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Relations of academic and general self-esteem to school achievement

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ABSTRACT

The study demonstrates on a nationally representative sample of Estonian students and university applicants ($N = 4572$) that although self-reported academic self-esteem is a strong and accurate predictor of school achievement, additionally rather low, not high, general self-esteem is a significant predictor of superior school performance when academic self-esteem and multicollinearity is controlled for. Two compensatory mechanisms—defensive pessimism and self-protective enhancement—may explain the paradox of low self-esteem: academically successful students have a more critical view of themselves and students with more modest academic abilities compensate for their academic under-achievement by elevating their general self-esteem. Children start to use self-protective enhancement but from age 12 to 14 they also start using defensive pessimism to protect themselves from the consequences of failure.

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1. Introduction

Despite popular beliefs that high self-esteem facilitates academic achievement, only a modest correlation was discovered between general self-esteem and school performance (Byrne, 1984; Byrne & Shavelson, 1986; Hansford & Hattie, 1982; Marsh & Yeung, 1998; Mintz & Muller, 1977). A recent meta-analysis estimated that the effect of the favourable influence of positive self-beliefs on academic achievement is modest and the overall estimated relation is about .08 (Valentine, Dubois, & Cooper, 2004). Also longitudinal studies do not point to any significant role for general self-esteem in the advancing of academic performance (Bachman & O'Malley, 1977; Byrne, 1986; Helmke & van Aken, 1995; Maruyama, Rubin, & Kingsbury, 1981; Pottebaum, Keith, & Ehly, 1986; Skaalvik & Hagtveg, 1990). Educational practices attempting to boost children's self-worth have demonstrated only limited and temporal effects unless they targeted specific self-concept domains (O'Mara et al., 2006). Based on these observations, Baumeister and his colleagues (2003) concluded that generalized evaluation of self-worth has no significant impact on the subsequent academic achievement (see Marsh & Craven, 2006, for a different opinion).

One possible explanation to the absence of a strong association between general self-esteem and academic performance is the specificity matching principle: in order to expect a strong or moderate correlation the specificity of predictors and criteria should be matched (Swann, Chang-Schneider, & McClarty, 2007). Because general self-esteem is unspecific and school performance rather narrowly defined, it may seem unlikely that school grades can be predicted from what people think or at least report about their general self-worth.

Not disputing the specificity matching principle, it is relevant to recognize that self-concept is a multidimensional construct (cf. Shavelson, Hubner, & Stanton, 1976) in which general and academic self-esteem are two distinguishable components with two dissimilar functions. While general self-esteem appears to be heavily affective in nature and tends to be associated with overall psychological well-being, specific self-esteem—that is self-evaluations in narrowly defined domains like school performance—appears to have a more cognitive component and tends to be more strongly associated with behaviour or behavioural outcomes (Baumeister et al., 2003; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). This means, in particular, that general self-esteem is only partly based on the student's academic self-esteem defined as evaluation of their school performance while self-assessment of their academic abilities is sufficiently accurate to reflect their achievement at school. Indeed, a meta-analysis has shown that specific academic self-concepts provide much better prediction of academic achievements than global self-esteem (Hansford & Hattie, 1982).

The main goal of this study is to demonstrate a multidimensional character of self-concept by showing reciprocation between general and academic self-esteem in their joint prediction of school achievement.

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2. Method

2.1. Participants

Three samples with a total of 4572 Estonian students and university applicants participated in this study. The number of participants with their mean ages across the grades is reported in Table 1.

2.1.1. Sample 1

The youngest sample of 1435 (682 girls and 753 boys) Estonian elementary school children (Grades 2, 3, and 4) was tested in 2002. The sample was drawn from 17 socially and geographically representative schools from all over Estonia, including the capital city of Tallinn, different towns and rural areas. Although first graders participated in completing the self-esteem tests, they are not yet given grades in most of the schools and, therefore, they were excluded. The mean age was 9.43 (SD = 1.04), ranging from 7 to 11 years. The permission was obtained from the parents.

2.1.2. Sample 2

The sample of 2746 Estonian adolescents (1466 girls and 1280 boys) attending Grades 6, 8, 10, and 12 was tested in 2001. The sample was drawn from 27 Estonian-speaking public secondary schools or gymnasiums from different regions of Estonia. The mean age of this sample was 14.93 (SD = 2.04), ranging from 11 to 19 years.

2.1.3. Sample 3

The sample consisted of 969 individuals (732 females and 237 males) who were applying for admission to the Faculty of Social Sciences at the University of Tartu in the years 1998 and 1999. The applicants' age ranged from 17 to 40 with the mean age of 19.2 (SD = 2.01) years and they completed an Estonian-speaking public secondary school or gymnasium all over Estonia. The participation in psychological testing was voluntary.

2.2. Measures

2.2.1. Academic achievement

Academic achievement was measured through the Grade Point Average (*GPA*), which was computed based on participants' grades of principal subjects (a) for the last semester from the school records for the Samples 1 and 2 or (b) based on the final school report from the finished secondary school for the applicants' sample. There is a five-mark grading system in Estonia ranging from 1 (*very weak*) to 5 (*very good*). The validity of *GPA* as a measure of academic achievement in the same schoolchildren (Samples 1 and 2) is recently reported (Laidra, Pullmann, & Allik, 2007).

2.2.2. General self-esteem

General self-esteem was measured by the Estonian version of the Rosenberg Self-Esteem Scale (*RSES*; Pullmann & Allik, 2000; Rosenberg, 1965). Items of the *RSES* were answered on a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). The internal reliabilities (Cronbach α) of the scale were .81 and .84 for the Samples 2 and 3, respectively. For the first sample, a modified and more readable version of the *RSES* was constructed in order to make the instrument more appropriate for the respondents of younger age. The original items of the *RSES* were restated using shorter and simpler analogues (e.g. the original item "*I feel I'm not a person of worth, at least on an equal plane with others*" was replaced with "*I'm as good as others*"). Additionally, the 5-point rating scale was replaced with a shorter version (1 = *disagree,* 2 = *sometimes,* 3 = *agree*) and the items were read aloud. The internal reliability of the modified *RSES* was $\alpha = .71$.

2.2.3. Academic self-esteem

Academic self-esteem was measured on the 7-item scale (*AcSES*) originally developed to assess students' academic self-esteem or perception of self-competence in the academic domain (cf. Marsh, 1992). More specifically, an evaluative aspect of present academic self-esteem was measured (i.e., "*I feel confident of my academic abilities*", "*I am one of the best students of my class*") rather than a cognitive dimension of self-concept that can be conceptualised as self-efficacy, referring to the person's conviction about own capacity to actualize a desired outcome and manage prospective situations (see Bong & Clark, 1999). Agreement with each item was rated on a 5-point scale, ranging from 0 *(strongly disagree)* to 4 *(strongly agree)*. The internal reliabilities of the scale were .78 and .75 for the Samples 2 and 3, respectively. Similarly to measure general self-esteem, a modified and more readable version of the *AcSES* scale was constructed for the first sample. The internal reliability of the modified *AcSES* was $\alpha = .71$.

3. Results

The mean level of *GPA* regularly decreased through all the grades starting from the highest value of 4.25 in Grade 2 and reaching its lowest value of 3.80 in Grade 12 (Table 1). As expected, the university applicants had statistically significantly higher *GPA* than secondary school leavers ($d = .69$, $p < .001$). Across all samples, girls had higher *GPA* than boys [$m = 4.17$ vs. 3.82, respectively; $t(4600) = 19.66$, $p < .001$] and this advantage of girls remained in

Table 1
Mean level and gender differences of the main variables and relations of academic achievement to general and academic self-esteem

Grade	*N*	Age	Means (Standard deviation)			Zero-order correlations		Partial correlations		
			GPA	*RSES*	*AcSES*	*RSES*	*AcSES*	*RSES**	*AcSES**	VIF
2nd	364	8.33 (0.59)	4.36 (0.57)♀	2.16 (0.34)	2.87 (0.50)♀	.28***	.39***	.04	.30***	1.56
3rd	388	9.45 (0.54)	4.35 (0.50)♀	2.18 (0.34)	2.78 (0.55)♀	.24***	.47***	−.09	.43***	1.69
4th	430	10.44 (0.56)	4.26 (0.64)♀	2.24 (0.32)	2.82 (0.57)♀	.33***	.60***	−.03	.54***	1.48
6th	609	12.44 (0.60)	3.97 (0.68)♀	2.71 (0.67)♀	2.44 (0.83)♀	.42***	.64***	.03	.54***	1.60
8th	697	14.39 (0.64)	3.85 (0.68)♀	2.70 (0.68)	2.37 (0.87)	.28***	.64***	−.13**	.62***	1.45
10th	642	16.06 (0.52)	3.82 (0.56)♀	2.79 (0.65)♂	2.38 (0.77)	.20***	.55***	−.18***	.55***	1.49
12th	488	17.82 (0.53)	3.80 (0.57)♀	2.81 (0.62)	2.34 (0.76)	.09	.46***	−.18***	.50***	1.28
Applicants	954	19.23 (1.98)	4.16 (0.48)♀	3.00 (0.63)	2.91 (0.87)♀	−.02	.50***	−.24***	.54***	1.14
Total	4572	14.45 (3.80)	4.02 (0.62)♀	2.66 (0.65)	2.61 (0.80)♀	.20***	.53***	−.12***	.53***	1.38

Note. *N* = number of valid cases; *GPA* = grade point average; *RSES* = Rosenberg Self-Esteem Scale; *AcSES* = Academic Self-Esteem Scale; *RSES** = Rosenberg Self-Esteem Scale controlled for the *AcSES*; *AcSES** = Academic Self-Esteem Scale controlled for the *RSES*; VIF = the variance inflation factor; ♀, ♂ = the mean level statistically significantly (at least $p < .05$) higher for girls and boys.

** $p < .01$.

*** $p < .001$.

each study group. The students' academic self-evaluation was related to academic achievement, reflecting quite accurately their performance at school. The Pearson's correlation between the *AcSES* and *GPA* ranged from $r = .39$ to .64 with the mean correlation of .53.

Unlike academic self-esteem, Pearson's correlation between general self-esteem and academic achievement increased from $r = .28$ up to .33 ($p < .001$) during elementary school grades, reaching the highest value in Grade 6 ($r = .42$, $p < .001$), and declined rapidly afterwards. General self-esteem explained only about 4% of the total variance of academic performance in Grade 10 and the correlation between the *RSES* and *GPA* became insignificant among secondary school leavers (Grade 12) and in the applicants' sample. However, the positive relationship between *RSES* and *AcSES* remained stable for all the grades (the mean correlation of .53, $p < .001$), indicating that students more confident of their academic abilities tended to rate their general self-worth more favourably. Moreover, the relationship between general and academic self-esteem remained unchanged ($r = .50$, $p < .001$) when academic achievement, gender, and age was controlled for. The mean correlations between the *RSES* and *AcSES* were $r = .48$, .53, and .53 for low, medium, and high academic performance groups, respectively, based on the tripartite split of the *GPA*.

What is the joint effect of academic and more global self-esteem on school performance? The association between general self-esteem and academic achievement changed dramatically when the students' evaluations of their academic abilities were partialled out (*RSES** in Table 1). For instance, the statistically significant positive correlations between the *RSES* and *GPA* turned out to be insignificant in the elementary school grades when academic self-esteem was taken into account. Moreover, the partial correlations between the *RSES* and *GPA* demonstrated negative signs when controlled for the *AcSES* for older students and in the applicants' sample (Table 1).

Because there were statistically significant positive correlations between the self-esteem scales, all the regression models were checked for multicollinearity effect using variance inflation factor (VIF) to describe the extent to which the standard error of the specific regression coefficient was enlarged due to collinearity. The mean VIF value was 1.38 (Table 1, for details), indicating that multicollinearity was not a problem in the regression models (a rule of thumb states that there is evidence of collinearity if VIF > 10). Additionally, all the main variables were standardized ($m = 0$, SD = 1) for the analyses to reduce possible problems associated with multicollinearity.

For more detailed analyses, a mediating effect of general self-esteem on the association between academic self-esteem and school performance was tested. First, a standardized criterion variable (*GPA*) was regressed on academic self-esteem alone and, then, jointly on academic and general self-esteem for the total sample. The results of the regression analysis revealed, firstly, that the positive validity (i.e., zero-order correlation with the criterion) of the *AcSES* on *GPA* increased significantly from $\beta = .55$ to .61 after the inclusion of the *RSES* in the equation with a significant increase

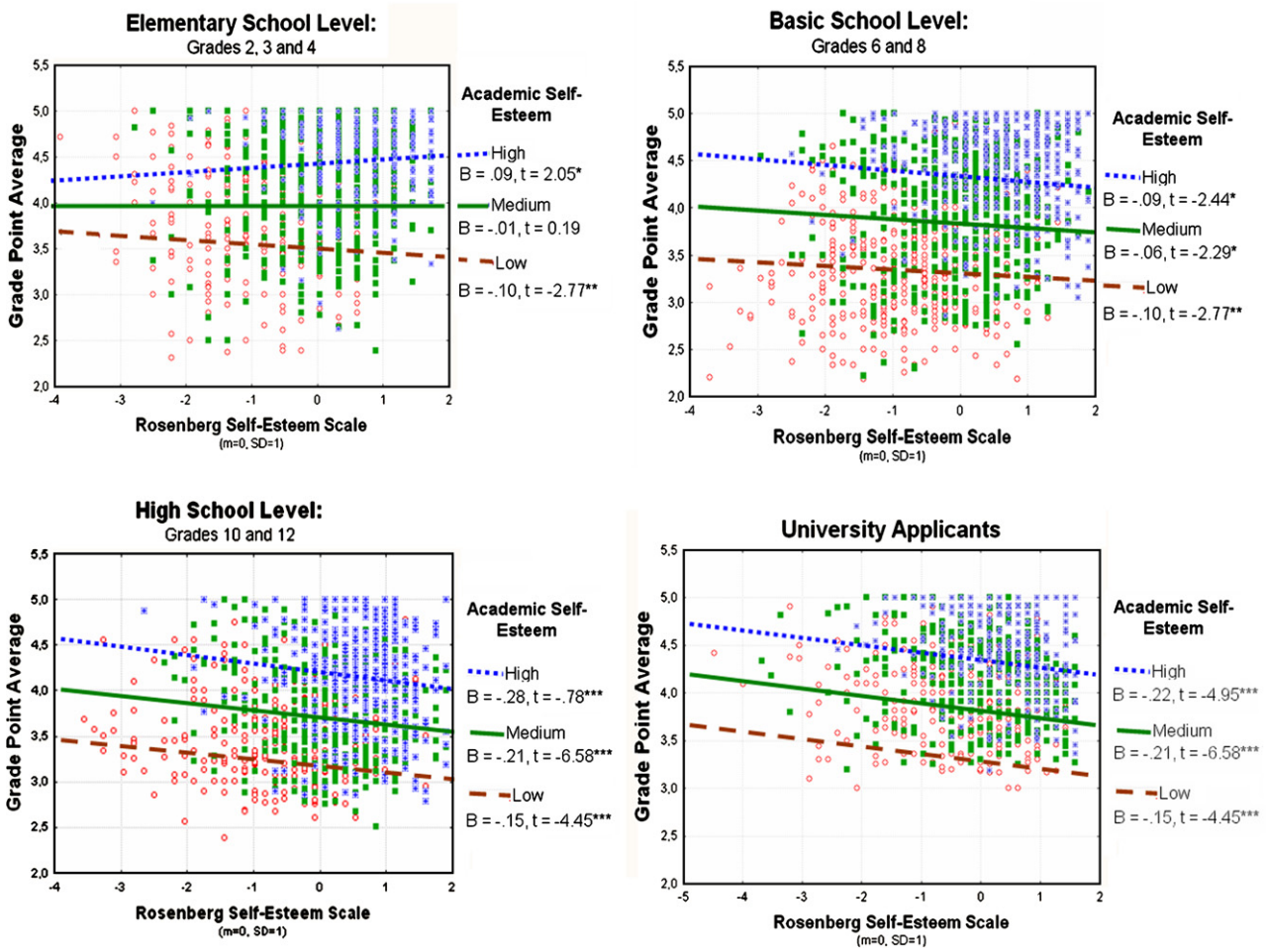

Fig. 1. Relationship between academic achievement and general self-esteem when students are divided into three groups according to their low, medium, and high levels of academic self-esteem. *Note*: The left-upper panel summarizes the results for elementary school, the right-upper panel for basic school, the left-lower panel for high-school, and the right-lower panel for the university applicants' sample. *B* = unstandardized slope regression coefficient. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

in R^2, $F_{change}(2,4601) = 63.33$, $p < .001$. Secondly, the initial positive validity of general self-esteem on academic performance demonstrated an opposite sign, changing from $ß = .21$ to a negative value of $ß = -.11$ ($ps < .001$) after inclusion in the equation along with the *AcSES*. Thus, an inconsistent mediation model was found (Sobel test value $z = -7.74$, $p < .05$) since the direct and mediated effects of the *AcSES* (0.61 and −0.06, respectively) to *GPA* while holding the *RSES* constant had opposite signs.

The next question was whether relation between general self-esteem and school performance differed for students with various levels of academic self-perceptions. For that purpose, all participants within the same grade/sample were divided into three groups (low, medium, and high) on the basis of the tripartite split (33 and 66 percentiles) of the *RSES* and *AcSES* scores. The group with a medium level of the *AcSES* had, on average for the total sample, 0.40 point higher *GPA* than participants in the low *AcSES* group and, in turn, the high *AcSES* group had 0.48 point higher *GPA* score than the medium *AcSES* group.

To test a moderating effect of the *AcSES* on the associations between the *RSES* and *GPA*, standardized scores of the *AcSES* and *RSES* scales were entered at the first step and the interaction term (*AcSES* × *RSES*) was entered at the second step. The results confirmed that there was no interaction between general and academic self-esteem in relation to academic achievement for the total sample. More specifically, the cross-product of the self-esteem measures (*AcSES* × *RSES*) did not contribute a statistically significant variance beyond the proportion of criterion variance accounted for by the main effects, $R^2 = 0.000$, $F_{change}(1,4600) = .24$, $p = .62$. Indeed, the slopes were identical despite students' level of academic self-perceptions: $B = -0.12$ ($t = -7.15$), $B = -0.11$ ($t = -7.62$), and $B = -0.11$ ($t = -5.13$) for low, medium and high academic self-esteem groups, respectively, $ps < .001$.

To examine the developmental patterns of the finding, regression analyses were performed separately for students of elementary (Grades 2, 3 and 4), basic (Grades 6 and 8) and high (Grades 10 and 12) schools, and university applicants. The results are graphically demonstrated in Fig. 1. In the youngest sample (students aged 7–11 years), the relationship between the *RSES* and *GPA* was positive ($B = 0.09$, $p < .05$) among students with high academic self-confidence: students who thought highly about their academic competence tended to have a higher self-esteem with an increase of their school grades. However, for elementary school students in Sample 1, who had a low opinion about their academic abilities, the relationship between the *RSES* and *GPA* was statistically significantly negative (the left-upper panel in Fig. 1).

Moreover, except for the elementary school sample, the results of regression analyses were simple and uniform: the simple slope between *GPA* and *RSES* was negative within a group with the same level of academic self-evaluation. Although the regression coefficients were not particularly high (ranging from $B = -0.06$ to -0.28), they were still statistically significant and demonstrated a systematic negative relationship between general self-esteem and school performance when academic self-esteem was controlled for (Fig. 1). Consequently, the results confirmed a robust pattern that students with low levels of general self-esteem within their respective academic self-evaluation level were the most successful in academic context and had higher objectively assessed academic performance compared to those with a more positive overall self-esteem.

4. Discussion

The main finding of the present study is a mixture of expected and surprising results: although academic self-esteem systematically and accurately predicts school achievement, students' opinions about their general self-worth also have some associations with academic accomplishments: After elementary school, students with lower general self-esteem are more likely to be academically successful when their self-rated academic self-esteem is taken into account.

This is certainly not the first paradox of self-esteem (see Baumeister, 1993; Higgins, Snyder, & Berglas, 1990; Morf & Rhodewalt, 2001). Low general self-esteem among minorities, particularly Black American, has been considered a self-evident truth. Nevertheless, systematic reviews have shown that neither African Americans nor minorities living in the Western countries have lower general self-esteem (Gray-Little & Hafdahl, 2000; Porter & Washington, 1993; Twenge & Crocker, 2002; Verkuyten, 1994, 2005). Although African Americans have lower academic outcomes they typically have a higher general self-esteem compared to White Americans (Osborne, 1995; Van Laar, 2000). A similar discrepancy is found between the academic achievement of men and women and their overall self-esteem. Similar to many previous reports (e.g. Kling, Hyde, Showers, & Buswell, 1999), boys in the current study received lower grades than girls; however, their general self-worth did not suffer from such a disadvantage. Thus, there are several situations in which the level of self-esteem is different from what could be expected by common sense or expert knowledge (see also Baumeister et al., 2003).

In most cases, the self-esteem paradoxes are resolved by attributing some adaptive functions to general self-esteem. For example, the most likely explanation for the fact that self-esteem of African Americans does not suffer from poorer academic outcomes is academic disidentification (Steele, 1988, 1997). It was proposed that African American children detach their self-esteem from academic outcomes, thus, protecting them from the feeling of failure. For instance, analyses of data drawn from a nationally representative longitudinal study of American students revealed a pattern of weakening correlations between self-esteem and academic outcomes from Grades 8 to 10 for African American students whereas the correlations for white students remained relatively stable (Morgan & Mehta, 2004; Osborne, 1995, 1997). The results of the present study indicated a similar process of disidentification among Estonian schoolchildren. Starting from Grade 8, the correlation between general self-esteem and academic outcome weakened and became virtually zero among high-school graduates. These data seem to suggest that Estonian students tend to disassociate their general self-esteem from their academic success and failure during their studies. This, however, is a misleading conclusion since if the self-reported affective evaluations of their academic performance were taken into account, the association between general self-esteem and academic achievement became insignificant (younger students) or substantially negative (older students). Thus, the academic disidentification among Estonian schoolchildren is more apparent than real, disappearing after academic self-esteem is controlled for.

There are two possible lines of explanation why low general self-esteem does not necessarily signal a poor academic performance and these two lines need not be incompatible with each other. Both of these explanations assume that self-concept is a multidimensional construct in which general and academic self-esteem can serve different functions (Marsh & O'Mara, 2008). Firstly, it is possible that cognitively better developed and academically successful students have a more critical outlook on themselves. Secondly, students with more modest academic abilities compensate their academic deficiency by elevating their general self-esteem.

Students with higher cognitive abilities and superior academic results seem more likely to reflect on and be aware of their own thoughts and feelings (Hattie, 1992). Being aware of their shortcomings, they are less certain and more critical of themselves

and therefore rate themselves lower on general self-esteem. "The greater one's awareness of falling short of personal standards of correctness, the lower self-esteem" (Hattie, 1992, p. 47). Because there is a strong and systematic relationship between actual academic performance and students' evaluations of their academic achievements, this critical outlook is characteristic of individuals with generally high academic self-esteem. As our data demonstrated, except for elementary school level, there is a negative relationship between the *RSES* and *GPA* in the high academic self-esteem groups: among academically talented students a lower general self-esteem leads to slightly better grades.

Perhaps another way to describe an elevated self-criticism is defensive pessimism (Norem & Cantor, 1986). It is likely that academically talented students, who on average have higher evaluations of their academic abilities, may strategically set low their expectations towards their academic achievements. They do so in order to protect themselves from the consequences of failure. These low expectations, however, do not become self-fulfilling prophesies and self-handicapping. Defensive pessimism strategy does not lead to correspondingly low academic performance and the *GPA* remains generally higher than in those who have medium or low academic performance and self-esteem. The pessimism of academically talented students is still, on average, higher than the optimism of students with academically medium or low performance.

Why does poor academic performance not necessarily lead to low overall self-esteem? One of the primary functions of general self-esteem appears to be the compensation of weaknesses in specific domains. As Rosenberg (1982) writes, an individual "will be disposed to value those things at which he considers himself to be good and to devalue those qualities at which he considers himself poor" (p. 538). Consequently, use of compensatory strategies by academically less talented individuals may help explain why they have generally higher self-esteem than their peers who have better school results. It may be the same reason why stigmatized groups do not necessarily have low self-esteem and why self-esteem does not decline with age although elderly people experience health problems and decline in their abilities (Crocker & Wolfe, 2001). Specifically, in order to compensate weaknesses in their academic achievements students inflate their general self-esteem. It is logical to expect that students with low and perhaps medium academic performance and self-esteem use this self-protecting strategy. Indeed, among students with low academic self-esteem across the whole academic time span from elementary school to university studies the relationship between general self-esteem and academic outcomes is negative: those who received slightly lower grades had relatively higher opinion about their general self-worth. However, the magnitude of a self-enhancement was relatively modest, typically about one standard deviation decrease in the general self-esteem is accompanied by about 0.08 point increase in the *GPA*.

Like all studies, this study has several limitations. Only cross-sectional data were used, self-esteem ratings relied exclusively on self-reports, and academic achievement was estimated retrospectively, this is not at the moment when opinions about self-esteem were asked but mainly based on the summary grades of the previous semester. Also a potential moderating role of learning environment was not considered (cf. Trautwein, Lüdtke, Köller, & Baumert, 2006) and no evidence was presented how well Estonian data are generalizable to other countries. Nevertheless, a sufficiently large and nationally representative sample replicated in different age groups suggested a general rule that academic self-esteem is a strong and accurate predictor of school performance. Beside this, lower, not higher general self-esteem has an additional impact on school performance. The present study demonstrates for the first time that an interplay between academic and general self-esteem is responsible for the fact that, beside high academic self-esteem, low general self-esteem may be a significant predictor of academic achievement as measured by the grade point average. Starting from about age 12 to 14, academically more successful students may have a more critical view of themselves and, in turn, even young students with more modest academic abilities compensate deficiencies in their studies by elevating their general self-esteem.

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