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How students build their performance expectancies: The importance of Need for Cognition

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Abstract

Individual differences in Need for Cognition (NFC) have been found to correspond with differences in information processing. Individuals with lower NFC process information using a peripheral route compared to individuals higher in NFC. These differences may effect the formation of performance expectancies. Based on previous work demonstrating that the formation of performance expectancies can be understood as an information processing event and that inferring expectancies from the specific self-concept requires cognitive motivation, we tested whether students with higher NFC had performance expectancies in a specific subject that more strongly depended on specific self-concept. 375 students from grade 8 and 9 reported their NFC, their performance expectancies for the final report card in Mathematics and German, general self-concept, and specific self-concepts in Mathematics and German. Multiple linear regressions supported the interaction-hypothesis concerning performance expectancies in Mathematics and German. The higher the students' NFC, the stronger performance expectancies were related to the corresponding specific self-concept. Individual differences in NFC influence motivational processes, and should be included in models describing the relation between self-concepts and students' beliefs like expectancies.

Key words: Social Cognition, Performance expectancies, Personality Traits and Processes, Need for Cognition

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Expectancies are an important motivational variable in explaining learning outcomes and achievement-related behavior of students. Direction, vigor and persistence of behavior are assumed to depend significantly on the individual's expectation to do well in the given task (Atkinson, 1957; Bandura, 1997; Eccles, 1983; Wigfield, & Eccles, 2000). Performance expectancies are expectancies that individuals hold about their likely future performance in specific achievement-related tasks. There is both longitudinal (e.g., Meece, Wigfield, & Eccles, 1990) as well as experimental (e.g., Marshall & Brown, 2004) support for the assumption that performance expectancies affect subsequent performance, especially when the task is a difficult one.

In their model of achievement-related choices, Wigfield and Eccles (2000) assume that differences in performance expectancies partly result from individual differences in the self-concept of ability. The influence of the self-concept of ability on performance expectancies is due to the fact that students rely on their knowledge concerning their abilities when they have to rate how successful they will be in the future.

The self-concept of ability can be defined as an individual's perception of their current ability. In their classical model of self-concept, Shavelson, Hubner, & Stanton (1976) differentiated between academic (i.e., achievement-related) and non-academic self-concepts (e.g., social, emotional and physical self-concepts). On a lower level in the hierarchy established by Shavelson et al., self-concepts are assumed to be more subject- or domain-specific. Marsh and Shavelson (1985) revised the original model to distinguish between math and verbal self-concept as the two facets of academic self-concept. Most approaches towards academic self-concept implicitly or explicitly assume that, given the multidimensional nature of academic self-concept, the assessment of a general academic self-concept leads to less accurate predictions of individuals' beliefs and behavior in a specific situation than subject- or task-specific measures of academic self-concept. Marsh and Yeung (1997), for example, argue that the predictive power of self-concepts are due to the *subject- or task-specific* components of academic self-concept rather than a *general* component of self-concept (see also Song & Hattie, 1985).

Some conceptions of the self-concept (e.g., Markus, 1977) stress the idea that self-concepts or self-schemas are memory structures and that different aspects of the self can be activated depending on the specific context the individual is in (e.g., Hannover, Pöhlmann, Springer & Roeder, 2005). The achievement context at school probably activates general academic self-concepts (general beliefs about academic abilities) as well as specific self-concepts (beliefs about subject-specific abilities). In the present article, we will take a closer look at the postulated relation between general or specific self-concept and performance expectancies. We assume that the strength of relation between these variables differs depending on the cognitive motivation of students.

In a series of experiments, Dickhäuser and Reinhard (2006) found support for the assumption that the formation of performance expectancies can be understood as a cognitive process, which requires cognitive capacity as well as cognitive motivation. If a student is asked to rate his or her likely future performance in a given task, he or she has to refer to knowledge concerning his or her own past competencies (represented within an individual's academic self-concept). Dickhäuser and Reinhard (2006) argued that students' "Need for Cognition" (NFC) determines whether initial performance expectancies on a novel task can be more accurately predicted based on the general or the specific self-concept.

Cacioppo and Petty (1982) describe individuals low in NFC as having a low tendency to engage in and enjoy effortful cognitive endeavors. In 1996, Cacioppo, Petty, Feinstein, Jarvis, and Blair published a review of over one hundred studies on individual differences in NFC and their consequences on processing of social information. In sum, the results show that individuals with a high NFC are better at remembering previously presented information than individuals with a low NFC (e.g., Boehm, 1994; Cacioppo, Petty, & Morris, 1983;

Lassiter, Briggs, & Bowman, 1991) and they are more likely to be persuaded by strong arguments (e.g., Cacioppo et al., 1983). Furthermore, they take greater pleasure in difficult tasks and show a stronger propensity to search for information (e.g., Verplanken, Hazenberg, & Palenewen, 1992). Most important for the present investigation is the finding that NFC is connected with how individuals process information: Those with a high NFC tend to process information via a central route characterized by accurate balancing of all specific information before judging, whereas those with a low NFC tend to use more peripheral cues such as source characteristics (see Petty & Cacioppo, 1986).

The essential tenet in Dickhäuser and Reinhard's (2006) argument is that the generation of performance expectancies requires information processing. If a student has to report his/her performance expectancy for a specific subject (e.g., concerning his/her next report card), the search of and reliance on general knowledge structures (like: I am a good student) requires less cognitive capacity than the search of and reliance on specific structures. In the latter case, the specific demands of the subject have to be analyzed and to be compared with the corresponding specific self-concept. Therefore, the lower students' NFC the more strongly performance expectancies should relate to students' general academic self-concept whereas the higher students' NFC the more strongly performance expectancies should relate to students' specific self-concept.

In line with this hypothesis, Dickhäuser and Reinhard (2006) found in a sample of university students that with increasing NFC, the performance expectancies could be better predicted from the specific self-concept (Study 1). However, this changed when cognitive load was induced by a secondary task where the performance expectancies had to be reported (Study 2): Lowering cognitive capacity by a secondary task led all participants (independently of their NFC) to infer their performance expectancies from their general self-concept. In contrast, in Study 3, when high relevance was induced (by telling the participants that it would be very important that they do a good job in accurately rating their future performance), all participants inferred their performance expectancies from their specific self-concept. In sum, these results underline that NFC moderates the relationship between specific self-concept and performance expectancies in that the higher the NFC, the more strongly performance expectancies depend on the specific self-concept.

However, the data from the study (Dickhäuser & Reinhard, 2006) was collected in a controlled experimental setting. The subjects were university students and they had to rate their performance expectancies concerning a novel task with which the students were unfamiliar. The present study, therefore, attempts to test whether the theoretical assumptions also hold true for the formation of performance expectancies at school. We predict that the higher the students NFC, the more closely the performance expectancies will relate to the specific (mathematical or verbal) self-concept, i.e., we had a directed hypothesis that the effect of the interaction of NFC and specific self-concept on performance expectancies would be positive. The lower the students NFC, the more closely the performance expectancies will relate to the general academic self-concept, i.e., we had a directed hypothesis that the effect of the interaction of NFC and general self-concept on performance expectancies would be negative.

We did not expect a main effect of NFC on performance expectancies. Even though the formation of performance expectancies requires cognitive capacity, we would not expect that the mean level of performance expectancies will depend on the mean level of NFC as intensive vs. less intensive information processing both can result in either high or low expectancies.

Method

Participants

The analyses are based on a sample of 169 female and 207 male students from 13 classes from grade 8 and 9. Although most participants were 15 years old, the ages ranged between 14 and 18 years. The classes were recruited from five different secondary schools of the vocational track (German Realschule) in three different middle-sized towns in Germany. Informed consent was obtained by parents and students before the study was commenced. The data was collected during regular class sessions.

Material and Procedure

Participants reported their demographic data and responded to items that assessed NFC. We assessed students' specific self-concept for German and for Mathematics as a measure of the verbal and mathematical self-concept. We used a grid form of the self-concept scale by Dickhäuser, Schöne, Spinath, and Stiensmeier-Pelster (2002). Five items with an empty space (…) left for the individual school subject were presented to the students within a grid. The grid consisted of five rows (items) and two columns for the two subjects German and Mathematics. The students were asked to fill out the space (…) mentally with the corresponding subjects and to answer the items. Two example items were "In (…) I feel..." "not at all gifted" [1], "very gifted" [5] and "Learning new things in (…)" "is very hard for me" [1], "is very easy for me" [5]. The internal consistencies for both scales were high (Cronbach's α = .84 for German and .92 for Mathematics). We also assessed students' general academic self-concept. The formulation of the five items was parallel for the items used to assess German and Math self-concepts. Two example items were "At school I feel..." "not at all gifted" [1], "very gifted" [5] (b) "Learning new things at school" "is very hard for me" [1], "is very easy for me" [5]. Previous research has provided evidence for the reliability and validity of the self-concept measures (Dickhäuser et al., 2002). The internal consistency for the general self-concept-scale in the present sample was Cronbach's α = .85.

We used the German version of the NFC-scale (Bless, Wänke, Bohner, Fellhauer, & Schwarz, 1994), which contains 33 items such as "I prefer my life to be filled with puzzles that I must solve" or "The notion of thinking abstractly is appealing to me". Items were answered on a seven-point scale ranging from 1 [completely disagree] to 7 [completely agree]. The scale has been shown to be a reliable and valid measure of NFC (Bless et al., 1994). In the present sample, the scale showed a high internal consistency (Cronbach's α = .86).

Furthermore, the participants' performance expectancies for German and Mathematics were assessed: They were asked to guess which grade they probably will receive at the end of the school year (at that time about eight months later) in their report card. They reported their performance expectancies on a scale of grades at German schools ranging from 1 [very good] to 6 [very poor]. For the sake of clarity, the performance expectancies were recoded so that high values now indicated high expectancies.

Statistical Analysis

Hierarchical multiple linear regressions were applied to investigate the mechanisms underlying the formation of performance expectancies depending on NFC and self-concepts. In a first block of the regression, we included only the main effects (NFC, general and specific self-concept) as predictors. However, we assume that the effect on the general and the German or Mathematical self-concept on the performance expectancies in German and Mathematics will be different depending on NFC. Given our coding of NFC and self-concepts, for the prediction of the performance expectancies (German/Maths), significant coefficients were expected for the interaction term of NFC and the general self-concept (this term is predicted to be negative), as well as for the interaction term of NFC and the specific self-concept (this term is predicted to be positive). These interaction-terms were included in block 2. All predictors were standardized; interaction terms were computed using multiplication.

Results

The mean NFC was 4.18 (SD = 0.71), the mean general self-concept was 3.69 (SD = 0.61). The mean specific self-concept score was 3.49 (SD = 0.68) for German and 3.44 (SD = 1.00) for Mathematics. The expectancies (recoded expected grade) were as follows: German 3.87 (SD = 0.76), Mathematics 3.74 (SD = 1.02). The zero-order correlations for all variables are presented in Table 1.

Prediction of Performance Expectancies in German

R for the first block of the regression was significantly different from zero, $F(3, 341) = 56.36$, $p < .001$, $R^2 = .33$, adjusted .33. As can be seen from Table 2, left panel, the German self-concept was a strong predictor of the performance expectancies ($\beta = .55$). Furthermore, the general self-concept predicted performance expectancies in German ($\beta = .10$). The variables included in block 2 resulted in an R^2 of .34, adjusted .33 ($F(5, 339) = 35.20$, $p < .001$. The increment in R^2 was significant at the .10-level. As can be seen from table 2, the predicted effect of the interaction of NFC and German self-concept ($\beta = .09$) was positive and significant at the .10-level, two-tailed testing and significant at the .05-level, one-tailed testing (please note that this interaction term was predicted to be positive). The simple slope-analysis (see Aiken & West, 1991) resulted in a statistically significant slope for students with a high NFC (one standard deviation below the mean, $t(344) = 7.28$, $p < .05$); a rise in the performance expectancies in German was observed with increasing specific self-concept in German. The simple slope for students with a low NFC (one standard deviation below the mean) also was positive and different from zero, $t(344) = 5.46$, $p < .05$. However, as predicted, the relation between the specific German self-concept and performance expectancies was more pronounced when the NFC was higher. The simple slopes are illustrated in the left panel of Figure 1. There was no statistically significant NFC x general self-concept interaction.

Prediction of Performance Expectancies in Mathematics

R for the first Block of the regression was significantly different from zero, $F(3, 339) = 106.70$, $p < .001$, $R^2 = .49$, adjusted .48. As can be seen from Table 2, left panel, the Mathematical self-concept was a strong predictor of the performance expectancies ($\beta = .65$). Furthermore, the general self-concept slightly predicted performance expectancies in Mathematics ($\beta = .10$). The variables included in block 2 resulted in an R^2 of .50, adjusted .50

(F(5, 337) = 66.0, $p < .001$. The increment in R^2 was significant at the .05-level. As can be seen from Table 2, the predicted effect of the interaction of NFC and Mathematical self-concept interaction ($\beta = .09$) was positive and significant at the .05-level, two-tailed testing. The simple slope for students with a high NFC (one standard deviation below the mean) was positive and different from zero, $t(342) = 15.01$, $p < .05$; a rise in the performance expectancies in Mathematics was observed with increasing Mathematical self-concept. The simple slope for students with a low NFC (one standard deviation below the mean) was also positive and different from zero, $t(342) = 12.01$, $p < .05$. As predicted, the relation between Mathematical self-concept and performance expectancies was more pronounced when the NFC was higher. The simple slopes are illustrated in Figure 1, right panel. There was no statistically significant NFC x general self-concept interaction.

Discussion

In this paper, we analyzed determinants of performance expectancies. Building on theories of self-concept and social information processing, we explored whether performance expectancies are influenced more by general or more by specific academic self-concepts, depending on individual differences in cognitive motivation.

Recent investigations have shown dispositional differences in the tendency to engage in and enjoy effortful cognitive endeavors (NFC; Cacioppo & Petty, 1982). NFC is a variable that has been primarily investigated concerning social information processing, e.g., attitude formation, person perception, etc. Expanding on these findings, our study shows that NFC plays an important role in moderating the relationship between self-concept and performance expectancies.

In our study, we showed that the higher the NFC, the more closely success expectancies are related to specific self-concepts. These findings support the idea that the use of self-related cognitions (e.g., cognitions concerning personal abilities) can be conceptualized as an information-processing event. To what extent individuals rely on their specific self-concepts seems to depend on whether individual's dispositions favor effortful or effortless types of information processing. Generally, it is assumed that the basis of individuals' beliefs and behavior is founded on specific self-concepts (Marsh & Shavelson, 1985; Marsh & Yeung, 1997; Shavelson et al. 1976). In specifying this assumption, our findings suggest that specific self-concepts have a greater predictive power the higher an individual's NFC and a lower predictive power the lower the individual's NFC. The effects were small (in terms of explained variance), but they are theoretically meaningful because they illustrate that the formation of performance expectancies can be understood as information processing.

In contrast to our hypothesis and previous findings in the laboratory, we found no interaction between NFC and the general self-concept in predicting performance expectancies at school. Even though there was a small main effect of the general self-concept on the performance expectancies (i.e., all students, independent of their NFC, seemed to use their general self-concept to a small extent), which only was significant at the .10-level, the formation of performance expectancies for students low in NFC is different compared to those high in NFC: Students with a lower NFC use their specific self-concept (and their general self-concept to a small extent). However, the extent to which students with lower NFC used their specific self-concept is reduced as compared to students with a higher NFC. One possible explanation for the fact that NFC did not interact with the general self-concept may be that at school, tasks (even different tasks in different subjects) require general skills (like general logical reasoning) to some extent. Therefore, the representations of one's own general ability may be considered to lead to higher estimates of performance independent of the subject, even after central processing. This interpretation is in line with the fact that the general self-concept slightly predicted performance expectancies independent of NFC and of school subject (German and Mathematics).

In the present study, we did not assess ability or prior performance. Therefore, it is impossible for us to control for these variables in the regression models. We used self-concepts and not prior performance/ability as predictors of expectancies due to theoretical reasons: The model of achievement-related choices assumes, that it is not reality itself (i.e. previous achievement/ability), which most directly influences an individual's achievement-related beliefs and behaviour (e.g., expectancies, course selection), but rather the cognitive interpretation of that reality (Eccles, 1983). The idea behind this assumption is that self-concepts are the results of the processing of previous experience and in a specific situation it is more efficient to rely on the self-concept than on numerous previous experiences.

However, one might also argue that NFC might influence the way in which individuals use prior performance to build their self-concept or process salient information about performance in order to change their expectancies. The latter has been investigated in a study by Dickhäuser, Reinhard, Diener and Bertrams (2009). The authors found that the lower students' NFC was, the more students tended to rely on a salient achievement information (grade from an English test which the students had just received) in order to adapt their expectancies for different subjects (e.g., History, English, Religion). This underlines that it is very importance to distinguish between specific, salient information (e.g., salient feedback from an exam) and specific self-concepts when describing the processing leading to performance expectancies. These findings suggest that students low in NFC are not simply more responsive to specific information (like information about specific grades or the specific self concept). In cases where specific information is more salient, rather students with a low NFC tend to rely on it (probably because it is cognitively less demanding to base judgements on salient information).

Our findings suggest an extension of self-concept models, which assume a constant relationship between specific self-concepts and specific external criteria (see Marsh & Shavelson, 1985; Marsh & Yeung, 1997; Shavelson et al., 1976). Our results support an alternative interpretation: Individuals activate their specific academic self-concepts depending on their NFC. To what extent an individual's specific self-concept determines his or her performance expectancies depends on his or her cognitive motivation. Given a low NFC, success expectancies and performance are determined less by an individual's specific self-concept, whereas given a high NFC, they are determined more closely by the individual's specific self-concept.

In the present study, we did not assess subsequent performance as a variable, which should be affected by the performance expectancies. The laboratory studies by Dickhäuser and Reinhard (2006) showed that the moderating role of NFC also contains the relation between self-concepts and performance. A test of this postulated moderation in an achievement setting outside the lab, e.g., at school, should be subject to future studies in order to find out, whether the strength of the relation between self-concepts and achievement at school is influenced by individual differences in NFC.

Concerning the practical implications, we would argue that students with a high NFC process achievement-related information in a more adaptive way: They more strongly build their performance expectancies on the basis of specific self-concepts, which makes the expectancies more accurate and more predictive on achievement (see Dickhäuser & Reinhard, 2006) and – as mentioned above – they show less overgeneralization (Dickhäuser et al., 2009). Moreover – as demonstrated in many studies -, a higher NFC is associated with the choice of more difficult and challenging tasks (see Cacioppo et al., 1996, for an overview). Therefore, we would assume that increasing students' NFC would be beneficial to students. However, to our knowledge, no study so far has investigated how NFC can be promoted. As NFC is a fairly stable trait, it is supposedly influenced best in youth, when thinking habits are less fixed.

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References

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review, 64*, 359-372.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bless, H., Wänke, M., Bohner, G. Fellhauer, R. F., & Schwarz, N. (1994). Need for Cognition: Eine Skala zur Erfassung von Engagement und Freude bei Denkaufgaben [Need for cognition: A scale measuring engagement and happiness in cognitive tasks]. *Zeitschrift für Sozialpsychologie, 25*, 147-154.

Boehm, L. E. (1994). The validity effect: A search for mediating variables. *Personality and Social Psychology Bulletin, 20*, 285-293.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*, 116-131.

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., Jarvis, W., & Blair, G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin, 119*, 197-253.

Cacioppo, J. T., Petty, R. E., & Morris, J. (1983). Effects of need for cognition on message evaluation, recall, and persuasion. *Journal of Personality and Social Psychology, 45*, 805-818.

Dickhäuser, O., & Reinhard, M.-A. (2006). Factors underlying expectancies of success and achievement: The influential roles of need for cognition and general or specific self-concepts. *Journal of Personality and Social Psychology, 90*, 490-500.

Dickhäuser, O., Reinhard, M.-A., Diener, C. & Bertrams, A. (2009). How need for cognition affects the processing of achievement-related information. *Learning and Individual Differences, 19*, 283-287.

Dickhäuser, O., Schöne, C., Spinath, B., & Stiensmeier-Pelster, J. (2002). Die Skalen zum akademischen Selbstkonzept: Konstruktion und Überprüfung eines neuen Instrumentes

[The academic self concept scales: Construction and evaluation of a new instrument]. *Zeitschrift für Differentielle und Diagnostische Psychologie, 23*, 393-405.

Eccles, J. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motives* (pp. 75-146). San Francisco: Freeman.

Hannover, B., Pöhlmann, C., Springer, A. & Roeder, U. (2005). Implications of independent versus interdependent self-knowledge for motivated social cognition: The Semantic Procedural Interface Model of the Self. *Self and Identity, 5*, 159-175.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63-78.

Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-123.

Marsh, H. W., & Yeung, A. S. (1997). Coursework selection: Relations to academic self-concept and achievement. *American Educational Research Journal, 34*, 691-720.

Marshall, M. A., & Brown, J. D. (2004). Expectations and realizations: The role of expectancies in achievement settings. *Motivation and Emotion, 28*, 347-361.

Meece, J. L., Wigfield, A., & Eccles, J. S. (1990). Predictors of math anxiety and its influence on young adolescents' course enrollment intentions and performance in mathematics. *Journal of Educational Psychology, 8*, 60-70.

Lassiter, G. D., Briggs, M. A., & Bowman, R. E. (1991). Need for cognition and the perception of ongoing behavior. *Personality and Social Psychology Bulletin, 17*, 156-160.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.) *Advances in experimental social psychology* (pp. 123-205). Orlando, FL: Academic Press.

Song, I.-S. & Hattie, J. (1985). Relationships between self-concept and achievement. *Journal of Research in Personality. 19*, 365-372.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research, 46*, 407-441.

Verplanken, B., Hazenberg, P. T., & Palenewen, G. R. (1992). Need for cognition and external information search effort. *Journal of Research in Personality, 26*, 128-136.

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*, 68-81.

Table 1

Correlation amongst variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) NFC	-							
(2) General self-concept	.45	-						
(3) Specific self-concept German	.22	.34	-					
(4) Specific self-concept Mathematics	.21	.41	-.16	-				
(5) NFC X General self-concept	.12	-.02	.04	-.04	-			
(6) NFC X Specific self-concept German	.08	.05	-.11	.03	.52			
(7) NFC X Specific self-concept German	.10	.00	.05	-.02	.33	.28		
(8) Performance Expectancy German (reverse coded)	.12	.26	.57	.02	.08	.04	.02	
(9) Performance Expectancy Mathematics (reverse coded)	.20	.35	-.10	.69	.03	.08	.08	.-15

Note. NFC = Need for Cognition. All | *r* | > .09 are significantly different from zero ($p < .05$).

Table 2

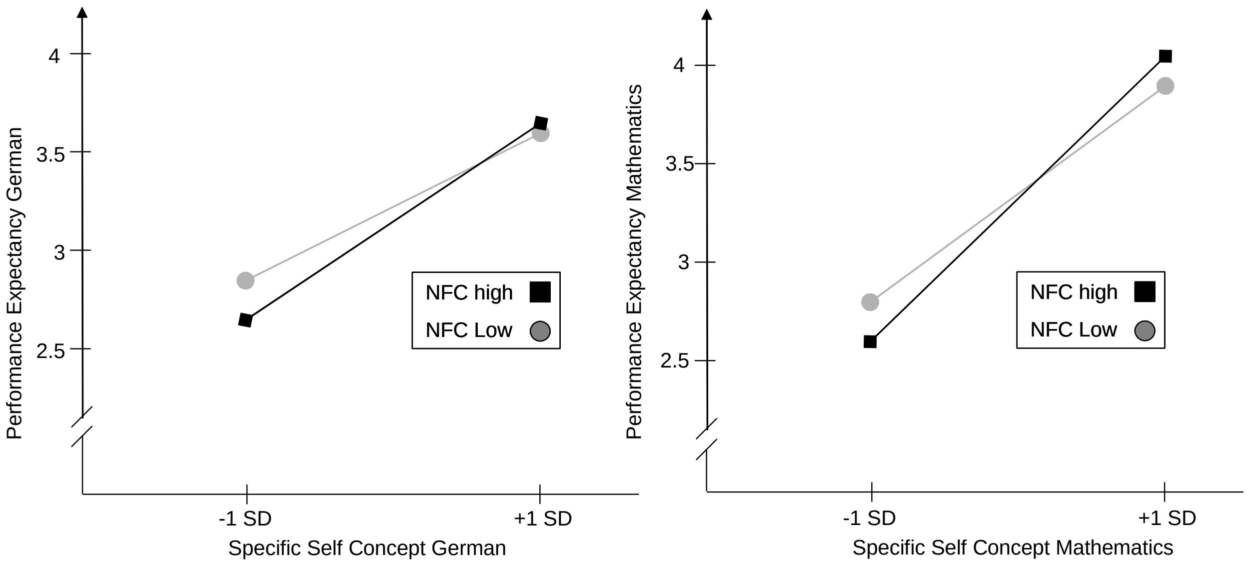
Summary of Hierarchical Regression Analysis for Variables Predicting Performance Expectancies in German and Mathematics

Criterion	Performance Expectancy German						Performance Expectancy Mathematics					
	Block 1			Block 2			Block 1			Block 2		
Predictor	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
NFC	-0.05	0.04	.06	-0.06	0.04	-.07	0.02	0.04	.02	0.02	0.04	.02
General self-concept	0.08	0.04	.10*	0.08	0.04	.10+	0.09	0.05	.08+	0.09	0.05	.09+
Specific self-concept	0.41	0.04	.55*	0.42	0.04	.56*	0.66	0.04	.65*	0.66	0.04	.65*
NFC X General self-concept				0.01	0.03	.02				0.02	0.04	.02
NFC X Specific self-concept				0.06	0.04	.09+				0.07	0.04	.09*

Note. NFC = Need for Cognition. * $p < .05$, $^{+}p < .10$.

Figure Caption

Figure 1. Simple slopes for the prediction of expectancies based on specific self concepts for students with high or low NFC. Results for Mathematics are in the left panel, results for German are in the right panel.



Performance Expectancy German
4
3.5
3
2.5
NFC high
NFC Low
-1 SD
+1 SD
Specific Self Concept German
Performance Expectancy Mathematics
4
3.5
3
2.5
NFC high
NFC Low
-1 SD
+1 SD
Specific Self Concept Mathematics