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Development of achievement goals across the transition out of secondary school

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1. Introduction

Achievement goals are central aspects of individual motivation in social learning contexts and have multiple impacts on learning behavior and performance (for an overview see [Maehr & Zusho, 2009](#); [Gegenfurtner & Hagenauer, 2013](#)). The achievement goals individuals pursue are rooted not only in personal dispositions, but also in contextual features ([Ames & Archer, 1988](#); [Midgley, Kaplan, & Middleton, 2001](#)). Thus, it is assumed that individuals adapt their achievement goals to changing environments—transitions from one educational context to another can be seen as being critical in this sense ([Anderman & Anderman, 1999](#); [Chouinard & Roy, 2008](#); [Fryer & Elliot, 2007](#); [Muis & Edwards, 2009](#)). Since research on the relevance of the transition from secondary school into different contexts (e.g., university studies, vocational training) for achievement goal adoption among older adolescents is scarce, we addressed this issue in the present work. In a longitudinal study with three measuring points over the period of eight months, using an online-methodology, we investigated changes in achievement goals over the transition following graduation from secondary school. We focused on self-esteem as a factor which could potentially protect one against maladaptive achievement goal development, since self-esteem has been found to be an important internal factor in the field of resilience research, and has been linked to achievement goal adoption (e.g., [Dutton & Brown, 1997](#); [Heimpel, Elliot, & Wood, 2006](#); [Skaalvik, 1997](#)).

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1.1. Achievement goals

Generally, goals are conceptualized as cognitive representations of states, events, or results which are to be attained or avoided and, therefore, are conceptualized as guiding behavior and related experiences and cognitions (e.g., Austin & Vancouver, 1996; Elliot & Fryer, 2008; Elliott & Dweck, 1988; Kaplan & Maehr, 2007). Accordingly, achievement goals refer to the aims individuals have in pursuing achievement (Ames, 1992; Dweck & Leggett, 1988; Nicholls, 1984). Against the background of differential consequences, in current achievement goal theory researchers distinguish among at least three fundamental types of achievement goals (Ames, 1992; Dweck, 1986; Elliot, 1997, 1999; Middleton & Midgley, 1997): Mastery goals (aim to learn, understand, and improve knowledge and skills), performance approach goals (aim to demonstrate one's competences relative to others), and performance avoidance goals (aim to avoid being perceived as incompetent by others).¹

This well-established trichotomous conceptualization of achievement goals puts the emphasis on why students engage in learning activities. Additionally, Nicholls and colleagues (Nicholls, Patashnick, & Nolen, 1985; Nicholls, 1984) suggested that the aspect of academic alienation or work avoidance should be taken into account as well, i.e. students' goals to avoid putting effort into learning activities. Although work avoidance goals may be characterized as the absence of achievement goals (Elliot, 1999), the practical relevance of including them in motivational research in educational settings has been well-documented in the literature (e.g., Butler, 2008; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Nicholls et al., 1985; Nolen, 1988; Seifert & O'Keefe, 2001).

Consistent with the theoretical notion that goals guide behavior and related experiences and cognitions, an impressive body of empirical evidence demonstrates that different achievement goals are associated with different patterns of outcomes in the learning process. Mastery goals are clearly related to adaptive patterns. Consistent positive associations with interest, deep processing, persistence in the face of difficulty, and preferences for challenging tasks are documented in the literature for this type of goal (e.g., Ames & Archer, 1988; Elliot & McGregor, 2001; Harackiewicz et al., 2000). In contrast, performance avoidance goals as well as work avoidance goals are related to maladaptive patterns. The adoption of performance avoidance goals is negatively related to interest, deep processing, academic performance, and positively related to test anxiety (e.g., Church, Elliot, & Gable, 2001; Elliot & McGregor, 2001; Skaalvik, 1997). Work avoidance goals are similarly inimical (e.g., Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Meece, Blumenfeld, & Hoyle, 1988). However, the patterns of consequences associated with performance approach goals are more diverse. They are related to strong academic performance but also to surface processing and test anxiety (e.g., Cury, Elliot, Da Fonseca, & Moller, 2006; Harackiewicz, Barron, Tauer, & Elliot, 2002; Middleton & Midgley, 1997).

1.2. Stability and contextual antecedents of achievement goals

Current theoretical models conceptualize achievement goals as dependent on a series of more or less stable antecedents (for an overview see Maehr & Zusho, 2009), resulting in a moderate stability as well as a considerable degree of plasticity/variability among achievement goals (e.g., Fryer & Elliot, 2007). The latter is underpinned, for example, by average changes in achievement goals during several phases of primary and secondary education—particularly well-documented here is a continuous decline in mastery goals (e.g., Chouinard & Roy, 2008; Gonida, Kiosseoglou, & Voulala, 2007; Meece & Miller, 2001; Spinath & Spinath, 2005).

Of central importance for the present work is the conviction that achievement goals are conceptualized as not only being dependent on individual antecedents (such as implicit theories, motives, self-perceptions; Barron & Harackiewicz, 2001; Cury et al., 2006; Elliot & McGregor, 2001; Kaplan & Maehr, 2007), but also on contextual conditions (Ames, 1992; Meece, Anderman, & Anderman, 2006). Correspondingly, achievement goals have been empirically found to be associated with features of the context, for example the classroom context (e.g., Ames & Archer, 1988; Ames, 1992; Church et al., 2001; Seifert & O'Keefe, 2001; Turner, Meyer, Midgley, & Patrick, 2003): Educational contexts which advocate understanding the learning material and mastery of learning tasks are associated with a strong adoption of mastery goals. In contrast, students adopt performance goals to a large degree in contexts with an emphasis on grades, competition and the demonstration of abilities. A combination of the latter with harsh evaluation has been shown to be associated with performance avoidance goals. Finally, climates rife with alienation and lacking opportunities to experience competence are associated with the embracement of work avoidance goals.

1.3. The role of transitions

According to the relevance of contextual conditions, it can be assumed that transitions from one educational (achievement) context to another (e.g., transition from secondary school to vocational training) are of pivotal importance for the development of achievement goals (Anderman, Austin, & Johnson, 2002). While conditions within educational contexts

¹ Elliot and McGregor (2001) and Pintrich (2000) suggested also differentiating between approach and avoidance goals for mastery goals, i.e. between the aim to understand and learn and the aim to avoid misunderstanding and not mastering learning tasks. The 2 × 2 framework which results from fully crossing the mastery-performance distinction and the approach-avoidance distinction expands the trichotomous model to include mastery avoidance goals. They have, however, not been included in the present work.

are frequently stable to a considerable degree (e.g., because students have the same teachers with their stable teaching styles over longer periods), different educational contexts are assumed to differ substantially with respect to conditions relevant for achievement goal adoption (e.g., structure of constraints and opportunities, standards, and incentives). Thus, transitions from one educational context to another are frequently associated with immense changes for the individual and, therefore, are expected to have a strong influence on achievement goal setting, and thus play a crucial role in the development of achievement goals. Additionally, they can be seen as outstanding opportunities to analyze the role of the context in achievement goal adoption, especially because the chances to enlighten change in achievement goals in dependence of change in contextual conditions are limited within given contexts with stable conditions (see [Anderman et al., 2002](#)).

Actually, a number of studies have indicated that changes in achievement goal adoption are related to transitions from one scholastic context to another. A series of studies focused on the transition from elementary to middle school (for an overview see [Anderman et al., 2002](#)). Here, a substantial decline in students' orientation toward mastery goals has been consistently evident (e.g., [Anderman & Anderman, 1999](#); [Anderman & Midgley, 1997](#); [Shim, Ryan, & Anderson, 2008](#)). Regarding performance goals, the pattern of findings is less consistent: While [Anderman and Anderman \(1999\)](#) found an increase in performance goals across the transition from elementary to middle school, [Anderman and Midgley \(1997\)](#) reported no changes. Some studies also focused on later transitions within the school system. Results from [Pajares and Cheong \(2003\)](#) indicated that mastery goals regain significance after the transition to high school, whereas performance approach and performance avoidance goals do not change substantially after this transition. [Tuominen-Soini, Salmela-Aro, & Niemivirta \(2012\)](#) also investigated the development of achievement goals across the transition to upper secondary education—they identified groups of students with different motivational profiles and found that these motivational profiles were relatively stable across this transition within school system.

Contrary to the (relatively) broad evidence regarding achievement goal change over transitions within school systems, the trajectories of achievement goals across the transition from secondary school into other educational contexts (i.e. the transition out of school) have, to the best of our knowledge, not yet been investigated. However, it can be assumed that other educational contexts such as vocational training or university studies differ more sharply from the (secondary) school context than different scholastic contexts within school systems. The context of vocational training (especially in its specific German tradition) often includes more practically-oriented learning opportunities, which are relevant for problem-solving in the workplace, and focuses more on action competences and competences relevant for work processes than is the case for the scholastic context (see [Weigel, Mulder, & Collins, 2007](#)). Therefore, the context of vocational training is assumed to be conducive to the development of mastery goals and less so for the development of performance goals (see also [Krapp & Lewalter, 2001](#); [Lewalter & Krapp, 2004](#)). On the other hand, the context of university studies is more theoretically-oriented and characterized by more challenging tasks than the common scholastic context, thus it can be assumed that this context encourages the adoption of mastery goals; at the same time it can be assumed that the associated increase in testing emphasizes performance goals ([Darnon, Dompnier, Delmas, Pulfrey, & Butera, 2009](#); see also [Salmela-Aro, Kiuru, & Nurmi, 2008](#)). Facing these assumed differences between non-scholastic educational contexts and the scholastic context, it seems fruitful to analyze achievement goal change across the transition out of secondary school.

1.4. Self-esteem and achievement goal development

School graduation and the transition into a new context are seen as a critical life event for emerging adults in developmental psychological literatures (e.g., [Filipp & Klauer, 1991](#)), since they not only encompass changes in the learning and achievement environment but also in social relationships and living situations. Accordingly, this transition places developmental demands on adolescents (in terms of a necessary adaption to a new context), which can be especially stressful ([Arnett, 2000](#); [Martin & Marsh, 2006](#)). While some are able to cope with, or even thrive in the face of, difficult and challenging life events, others are more at risk. It can be assumed that maladaptation to the new context may manifest itself in dysfunctional achievement goals (i.e., weak mastery goals, strong performance avoidance and work avoidance goals).

The body of literature on risk resilience research points to several, both internal and external, protective factors which provide a buffer against the potentially negative consequences of (very) stressful and depressing circumstances ([Catterall, 1998](#); [Dumont & Provost, 1999](#); [Morrison, Brown, D'Incau, O'Farrell, & Furlong, 2006](#)). One of the most prominent internal factors is high self-esteem. Defined as a global evaluation of oneself, sometimes also as an attitude toward oneself ([Baumeister & Tice, 1985](#); [Baumeister, Campbell, Krueger, & Vohs, 2003](#)), self-esteem has been consistently found to play a protective role against maladaptive patterns ([Dutton & Brown, 1997](#)). For example, individuals with high self-esteem demonstrate better motivation and performance after failure than individuals with low self-esteem ([Baumeister & Tice, 1985](#)).

Regarding the link between self-esteem and achievement goals, only cross-sectional findings have been presented so far. [Skaalvik and colleagues \(Skaalvik, Valans, & Sletta, 1994; Skaalvik, 1997\)](#) found positive associations between self-esteem and performance approach goals and negative correlations with performance avoidance goals. They concluded that students with low self-esteem may be preoccupied with not looking stupid and therefore adopt performance avoidance goals. [Heimpel et al. \(2006\)](#) also found that students with low self-esteem are more likely to adopt avoidance than approach goals. Similarly, [Tuominen-Soini, Salmela-Aro, & Niemivirta \(2008\)](#) found positive associations between self-esteem and mastery goals and negative associations between self-esteem and performance avoidance goals.

Despite these quite consistent findings, the role of self-esteem in the development of achievement goals remains unclear, since longitudinal evidence has been lacking. According to the theoretical assumption that high self-esteem buffers against

maladaptive developments in the face of stressful demands, it can be expected that high self-esteem prior to the transition out of school is associated with adaptive changes in achievement goals after the transition.

1.5. Research questions

To sum up the above mentioned research deficits, it can be stated that changes in the achievement goals of young adults associated with transitions to contexts different from their prior school environments have not yet received proper attention. Additionally, the role of self-esteem in the development of achievement goals in young adults remains unclear. Against this background, the present study aimed to investigate the individual trajectories of achievement goals (mastery, performance approach, performance avoidance, and work avoidance) across the transition from secondary school into other educational contexts (vocational training, university studies). In addition, we aimed to investigate potential effects of self-esteem on achievement goal development over the transition out of school.

Specifically, the following research questions guided the study:

- (1) What changes in achievement goal setting occur over the transition out of school and what inter-individual differences exist in these changes?
- (2) Are specific growth trajectories for achievement goals associated with different types of transition (e.g., transition to vocational training, to university studies)?
- (3) Are growth trajectories for achievement goals related to initial self-esteem (prior to the transition)?

Since considerable shifts in context conditions could be assumed, we expected changes in goal trajectories across the transition out of school and inter-individual differences in the direction and intensity of these changes. Moreover, we expected differences between the trajectories of students moving to different contexts. In addition, we expected self-esteem to buffer against maladaptive achievement goal changes.

2. Method

2.1. Procedure and participants

A longitudinal study with three measuring points using online-questionnaires was realized. Participants were recent graduates of German secondary schools. Measuring points were scheduled for the month prior to graduation (Time 1), four months after graduation (Time 2), and eight months after graduation (Time 3). The graduates' achievement goals were assessed at each of the three measuring points. Self-esteem and biographical data were measured at Time 1. The type of the educational context the graduates were transiting into was assessed at Time 2 and Time 3.

Participants were recruited for Time 1 using postcards with the URL of the first online-questionnaire which were distributed by teachers in classes attended by students about to graduate. Participants who, at Time 1, agreed to be contacted for subsequent participation, were notified by e-mail when the surveys at Time 2 and Time 3 were to be conducted. Participation was voluntary at each measuring point. As an incentive to take part in the study all participants were invited to take part in a lottery drawing, with three electronic devices as prizes, at each of the three measuring points.

The final sample included those 367 graduates who took part in at least two of the three surveys (59% participated at all three measuring points). About half of the participants (49%) graduated from a lower school track, the remaining participants graduated from a higher school track.² The average age of the participants was 17.8 years at Time 1 ($SD = 1.91$). The proportion of females came to 61% and the proportion of students with an immigration background came to 8%.

Most of the graduates transited into one of three contexts, vocational training (26%), university studies (31%), or a higher secondary school track (31%). The remaining graduates (13%) transited into one of several other contexts (e.g., community service, military service, occupational activity without training)—since these remaining contexts were all non-educational (at least formally), they served as a reference category in the main analyses.³

² The German school system consists of several tracks for secondary education. Lower secondary school tracks lead to a secondary general school qualification and refer to school types such as "Hauptschule", "Mittelschule" or "Realschule" (school type names vary between federal states). Students with a secondary general school qualification can enter either vocational training or move on to a higher secondary school track, but are not qualified to register in university programs. Higher secondary school tracks comprise two or three years more than lower tracks, lead to tertiary school qualification and refer to school types such as "Fachoberschule", "Berufsbildende Schule" or "Gymnasium". Students who graduate from a higher secondary school track can enroll in German state universities, vocational training or (in some cases) a subsequent higher secondary school leading to a more general higher education qualification.

³ Different contexts require different secondary school qualifications (see footnote 2). Therefore, secondary school tracks were not uniformly distributed within the contexts ($\chi^2(3; N = 367) = 200.6; p < .001$; the percentages of students who had graduated from a higher school track within the different contexts were as follows: 20% for vocational training, 98% for university studies, 18% for another higher secondary school track, and 80% for other contexts). Since the number of years needed to complete the different secondary school tracks varies, graduates transiting into different contexts were also, on average, of different ages at Time 1 (vocational training: $M = 16.7$ years; $SD = 1.27$; university studies: $M = 19.3$ years; $SD = 1.14$; higher secondary school track: $M = 16.8$ years; $SD = 1.94$; other contexts: $M = 18.8$ years; $SD = 1.49$; $F(3, 363) = 75.020, p < .001$). Aside from these expectable differences, no significant differences between the four context groups existed with regard to gender ($\chi^2(3, N = 367) = 1.15; p = .77$) or immigration background ($\chi^2(3, N = 367) = 1.53; p = .68$).

2.2. Measurements

2.2.1. Achievement goals

An abbreviated version of an instrument well-established in Germany (*SELLMO*; Spinath, Stiensmeier-Pelster, Schöne, & Dickhäuser, 2002), adapted to the different contexts, was used to assess achievement goals at all three measuring points. This instrument assesses four dimensions of achievement goals, namely mastery goals, performance approach goals, performance avoidance goals, and work avoidance goals. In order to safeguard the equivalence of the achievement goal measurements across different contexts, we used a variation of the item stem to realize the context-specificity of each measure (e.g., “In school . . .”, “In my vocational training . . .”, “In my university studies . . .”). Item texts were identical across contexts and measuring points. Mastery goals (sample item: “... I want to learn as much as possible”), performance approach goals (“... I want to outperform others”), performance avoidance goals (“... I don't want it to show if I am not as smart as the others”), and work avoidance goals (“... I don't want to work too hard”) were measured using 6, 5, 6 and 6 items, respectively. Items could be rated on 5-point Likert type scales ranging from 1 (*absolutely false*) to 5 (*absolutely true*). Internal consistencies were acceptable to satisfactory for all achievement goal measures at all measuring points (see Table 1).

2.2.2. Self-esteem

In order to assess self-esteem at Time 1, we used the German version (von Collani & Herzberg, 2003) of a questionnaire developed by Rosenberg (1965). An abbreviated version consisting of four items was applied (sample item: “On the whole, I am satisfied with myself”). Items could be rated on a 4-point Likert type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The scale demonstrated a good internal consistency ($\alpha = .81$).

2.3. Analysis

The research questions were addressed by estimating latent growth-curve models (Little, Card, Preacher, & McConnell, 2009; McArdle & Epstein, 1987). In such models, inter-individual differences in the outcome variable occur in two ways, namely as inter-individual differences in the initial magnitude of the outcome at the first measuring point (intercept), and as inter-individual differences in the change of the outcome over time (slope).

For each of the four achievement goal types, we estimated three latent growth curve models. (1) The *Basic Model* was used to estimate means and variances of initial goal magnitude and goal change over the transition independently from the context to which graduates transited, and independently from their initial self-esteem. (2) To analyze whether goal change (and, eventually, initial goal magnitude) is specific for the individual contexts to which the graduates transited, we estimated the *Context-specific Model* in the second step. Context was represented using a set of three effect-coded variables (transition to vocational training, to university studies, or to a higher secondary school track) with transition to non-educational contexts as reference category. (3) Finally, self-esteem at Time 1 was included as a predictor. The resulting *Self-esteem Model* estimated the effects of self-esteem on goal change (and its associations with initial goal magnitude), while controlling for the type of the context into which the adolescents transited. Since the type of the new context was effect coded, the resulting coefficients of self-esteem refer to average effects for all contexts and not only to effects in the reference context.

In all models, achievement goals and self-esteem were specified as latent variables with two indicators (item parcels). One requirement for the proper interpretation of latent growth curve modeling results is that the measurement models remain invariant over time. For this reason, factor loadings and intercepts for the goal variables were set invariant for the three measuring points. Using Mplus 6 (Muthén & Muthén, 2010), all parameters were estimated through the ML Estimator, which is comparable to the Full Information Maximum Likelihood method (Finkelbeiner, 1979; Schafer & Graham, 2002). Under the assumption that missing data occurred at random, 23.6% of the data were estimated. Compared to a pairwise or listwise deletion of incomplete cases, the method applied takes into account the prevention of potential biases due to attrition in longitudinal analyses (Schafer & Graham, 2002).⁴

3. Results

3.1. Descriptive statistics

Descriptive statistics for achievement goals and self-esteem are displayed in Table 1. Correlations between measures of achievement goals at Time 1 and Time 2 ranged between $r = .43$ and $r = .49$ (mean $r = .46$), pointing to a moderate rank-order stability across the transition out of school. The corresponding correlations between Time 2 and Time 3 measures were, descriptively, larger and fell in the range between $r = .52$ and $r = .74$ (mean $r = .60$), pointing to a seemingly larger rank-order stability within the new context.⁵

⁴ In order to gather evidence as to whether missing values occurred randomly, we compared students who had participated at all measuring points with students who had not participated at all measuring points regarding the central variables of the present study at Time 1 (four dimensions of achievement goals, self-esteem). A multivariate analysis of variance revealed no significant differences between these two groups at Time 1 (Wilks $\lambda = 0.98$; multivariate $F(5,355) = 1.606$; $p = .16$), underpinning the assumption that missing values occurred at random.

⁵ A full correlation matrix is available as Supplementary Material.

Table 1
Descriptive statistics.

	Time 1			Time 2			Time 3		
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α
Mastery goals	4.16	0.52	.65	4.17	0.70	.80	4.21	0.66	.79
Performance approach goals	3.23	0.86	.75	3.29	0.85	.79	3.19	0.89	.80
Performance avoidance goals	2.40	0.81	.80	2.32	0.88	.86	2.24	0.83	.86
Work avoidance goals	2.46	0.88	.84	2.16	0.84	.87	2.07	0.81	.87
Self-esteem	3.19	0.69	.81						

Note: Time 1: $n = 367$; Time 2: $n = 256$; Time 3: $n = 218$.

Table 2
Fit indices for latent growth curve models.

Model	χ^2	df	RMSEA	CFI	SRMR
Basic Model					
Mastery goals	32.56	10	.08	.96	.07
Performance approach goals	12.64	10	.03	.99	.05
Performance avoidance goals	18.51	10	.05	.99	.04
Work avoidance goals	16.49	10	.04	.99	.04
Context-specific Model					
Mastery goals	54.98	21	.07	.95	.06
Performance approach goals	15.96	21	.01	1.00	.04
Performance avoidance goals	28.24	21	.03	.99	.04
Work avoidance goals	36.31	21	.05	.98	.04
Self-esteem Model					
Mastery goals	78.17	37	.06	.96	.06
Performance approach goals	54.27	37	.04	.98	.04
Performance avoidance goals	53.57	37	.04	.99	.04
Work avoidance goals	66.54	37	.05	.98	.05

3.2. Goal change after secondary school graduation independent from specific future contexts (Basic Model)

Table 2 shows fit indices for all estimated latent growth curve models (Basic Model, Context-specific Model, and Self-esteem Model), and indicate a quite good fit for all models.

The results of estimating the Basic Model (Table 3) indicated inter-individual variability in initial achievement goals (intercept) and achievement goal change (slope).⁶ Additionally, the results indicated an average decline in work avoidance goals independent from the specific context to which adolescents transited after graduation. However, an average change was not evident for the remaining types of achievement goals.

3.3. Context-specific goal change (Context-specific Model)

Estimating the Context-specific Model indicated some changes in adolescents' achievement goals specific to the educational context to which they transited after graduation (see Table 3). For mastery goals significant slope differences for all three future educational contexts were evident. These indicated that adolescents increased their mastery goal adoption after transiting into each of the educational contexts (vocational training, university studies, higher secondary school track), while the mastery goals of graduates transiting to a non-educational context decreased. Additionally, the results indicated that students who transited to a higher secondary school track (i.e., were faced with a transition within the school system) lowered their adoption of performance approach goals, while this was not obvious for transitions to other contexts. For performance avoidance goals and work avoidance goals no context-specific goal change was evident.

3.4. Effects of self-esteem on goal change (Self-esteem Model)

In estimating the Self-esteem Model, the effects of initial self-esteem (Time 1) on initial goal magnitude and, more importantly, goal change were investigated (see Table 3).

To begin with, results regarding the associations of adolescents' self-esteem and their initial achievement goals (intercept effects) indicated negative associations with performance avoidance and work avoidance goals.

⁶ It has to be mentioned that testing whether the slope variance is different from nil revealed non-significant results in two of the four cases (performance approach goals, work avoidance goals). Since the respective test is susceptible to producing conservatively biased results (see Snijders and Bosker, 1999), individual goal change was, nevertheless, also predicted in subsequent modeling steps for these two goal types.

Table 3
Latent growth curve models of achievement goals.

	Mastery goals			Performance approach goals			Performance avoidance goals			Work avoidance goals		
	Basic model	Transition model	Self-esteem model	Basic model	Transition model	Self-esteem model	Basic model	Transition model	Self-esteem model	Basic model	Transition model	Self-esteem model
Intercept												
Mean	4.16* (.03)	4.19* (.06)	4.19* (.06)	3.03* (.05)	3.09* (.09)	3.09* (.09)	2.36* (.04)	2.37* (.09)	2.35* (.09)	2.40* (.05)	2.40* (.10)	2.38* (.10)
Variance	.19* (.05)	.22 (.05)	.21 (.05)	.32 (.09)	.30 (.08)	.29 (.09)	.46 (.08)	.47 (.08)	.39 (.08)	.36 (.08)	.36 (.08)	.32 (.08)
Transition to ^a												
Vocational training		.01 (.05)	.02 (.05)		.10 (.07)	.09 (.07)		.04 (.07)	.03 (.07)		.02 (.08)	.00 (.08)
University studies		.06 (.04)	.06 (.04)		-.02 (.07)	-.02 (.07)		-.07 (.07)	-.07 (.07)		-.04 (.07)	-.05 (.07)
Higher secondary school track		.00 (.04)	.00 (.04)		.05 (.07)	.04 (.07)		.04 (.07)	.03 (.07)		.03 (.07)	.00 (.07)
Self-esteem			.07 (.06)			-.15 (.08)			-.39* (.08)			-.32 (.09)
Linear Change												
Mean	.00 (.02)	-.11* (.05)	-.12* (.05)	.00 (.05)	-.07 (.06)	-.07 (.06)	-.06* (.03)	-.03 (.06)	-.04 (.06)	-.17* (.03)	-.15* (.06)	-.17* (.06)
Variance	.09* (.03)	.09* (.03)	.09 (.03)	.06 (.05)	.04 (.05)	.03 (.05)	.15* (.05)	.15* (.05)	.14 (.05)	.06 (.04)	.05 (.04)	.03 (.04)
Transition to ^a												
Vocational training		.09* (.04)	.10* (.04)		.01 (.05)	-.01 (.05)		.04 (.05)	.03 (.05)		-.01 (.05)	.02 (.05)
University studies		.10* (.03)	.10* (.03)		-.07 (.05)	-.07 (.05)		.03 (.05)	.03 (.05)		.01 (.04)	.02 (.04)
Higher secondary school track		.07* (.04)	.08* (.04)		-.12* (.05)	-.12* (.05)		-.01 (.05)	-.02 (.05)		.05 (.04)	.05 (.04)
Self-esteem			.11* (.04)			-.04 (.05)			-.08* (.06)			-.10* (.06)

Note: Displayed are regression coefficients and standard errors (in parentheses).

^a Reference category: "Transition to a different context".

* $p < .05$.

+ $p < .10$.

Regarding the effects of self-esteem on goal change, a positive effect on the slope was found for mastery goals. This effect indicates that students with high self-esteem before secondary school graduation increased (more than the average) their adoption of mastery goals over the transition to a subsequent context. Moreover, latent growth curve modeling also revealed a negative effect of self-esteem for the slope of performance avoidance goals ($p = .07$). Thus, adolescents with high self-esteem before graduation from secondary school reduced their performance avoidance goals over time while an increase in these maladaptive achievement goals was evident for adolescents with low self-esteem. Finally, a negative effect of self-esteem was found for the slope of work avoidance goals, indicating that students with high self-esteem before graduation reduced their work avoidance goals over time more than the average.

4. Discussion

Against the background of the relevance of achievement goals for learning and achievement behavior (Elliot & Harackiewicz, 1996; Harackiewicz et al., 2000, 2002), this contribution dealt with changes in achievement goal adoption across the transition out of the secondary school context and into post-secondary educational contexts with a special focus on the potentially protective role of self-esteem. Since prior work was limited to transitions within the school system (e.g., Middleton, Kaplan, & Midgley, 2004), the present work supplements the existing literature.

For all four achievement goal types under investigation, substantial inter-individual differences between students were found. Additionally, we observed substantial inter-individual differences for changes in mastery goals and performance avoidance goals, which underpin our assumption that different students react with different goal changes to the conditions, demands and opportunities that the transition into a new context presented them with.

Independent from the type of new context into which the graduates transited (i.e., on the average level), work avoidance goals declined substantially with a linear trend over the transition out of school. There may be different reasons for this decline. Since our results indicate a quite uniform change for all new contexts, an interpretation in terms of the characteristics of the secondary school context from which students graduated after the first measuring point or an interpretation based on the circumstances of transition itself seems to be adequate. Seifert & O'Keefe, 2001 stated that a lack of subjective value increases work avoidance goals. So, it seems that in each of the new contexts (even continuing secondary school education on a higher track), more subjective value is perceived than was in the former school context, which may be due to autonomous choices of subjects/domains in vocational training or university studies, or due to novelty. The decline in work avoidance goals may also be the result of a general developmental trend, since Archer, Cantwell, & Bourke (1999) found that older students showed less work avoidance goals than younger students.

We expected to find different trajectories in achievement goals for different types of transitions and new contexts. The results partially confirmed our expectations. We found that all students who transited into an educational context (i.e. vocational training, university studies, continuing secondary school education on a higher track) increased their adoption of mastery goals—in contrast to students who transited into a different context. Moreover, we found that students who transited into a higher secondary school track (i.e. were faced with a transition with the school system) decreased their adoption of performance approach goals, while a similar decrease was not evident for other students. These results confirm our assumption that the context of vocational training is conducive to the development of mastery goals since it includes more practically-oriented learning opportunities (see Krapp & Lewalter, 2001; Lewalter & Krapp, 2004). Moreover, they confirm the assumption that the context of university studies encourages the adoption of mastery goals since it is characterized by more challenging tasks than the scholastic context (Darnon et al., 2009). Contrary to our expectations, we found no differences between different transitions regarding changes in performance avoidance goals and work avoidance goals. Nevertheless, in concert with the average change in work avoidance goals, the changes in achievement goals associated with specific transitions to specific new contexts underpin the theoretically assumed relevance of contexts and transitions for achievement goals and their development (Ames, 1992; Anderman et al., 2002; Meece et al., 2006).

In line with our expectations, we found evidence that initial self-esteem prior to the transition out of school functions as a protective factor against maladaptive developments in achievement goal setting in the face of the critical life event of school graduation and transition into a new context (e.g., Filipp & Klauer, 1991). Above cross-sectional associations between self-esteem and achievement goals at Time 1, which are consistent with prior findings (Heimpel et al., 2006; Skaalvik et al., 1994; Skaalvik, 1997; Tuominen-Soini et al., 2008), Time 1 self-esteem was linked to changes in several achievement goal types: Stronger self-esteem was linked to stronger increases in mastery goals, slightly stronger decreases in performance avoidance goals and stronger decreases in work avoidance goals than what was observed on average. It seems that students with high self-esteem not only retained their adaptive goals but advocated them all the more so across the transition out of secondary school. Although this pattern of findings is consistent with the literature on risk resilience research, which points to the buffering function of a high self-esteem against the potentially negative consequences of stressful and depressing circumstances, the present results are novel and supplement the literature on the antecedents of achievement goal development. It is noteworthy that, in the present approach, it is assumed that self-esteem is not only a personal antecedent, but functions in interaction with contextual demands (resulting from the transition from one educational context to another).

There are some limitations of the present study that have to be kept in mind when interpreting its results. First, the study was conducted as an online study and thus the self-selection of motivated students could have biased the results. At the same time, online studies have the advantage of a low-threshold because the participants are not obliged to come to a specific

location at a specific time or to return questionnaires through the mail. According to a recent survey, at least 95% of young Germans between 16 and 24 years of age use the internet on a regular basis (German Federal Statistical Office, 2011). Therefore, in this day and age, conducting online studies might even be conducive to participation. Second, it has to be mentioned that there was a certain degree of drop-out over time. In order to adequately address drop-out (which is a common phenomenon in every longitudinal study) missing values were estimated using the Full Information Maximum Likelihood algorithm which takes attrition into account. Thus, potential biases through drop-out rates are minimized in our results (Schafer & Graham, 2002). Third, the focused interval of longitudinal investigation was relatively short (eight months), and context-specific changes in achievement goal setting could have occurred after this time period (e.g., as a result of cumulative context influences). Although it would be interesting to investigate goal trajectories over a longer period of time, beginning with the entrance into an educational context, it can, nevertheless, be assumed that major achievement goal adoptions to contextual features occur shortly after an individual engages in a new context. Thus, it is likely that most of the adoption processes, with regard to the new context, occurred within the time interval realized in the present work. Forth, we did not include mastery avoidance goals in the present study—since these goals might also change across the transition from one educational context to another, it would be an interesting task for future research to investigate mastery avoidance goals across the transition out of school. Finally, in our study we focused individually on each achievement goal type in order to get a deeper understanding of each goal trajectory across transitions. In addition to changes in specific achievement goal types, changes in the concert of all achievement goal types could have ensued over the transition out of school (e.g., shifts in the relative importance of one goal type in comparison to other goal types; see Fryer & Elliot, 2007; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011). Therefore, investigating intra-individual shifts in goal setting processes across the transition out of school would be a relevant task for future research.

4.1. Conclusions

Despite these limitations, it could be concluded that achievement goals, in particular mastery goals and work avoidance goals, change over the transition to a new context following secondary school graduation, although these changes do not seem to be particularly specific for the different (educational) contexts into which adolescents transit after graduation. The present results underpin the fundamental theoretical assumption that achievement goals depend on the characteristics of the context (Ames, 1992; Anderman et al., 2002; Meece et al., 2006) and that transitions from one context to another can lead to substantial changes in achievement goal adoption and, thus, can be crucial in achievement goal development (e.g., Anderman & Anderman, 1999; Anderman & Midgley, 1997; Kumar & Jagacinski, 2011). Finally, it could be concluded that high self-esteem functions as a protective factor against maladaptive developments in achievement goal setting over the transition after graduation from secondary school, i.e. against a decrease in mastery goals and an increase in performance avoidance and work avoidance goals.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.jijer.2013.03.006>.

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