerning leisure, school and a professional career. 'Long-term' refers to the time after finishing school. Both scales included three attitudinal components, namely, cognition, affect and behavioural intention. A meta-analysis by Andre, van Vianen, Peetsma, and Oort (2018) showed that future time perspective measures, such as Peetsma's TPQ that include a combination of cognition, affect and behavioural intentions and are domain-specific reveal the strongest relationship with educational outcomes. Parents' expectations of their children's schooling were measured by presenting the students with items from the scale 'mobility orientation' by van der Veen (2003). The extent to which friends valued schooling was measured using the scale 'friends' school value' devised by Peetsma

et al. (2001). In addition, the explanatory factor 'presence of non-school-related risk factors for dropout' was included in this study. This was a combined measure of nine items that could have caused a student some or significant concern. These factors were:

1. Living space,
2. security,
3. financial situation,
4. addiction,
5. illness of a relative,
6. presence of a chronic illness or handicap that impeded studying,
7. having to care for a sick family member,
8. responsibility for the care of one or more siblings, and
9. having their own child(ren).

The higher the score, the greater the number of risk factors the students faced.

### ***Course dropout***

Data on students who dropped out of their courses were retrieved from school administrations and course managers.

### ***Background variables***

Control variables were gender, age, ethnic background, educational level of the parents and the level of vocational education (see [Table 1](#) for the categories and the reference categories identified). The ethnic background variable was based on the ethnic background of both parents: When both parents had been born in the Netherlands, it was counted as Dutch and where both parents were born in Turkey, for example, it was counted as Turkish. Where one parent had one Dutch and one a non-Dutch parent based on the country of birth, the ethnic background was considered to be the country of birth of the non-Dutch parent. Western ethnic backgrounds were added to the group with a Dutch background. When both parents had different non-Dutch non-Western countries of birth, the ethnic background was considered to be non-Western. The educational level of the parents was included as an indicator of the socioeconomic status of the students. The level of vocational education of the students is an indicator of their prior education. Pre-vocational education also has different levels and, of the students completing pre-vocational education, only those who complete the highest level successfully are allowed to attend the highest level (4) of senior secondary vocational education.

### ***Design of the analysis***

The Latent Growth Curve Analysis (LGCA) was performed using Mplus 7.11 (Muthén & Muthén, 2013). In this analysis, the level (intercept) and rate of growth (slope) are treated as latent variables. LGCA has several advantages. Firstly, a unique growth curve is estimated for each student, whereby every student can have a different level and a

different growth rate. The second advantage of LGCA is that correlations between the latent variables can be estimated, as a different level can be associated with a different growth rate. A third advantage is that the latent variables can be related easily to background characteristics to estimate differences in development related to these characteristics. A fourth important advantage is that LGCA allows for data to be missing at random (MAR), assuming that missing values can be estimated on the basis of available scores on other variables. To estimate missing data, we used a full-information maximum likelihood estimation (FIML). Missing data were assumed to be MCAR when cases with missing data are deleted, which has been criticised widely (Little & Rubin, 1989).

To investigate whether different growth patterns were non-linear, the square of the slope was also estimated for each individual. As the time at which each student was measured was not exactly the same, an LGCA with individually varying times of observation was used. In this type of analysis, a growth model with random slopes is estimated. Time in years was included in four different variables, starting at zero for time for the first variable. We corrected for the nesting of the data of students within classes by using the option TYPE = COMPLEX.

To answer the first research question concerning how motivation developed, the level and rate of growth of each of the five motivation variables were described and related to the background variables. A model including the square of the slope was compared to a model without this latent variable to determine whether development was non-linear. A consequence of LGCA with random slopes is that the usual model fit indices such as RMSEA are not computed. For this reason, the fits of the linear and quadratic growth models were compared by comparing the  $-2$  log-likelihood of the models:  $-2$  times the difference in log-likelihoods for two nested models is a distributed chi-square. A Satorra-Bentler scaled mean-adjusted chi-square was computed: This chi-square statistic was divided by a scaling correction factor to better estimate the chi-square, in case of non-normality. For the performance approach goals, sample-size-adjusted Bayesian information criterion (SABIC) scores for the linear and non-linear growth model were compared, as the Satorra-Bentler scaled chi-square was negative. A smaller SABIC indicates a better fit. After examining whether developments were non-linear, the background variables were added to the univariate growth curve. In this paper, the level of significance is  $p < .05$ .

To answer the second research question concerning the explanations of motivated behaviour and course dropout, the development in academic delay of gratification was first related to the development in motivational beliefs and explanatory factors while controlling for the background variables. Using a logistic regression analysis, course dropout was then related to the development in motivation and explanatory variables. Developments were included in the analyses in the form of latent growth curves.

## Results

### *Development in motivation variables*

Before examining the growth curves for the motivation variables, we present the zero-order correlations, mean scores, and standard deviations for the observed variables of

each of the four measurements in Table 3. For each measurement, students had the highest observed scores in self-efficacy and mastery approach goals. The mean observed scores per measurement for self-efficacy were similar, while the observed scores for mastery approach goals were slightly lower than later when the measurement took place.

We then performed latent growth curve modelling and examined whether a linear or quadratic growth model led to a better model fit. Table 4 shows the results.

For all the variables, except for performance approach and avoidance orientation, a quadratic growth model fitted the data better than did a linear growth model. With regard to performance approach goals, the Satorra–Bentler scaled chi-square was negative. SABICs for both models were compared. The SABIC for the linear model was smaller than was the one for the non-linear model (3622 compared to 3624), indicating that the linear model fitted the data better. Table 5 shows the means and variances and Figure 1 shows the growth curves. The estimated mean of each measurement (the intercepts) was very similar to the corresponding observed mean.

If the slope mean is significant, this means that there is an average development over time. There was only an overall decrease for academic delay of gratification; there was a decrease during the first half of the year and a slight increase afterwards. On an average, there was no significant growth for motivational beliefs. However, the variances of the slopes for all variables except performance approach and avoidance orientation were significant, which means that there was significant variability in the growth rates. For performance-avoidance and approach goals, individual students did not differ in growth, which means that these goals remained the same for all students after the first measurement.

Table 6 shows the relationship between the growth in motivation and the background variables. We do not show the relationships with the growth rate (slope) for either of the performance orientations, as the students did not differ significantly in growth.

Older students (19 years and older) had a higher level of self-efficacy at the first measurement than did younger students ( $d = 0.28$ ). Eighteen-year-old students (reference group) had a lower level of mastery orientation at the first measurement than did younger ( $d = 0.21$ ) and older students ( $d = 0.54$ ). There was only a relationship with the level of senior secondary vocational education for performance approach goals: students at the lowest level (2) had a lower performance approach orientation at measurement 1 than did students at higher levels ( $d = -0.63$ ). At measurement 1, female students reported higher academic delay of gratification ( $d = 0.29$ ) and lower academic self-efficacy ( $d = -0.31$ ) than did male students. Students with more highly educated parents had a more positive academic self-efficacy at measurement 1 ( $d = 0.30$ ) and higher performance approach goals ( $d = 0.34$ ) at measurement 1 than did students with less well-educated parents. The academic delay of gratification of students from a Turkish background started higher ( $d = 0.44$ ), developed more positively ( $d = 1.03$ ) and showed a more inverted-U-shape ( $d = -1.14$ ) than was the case for students with a Dutch background. Students from a Turkish background also had higher performance approach goals at measurement 1 than did students with a Dutch background ( $d = 0.48$ ). Students with a Moroccan background had a greater academic delay of gratification ( $d = 0.67$ ) and a higher mastery orientation ( $d = 0.40$ ) at the first

**Table 3.** Zero-order correlations, mean observed scores, and standard deviations for the motivation variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Academic delay of gratification m1	1																			
2. Academic self-efficacy m1	<b>0.26</b>	1																		
3. Mastery approach goals m1	<b>0.40</b>	<b>0.22</b>	1																	
4. Performance approach goals m1	<b>0.14</b>	<b>0.14</b>	<b>0.26</b>	1																
5. Performance-avoidance goals m1	0.06	-0.04	-0.04	<b>0.50</b>	1															
6. Academic delay of gratification m2	<b>0.60</b>	<b>0.04</b>	<b>0.28</b>	<b>0.09</b>	<b>0.07</b>	1														
7. Academic self-efficacy m2	<b>0.15</b>	<b>0.55</b>	<b>0.12</b>	<b>0.14</b>	-0.03	<b>0.16</b>	1													
8. Mastery approach goals m2	<b>0.29</b>	<b>0.11</b>	<b>0.39</b>	<b>0.15</b>	<b>0.04</b>	<b>0.40</b>	<b>0.34</b>	1												
9. Performance approach goals m2	0.00	<b>0.19</b>	<b>0.13</b>	<b>0.68</b>	<b>0.35</b>	<b>0.03</b>	<b>0.12</b>	<b>0.18</b>	1											
10. Performance-avoidance goals m2	0.08	0.01	0.05	<b>0.38</b>	<b>0.59</b>	<b>0.11</b>	-0.13	-0.09	<b>0.42</b>	1										
11. Academic delay of gratification m3	<b>0.46</b>	<b>0.07</b>	<b>0.27</b>	<b>0.13</b>	<b>0.06</b>	<b>0.58</b>	<b>0.13</b>	<b>0.24</b>	<b>0.14</b>	<b>0.13</b>	1									
12. Academic self-efficacy m3	<b>0.22</b>	<b>0.34</b>	<b>0.18</b>	<b>0.14</b>	<b>0.05</b>	<b>0.16</b>	<b>0.51</b>	<b>0.21</b>	<b>0.11</b>	-0.03	<b>0.29</b>	1								
13. Mastery approach goals m3	<b>0.25</b>	<b>0.14</b>	<b>0.40</b>	<b>0.15</b>	<b>0.04</b>	<b>0.16</b>	<b>0.16</b>	<b>0.41</b>	<b>0.18</b>	<b>0.04</b>	<b>0.34</b>	<b>0.39</b>	1							
14. Performance approach goals m3	0.06	0.09	<b>0.15</b>	<b>0.64</b>	<b>0.34</b>	<b>0.03</b>	<b>0.02</b>	<b>0.00</b>	<b>0.73</b>	<b>0.42</b>	<b>0.21</b>	<b>0.04</b>	<b>0.29</b>	1						
15. Performance-avoidance goals m3	0.08	0.02	-0.07	<b>0.34</b>	<b>0.53</b>	-0.02	-0.12	-0.11	<b>0.38</b>	<b>0.52</b>	<b>0.12</b>	-0.01	-0.04	<b>0.49</b>	1					
16. Academic delay of gratification m4	<b>0.47</b>	<b>0.04</b>	<b>0.28</b>	<b>0.12</b>	<b>0.09</b>	<b>0.54</b>	<b>0.17</b>	<b>0.33</b>	<b>0.03</b>	<b>0.03</b>	<b>0.55</b>	<b>0.24</b>	<b>0.15</b>	<b>0.08</b>	<b>0.09</b>	1				
17. Academic self-efficacy m4	0.11	<b>0.42</b>	<b>0.01</b>	<b>0.05</b>	-0.01	<b>0.16</b>	<b>0.47</b>	<b>0.15</b>	<b>0.06</b>	-0.10	<b>0.07</b>	<b>0.38</b>	<b>0.23</b>	<b>0.00</b>	-0.13	<b>0.14</b>	1			
18. Mastery approach goals m4	<b>0.25</b>	<b>0.22</b>	<b>0.34</b>	<b>0.23</b>	<b>0.14</b>	<b>0.31</b>	<b>0.20</b>	<b>0.37</b>	<b>0.18</b>	<b>0.08</b>	<b>0.29</b>	<b>0.28</b>	<b>0.42</b>	<b>0.21</b>	-0.01	<b>0.29</b>	<b>0.35</b>	1		
19. Performance approach goals m4	0.01	0.07	<b>0.04</b>	<b>0.57</b>	<b>0.40</b>	-0.07	-0.01	<b>0.02</b>	<b>0.61</b>	<b>0.36</b>	<b>0.07</b>	<b>0.02</b>	<b>0.13</b>	<b>0.58</b>	<b>0.33</b>	<b>0.10</b>	<b>0.00</b>	<b>0.19</b>	1	
20. Performance-avoidance goals m4	0.01	-0.02	-0.11	<b>0.28</b>	<b>0.49</b>	-0.08	-0.12	-0.01	<b>0.25</b>	<b>0.50</b>	<b>0.04</b>	-0.09	-0.20	<b>0.27</b>	<b>0.56</b>	<b>0.10</b>	-0.20	-0.15	<b>0.48</b>	1
Descriptive statistics																				
Mean	3.38	4.05	4.11	3.19	2.01	3.20	4.06	4.03	3.14	1.92	3.28	4.04	3.93	3.06	2.04	3.26	4.06	3.97	3.13	2.08
Standard deviation	0.82	0.55	0.65	0.99	0.82	0.86	0.57	0.65	0.97	0.79	0.79	0.60	0.73	1.01	0.87	0.81	0.58	0.66	1.14	0.86

Total  $n = 614$ ; bold correlation = significant.

**Table 4.** Comparison of linear and quadratic growth with Satorra–Bentler scaled chi-square test.

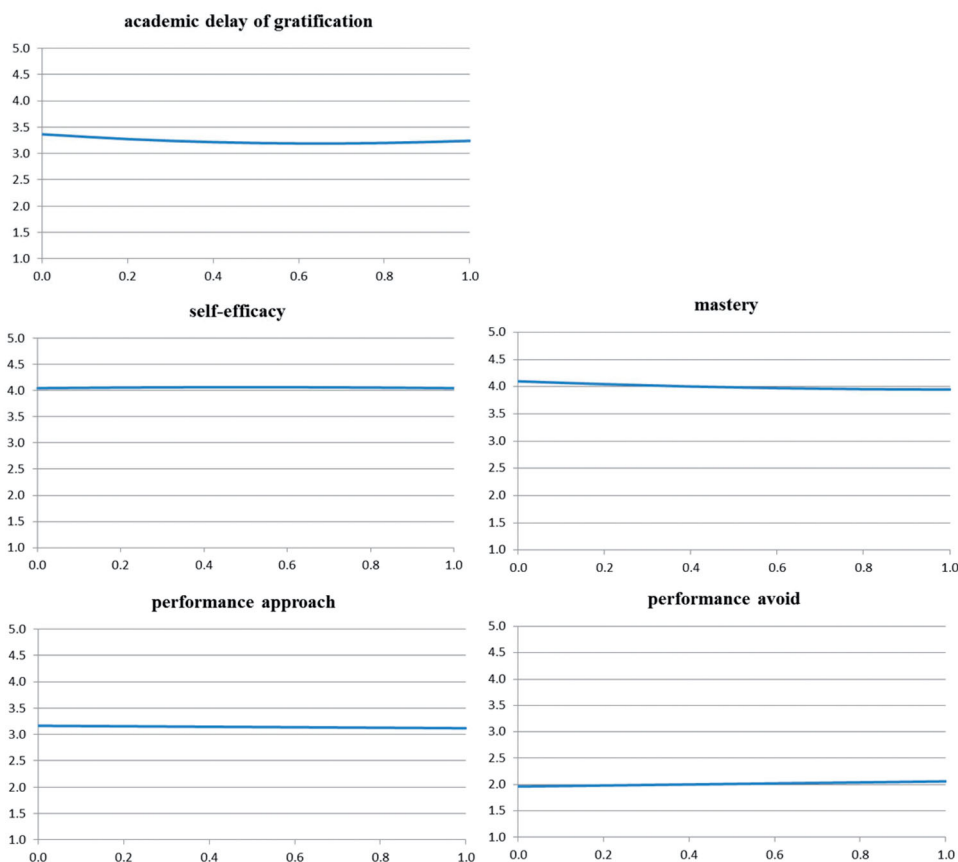
	Academic delay of grat.	Academic self-efficacy	Mastery approach goals	Performance approach goals	Performance-avoidance goals
Log likelihood model with linear growth	–1551.36	–1156.08	–1358.63	–1796.56	–1578.15
Log likelihood model with quadratic growth	–1543.80	–1150.54	–1356.44	–1791.25	–1577.21
TRd	<b>45.23</b>	<b>47.12</b>	<b>16.43</b>	–35.96	1.44
Df	4	4	4	4	4

Bold = significant.

**Table 5.** Means and variances for the best fitting growth curves.

	Academic delay of gratification		Academic self-efficacy		Mastery approach goals		Performance approach goals		Performance avoidance goals	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Mean										
Intercept	<b>3.37</b>	0.05	<b>4.04</b>	0.03	<b>4.10</b>	0.04	<b>3.17</b>	0.06	<b>1.96</b>	0.05
Slope	<b>-0.54</b>	0.14	0.08	0.13	-0.30	0.16	-0.06	0.05	0.10	0.06
Slope2	<b>0.42</b>	0.12	-0.08	0.11	0.15	0.14				
Variance										
Int	<b>0.52</b>	0.09	<b>0.27</b>	0.06	<b>0.31</b>	0.07	<b>0.69</b>	0.07	<b>0.45</b>	0.06
Slope	<b>2.69</b>	0.88	<b>1.78</b>	0.66	<b>1.62</b>	0.64	0.05	0.27	0.24	0.17
Slope2	<b>1.51</b>	0.49	<b>1.01</b>	0.36	<b>0.67</b>	0.26				

Bold = significant.

**Figure 1.** Average growth in motivation.

measurement than did students with a Dutch background. Students with other non-Western backgrounds had more positive growth in academic delay of gratification ( $d = 0.35$ ), higher academic self-efficacy ( $d = 0.34$ ) and a stronger mastery orientation at measurement 1 ( $d = 0.20$ ) than did students with a Dutch background.



**Table 6.** Growth in motivation related to background variables.

	Academic delay of gratification						Academic self-efficacy							
	Intercept		Slope		Slope 2		Intercept		Slope		Slope 2			
	Est.	(S.E.)	d	(S.E.)	Est.	(S.E.)	d	(S.E.)	Est.	(S.E.)	d	(S.E.)		
Age (ref = 18)														
Age 16	-0.04	(0.07)	-0.06	(0.34)	-0.10	(0.33)	0.23	(0.33)	0.19	(0.07)	0.14	(0.25)	0.14	(0.25)
Age 19 and older	0.07	(0.09)	0.10	(0.39)	0.23	(0.37)	-0.46	(0.37)	-0.38	(0.06)	<b>0.28</b>	(0.30)	-0.17	(0.30)
Age unknown	-0.01	(0.12)	-0.01	(0.42)	0.05	(0.38)	-0.15	(0.38)	-0.12	(0.06)	-0.18	(0.51)	0.05	(0.51)
Level (ref = level3)														
Level 2	-0.15	(0.18)	-0.21	(0.63)	0.28	(0.69)	-0.22	(0.69)	-0.18	(0.09)	-0.14	(0.71)	0.63	(0.71)
Level 4	-0.01	(0.09)	-0.01	(0.28)	0.14	(0.25)	-0.36	(0.25)	-0.29	(0.06)	0.07	(0.24)	-0.04	(0.24)
Gender (ref = male)														
Female	<b>0.21</b>	(0.08)	<b>0.29</b>	(0.30)	-0.23	(0.27)	0.32	(0.27)	0.26	(0.06)	<b>-0.31</b>	(0.20)	0.24	(0.20)
Parental education (ref = senior secondary vocational education)														
Max lower vocational education	-0.15	(0.10)	-0.21	(0.34)	0.04	(0.33)	0.11	(0.33)	0.09	(0.06)	0.00	(0.27)	-0.24	(0.27)
Higher education	0.04	(0.13)	0.06	(0.39)	0.34	(0.38)	-0.29	(0.38)	-0.24	(0.06)	<b>0.30</b>	(0.33)	0.21	(0.33)
Unknown	-0.10	(0.13)	-0.14	(0.38)	<b>0.49</b>	(0.35)	-0.47	(0.35)	-0.38	(0.06)	0.12	(0.31)	-0.18	(0.31)
Ethnic background (ref = Dutch)														
Moroccan	<b>0.48</b>	(0.11)	<b>0.67</b>	(0.48)	0.53	(0.49)	-0.50	(0.49)	-0.41	(0.09)	0.22	(0.35)	0.10	(0.35)
Turkish	<b>0.32</b>	(0.12)	<b>0.44</b>	(0.59)	<b>1.03</b>	(0.50)	<b>-1.40</b>	(0.50)	<b>-1.14</b>	(0.11)	0.09	(0.45)	-0.20	(0.45)
Surinamese	0.17	(0.13)	0.24	(0.61)	0.52	(0.58)	-0.60	(0.58)	-0.49	(0.09)	0.06	(0.58)	0.34	(0.58)
Other non-western	0.08	(0.10)	0.10	(0.27)	<b>0.35</b>	(0.27)	-0.37	(0.27)	-0.30	(0.08)	<b>0.34</b>	(0.29)	0.43	(0.29)
Unknown	0.00	(0.15)	0.00	(0.50)	0.51	(0.43)	-0.77	(0.43)	-0.63	(0.08)	-0.15	(0.33)	0.16	(0.33)

(Continued)

Table 6. Continued.

	Mastery														
	Intercept			Slope			Slope2			Performance approach			Performance avoidance		
	Est.	(S.E.)	d	Est.	(S.E.)	d	Est.	(S.E.)	d	Est.	(S.E.)	d	Est.	(S.E.)	d
Age (ref = 18)															
Age 16	0.12	(0.06)	0.21	-0.23	(0.32)	-0.18	0.22	(0.30)	0.27	0.08	(0.10)	0.09	-0.04	(0.09)	-0.06
Age 19 and older	0.30	(0.08)	0.54	-0.24	(0.39)	-0.19	0.22	(0.36)	0.27	-0.06	(0.12)	-0.07	0.08	(0.11)	0.12
Age unknown	0.06	(0.11)	0.10	0.25	(0.61)	0.19	-0.32	(0.62)	-0.39	-0.11	(0.14)	-0.13	0.01	(0.09)	0.01
Level (ref = level3)															
Level 2	0.02	(0.11)	0.04	-1.19	(0.81)	-0.94	1.40	(0.81)	1.71	-0.52	(0.19)	-0.63	-0.08	(0.17)	-0.12
Level 4	-0.09	(0.06)	-0.16	0.06	(0.41)	0.05	0.07	(0.40)	0.09	-0.07	(0.13)	-0.08	-0.11	(0.13)	-0.17
Gender (ref = male)															
Female	0.11	(0.06)	0.20	-0.26	(0.22)	-0.20	0.21	(0.22)	0.26	-0.08	(0.09)	-0.10	-0.15	(0.08)	-0.22
Parental education (ref = senior secondary vocational education)															
Max lower vocational education	0.01	(0.08)	0.01	-0.11	(0.32)	-0.08	0.18	(0.32)	0.21	0.05	(0.10)	0.06	-0.13	(0.09)	-0.19
Higher education	0.14	(0.09)	0.25	-0.19	(0.47)	-0.15	0.33	(0.45)	0.41	0.28	(0.11)	0.34	-0.09	(0.09)	-0.13
Unknown	-0.05	(0.10)	-0.08	0.55	(0.38)	0.43	-0.37	(0.34)	-0.45	0.07	(0.12)	0.09	-0.06	(0.11)	-0.09
Ethnic background (ref = Dutch)															
Moroccan	0.22	(0.09)	0.40	0.08	(0.39)	0.06	-0.05	(0.42)	-0.06	0.02	(0.13)	0.02	-0.04	(0.14)	-0.06
Turkish	0.14	(0.09)	0.25	0.79	(0.44)	0.62	-0.47	(0.45)	-0.57	0.40	(0.17)	0.48	0.32	(0.20)	0.48
Surinamese	0.05	(0.11)	0.09	-0.29	(0.53)	-0.23	0.30	(0.56)	0.37	0.18	(0.14)	0.21	-0.08	(0.14)	-0.12
Other non-western	0.20	(0.08)	0.35	0.01	(0.35)	0.01	0.04	(0.35)	0.05	0.04	(0.11)	0.05	-0.05	(0.11)	-0.07
Unknown	0.02	(0.12)	0.04	-0.23	(0.47)	-0.18	0.24	(0.47)	0.29	-0.02	(0.15)	-0.02	-0.17	(0.14)	-0.26

Unstandardized estimates and effect sizes (d); bold = significant.

### ***Growth in academic delay of gratification related to motivational beliefs and explanatory factors***

Overall, there was a decrease in academic delay of gratification (see Table 5 and Figure 1). Table 7 shows the extent to which the development in the academic delay of gratification was related to developments in motivational beliefs and Table 8 shows the degree to which it was related to identified explanatory factors. For both performance goals, the scores at the first measurement were included, as the slopes had no significant variance. For the development in the long-term future time perspective of leisure, linear developments in the quality of relationships between teachers and student and among students were included in the analyses. For the long-term future time perspective of leisure, a model with a non-linear development did not lead to a better model fit than did a linear model ( $TRd = 2.7(4)$ ,  $p > .05$ ). For both the quality of student-student relationships ( $TRd = 58.07(4)$ ,  $p < .05$ ) and teacher-student relationships ( $TRd = 45.24(4)$ ,  $p < .05$ ), a non-linear development fitted the data better. However, for the quality of the relationship with fellow students, including a non-linear development in the analysis led to excessively high ( $>300$ ) standard errors. In a model with non-linear development of the quality of the relationship with teachers, the mean and variance of the slope and square of the slope were not significant. We controlled for background characteristics in the analyses but, as discussed in paragraph 4.1, they were not included in the table for reasons of ease of reference.

Of the motivational beliefs, the level of mastery orientation ( $d = 0.72$ ), of self-efficacy ( $d = 0.50$ ) and of performance approach goals ( $d = 0.08$ ) at the first measurement were related to the level of academic delay of gratification at the first measurement. No significant relationship between the growth in motivational beliefs and the growth in academic delay of gratification was found.

Only the number of non-school-related risk factors at the first measurement was related to growth in the academic delay of gratification. The more risk factors, the more *positive* the development was in terms of the academic delay of gratification ( $d = 0.10$ ). The level of the academic delay of gratification at the first measurement was related negatively to long-term future time perspectives of leisure ( $d = -0.64$ ) and positively to the long-term future time perspective of school and professional career ( $d = 1.29$ ). Furthermore, the more positively the students experienced the quality of the relationship with their teachers ( $d = 0.53$ ), the higher their parents' expectations of their schooling ( $d = 0.29$ ) and the more their friends valued schooling ( $d = 0.20$ ), the higher the level of the academic delay of gratification of the students at the first measurement. The level of the experienced quality of the relationship with fellow students was not related significantly to the level of the academic delay of gratification at the first measurement.

### ***Course dropout related to motivation and explanatory factors***

At first, dropping out was only related to background variables to show how these variables were connected to the course dropout rate. Female students had lower odds of dropping out of the course with which they had started the year. The odds ratio was 0.75, meaning that the odds for male students dropping out were 1.33 times



**Table 8.** Developments in academic delay of gratification related to explanatory factors.

	Ftp on leisure			Ftp on school and prof career			Quality of student-student relationships			Quality of teacher-student relationships		
	Est.	S.E.	<i>d</i>	Est.	S.E.	<i>d</i>	Est.	S.E.	<i>d</i>	Est.	S.E.	<i>d</i>
Slope academic delay of gratification on												
Slope	0.01	1.73	0.01	1.87	3.08	1.14	1.40	1.37	0.86	1.04	1.68	0.64
Slope 2	n.a.			-2.64	14.15	-1.61	n.a.			n.a.		
Intercept	-0.01	0.49	-0.01	-0.07	2.78	-0.04	0.17	0.47	0.11	0.40	0.34	0.25
Slope 2 academic delay of gratification on												
Slope	-0.88	1.50	-0.72	-1.50	2.39	-1.22	-1.42	1.22	-1.16	-0.40	1.40	-0.32
Slope 2	n.a.			2.35	10.28	1.91	n.a.			n.a.		
Intercept	-0.18	0.45	-0.15	0.24	2.30	0.19	-0.36	0.45	-0.30	-0.26	0.33	-0.21
Intercept academic delay of gratification on												
Intercept	<b>-0.46</b>	0.10	<b>-0.64</b>	<b>0.93</b>	0.18	<b>1.29</b>	-0.33	0.18	-0.46	<b>0.38</b>	0.11	<b>0.53</b>
Parents' expectations of their children's schooling												
	Est.	S.E.	<i>d</i>	Est.	S.E.	<i>d</i>	Risk factors			Est.	S.E.	<i>d</i>
Slope academic delay of gratification	-0.18	0.23	-0.11	0.26	0.26	0.16	0.16	0.08	0.10	0.16	0.08	0.10
Slope 2 academic delay of gratification	0.23	0.24	0.19	-0.18	0.26	-0.15	-0.13	0.09	-0.10	-0.13	0.09	-0.10
Intercept acad. delay of gratification	<b>0.21</b>	0.07	<b>0.29</b>	<b>0.15</b>	0.06	<b>0.20</b>	-0.01	0.03	-0.02	-0.01	0.03	-0.02

 Unstandardized estimates and effect sizes (*d*); bold = significant.

higher ( $=1/0.75$ ) than they were for female students. Furthermore, for students aged 17 or younger, the odds for dropping out of a course were 1.76 times higher, and 2.14 times higher for students aged 19 years old and older than they were for 18-year-old students (the average age of all students).

We found no significant associations of the development in motivation during the first year of senior secondary vocational education (for both performance goals the scores on the first measurement) with the course dropout rate when controlling for the background variables (see Table I in the [Supplementary appendix](#)). Furthermore, no significant relationships for the association of the course dropout rate and the explanatory factors during the first year of senior secondary vocational education were found (see Table II in the [Supplementary Appendix](#)).

## Conclusions and discussion

The average decrease in motivation found after other school transitions was not as apparent in senior secondary vocational education. We found little average change in motivation during the first school year. We found a decrease in the students' academic delay of gratification after the beginning of a new school year but, after the initial decrease, it increased slightly. This might have been because the idea of going to work had become more concrete for them, having gained work experience in internships.

On an average, the goal orientations did not change. However, there were individual differences in the growth rate. This was not the case for performance-avoidance goals: The performance-avoidance orientation of all the students remained the same after the first measurement. This finding differs from Meier et al.'s (2013) study, which found that adolescents showed an increase in mastery goals after the transition. We should note that the first measurement was not taken immediately, but approximately two months after the beginning of the school year. This might have made the development appear less strong than was found in other studies. Furthermore, we included global measures for school motivation by referring to the school's location. Motivation in the workplace during internships might develop more strongly or differently, as found by Krapp and Lewalter (2001) and Gurtner et al. (2012).

Developments in motivation did vary according to background variables in some cases. The greater motivation for students from ethnic minorities compared to ethnic majority students was only found in some ethnic groups and not systematically in all the aspects of motivation that were assessed. Male students and students with low-educated parents seem to be more at risk of delay in their school career than female students and students with higher-educated parents. Male students had a higher chance of dropping out of the course with which they had started the year and also reported less academic delay of gratification than did female students at the beginning of the study, although they had higher academic self-efficacy. Students with lower educated parents had less positive growth in academic delay of gratification. Nevertheless, in the current study, course dropout was not found to be related to school motivation. Older students (at least 19 years' old) had higher self-efficacy than did younger students. Older students may have more insight into what they can do

academically than younger students because they have more experience with education or have made a more conscious choice for the programme. Nevertheless, we can only guess at the reasons for higher self-efficacy among older students, as reasons for this were not the subject of this study. Students at the lowest level of senior secondary vocational education had a lower performance approach orientation than did students at the other levels, perhaps as a result of being at a lower level. In this study, we explored differences in motivation by background characteristics. More research is needed into reasons for these differences.

We found no relationship between the change in motivated behaviour assessed as academic delay of gratification during the first year and motivational beliefs. Except for the number of non-school-related risk factors experienced, the other explanatory variables were also unrelated to changes in the academic delay of gratification. The greater the number of risk factors, the more positive the development in academic delay of gratification. It is possible that, for students experiencing risk factors, having an education demanded more of an explicit effort because, compared to students without these risk factors, staying at school and receiving an education was not something they could take for granted. It might have been the case that the students who experienced more non-school-related risk factors regarded their school as an escape from the difficult situation in which they were, or as providing a possible solution, in the short or longer term, to their situation. On the other hand, many of the risk factors were time intensive, such as having to care for a sick family member, children or siblings. Therefore, the results regarding risk factors might be artefacts of the items' wording. This should be further investigated in future research.

All the explanatory factors, except for the quality of the relationship with fellow students, showed the expected associations with motivated behaviour, which we assessed as an academic delay of gratification, but only at the start, not with changes in academic delay of gratification. It may be that the academic delay of gratification is no longer easily influenced by older adolescents. However, as stated previously, we only included quite general measures for school motivation that did not differentiate between contexts; for example, school versus work. The average scores for the academic delay of gratification of students were not high (3.4 on a five-point scale). In view of the significance of the academic delay of gratification for academic success (Bembenutty, 2011), it would be useful to study how teachers could provide students with an educational environment that would support their ability or willingness to delay gratification.

Self-efficacy and mastery orientation were the most important predictors for motivated behaviour, assessed as the academic delay of gratification. In other studies, both mastery orientation and self-efficacy have been associated with adaptive learning outcomes. The fact that we also found these positive associations in this study can be considered to be a favourable result, as education might have a more concrete meaning for students in senior secondary vocational schools than it does for students in general secondary schools, as the former are being educated to pursue an occupation. In later years, as the world of work becomes more tangible, students' mastery orientation may increase. However, other factors might also have an influence. In this study,

performance-approach goals had a very small positive association with the academic delay of gratification at the first measurement. Therefore, we found no indication that performance-approach goals were associated with less favourable outcomes in this study.

Moreover, we did not find associations between course dropout rates and motivation and the distinguished explanatory factors, such as long-term future time perspectives; we only found associations with the background variables of gender and age. However, future research may detect these relationships, as we only examined students who had dropped out of their courses in this study. Dropping out of a course may lead to dropping out of school because it often leads to a delay. We did not study the reasons or motives causing students to drop out of their courses. It seems likely that having made a 'wrong choice' would be a good predictor of course dropout. Another limitation of this study is that only a scale assessing the academic delay of gratification was included to assess motivated behaviour. Although the academic delay of gratification can be regarded as an important aspect of motivated behaviour because it has been found to be related to different aspects of motivational beliefs as well as to other aspects of motivated behaviour and academic achievement, future studies should also include other aspects of motivated behaviour. An additional limitation of this study is that we gained a somewhat global insight into all of the assessed concepts using questionnaires, and did not gain any insight into reasons for dropping out. In the future, more in-depth qualitative research examining the reasons for changing courses and motivations to study would be beneficial to differentiate among different learning contexts. Future research could also focus on identifying groups of students with specific motivation patterns and who have an increased risk of dropping out.

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