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Developments in motivation and achievement during primary school: A longitudinal study on group-specific differences

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ABSTRACT

To gain insight in developmental trajectories of motivation during upper primary school, the present study focused on how different aspects of students' motivation, i.e., task-orientation, self-efficacy, and school investment develop from grade three to six of primary school and how these developments differ for boys and girls, and students with different ethnic or social backgrounds. Furthermore the longitudinal relation between motivation and achievement in reading comprehension was examined. A total of 722 students completed questionnaires during five measurements. Latent growth curve analyses were performed. Results showed a negative development in task-orientation, self-efficacy remained relatively stable and school investment increased over time, but there were considerable differences in developments across different groups of students. Regardless of gender and background, however, developments in these aspects of motivation were substantially positively related to developments in achievement, beyond what can be explained by cognitive ability and background characteristics.

1. Introduction

Previous research has consistently found a decline in students' motivation for school during the secondary school years (e.g., Gottfried, Fleming, & Gottfried, 2001; Van der Veen & Peetsma, 2009). Although not many studies have been performed in primary school, there are indications that this decline is already apparent then (e.g., Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Spinath & Spinath, 2005; Stoel, Peetsma, & Roeleveld, 2001). Given the considerable impact of motivation on achievement (e.g., Steinmayr & Spinath, 2009), this can be considered worrisome. Moreover, little is known about whether or not such a decline in motivation is apparent for both boys and girls and for students with different backgrounds. More insight is needed therefore on how developmental patterns of motivation may vary by gender and background and how this relates to developments in achievement during primary school.

1.1. Motivation

Most theories of motivation include motivational values, expectancies and motivated behaviors (Boekaerts, 2010; Covington, 2000; Wigfield & Eccles, 2000). Motivational values form a very broad component of motivation that entails many different aspects, among others, intrinsic motivation (Ryan & Deci, 2000), task value (Wigfield & Cambria, 2010), interest (Renninger, 2000), and goal orientations (Pintrich, 2000). The present study limited its focus to the reasons why students engage in learning, namely their learning goals. More specifically, it focused on task-orientation, which means the extent to which students are oriented toward increasing their competence and understanding (Covington, 2000). Different aspects of the value component, including task-orientation, have been found to predict motivated behavior and achievement (e.g., Spinath, Spinath, Harlaar, & Plomin, 2006; Wigfield & Cambria, 2010).

Expectancies refer to one's perceived academic competence (Eccles & Wigfield, 2002). Expectancies are closely related to competence beliefs. However, competence beliefs focus on present abilities, while expectancies are predictions for future outcomes (Pajares, 1997). Academic self-efficacy is the most thoroughly studied expectancy-related concept, and is found to be more predictive of effort and achievement outcomes than any other aspect of motivational beliefs (e.g., Eccles & Wigfield, 2002; Pajares, 1997; Peetsma, Hascher, Van der Veen, & Roede, 2005). It refers to judgments about one's capabilities to carry out actions that are needed to complete academic tasks successfully (Bandura, 1977).

Students' investment in school refers to the behavioral activity which results from motivational beliefs. Investment can vary in terms of the intensity, persistence, and direction of school related behaviors (Pintrich, 2004; Schunk, Pintrich, & Meece, 2008).

The present study limited its focus to three aspects of motivation: task-orientation, self-efficacy, and school investment to examine how these aspects develop over time and how this relates to developments in achievement. Previous research has shown that these aspects of motivation predict achievement beyond cognitive abilities and background characteristics (e.g., Steinmayr & Spinath, 2009).

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These relations do not seem to be unidirectional. In their review, Wigfield and Cambria (2010) discuss that relations between different aspects of motivation and achievement are reciprocal and continuously affect one another.

1.2. Developments in motivation

Many studies have examined the development of motivation. Various aspects of motivational values are found to decrease during primary school and beyond, including intrinsic motivation (Gottfried et al., 2001), task value (Jacobs et al., 2002; Spinath & Spinath, 2005), as well as task-orientation (Anderman & Anderman, 1999; Bong, 2009). This decrease has not been found in the first years of primary school (Nurmi & Aunola, 2005), the onset appears to be in the later years of primary school (Spinath & Spinath, 2005).

Studies on competence beliefs mostly showed a decline (De Fraine, Damme, & Onghena, 2007; Jacobs et al., 2002; Spinath & Spinath, 2005; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2008), while self-efficacy has been found to increase from fifth to 11th grade (Zimmerman & Martinez-Pons, 1990). This may be attributed to the conceptual difference between these concepts. While competence beliefs are usually based on a comparison with classmates, self-efficacy measures concern students' ability to control their own actions and are based on prior experiences (Bandura, 1997). When students get older, they develop this sense of control, suggesting that their self-efficacy may increase with age (Schunk & Pajares, 2002). Other studies, however, have reported a decrease in self-efficacy (Anderman, Maehr, & Midgley, 1999; Pajares & Valiante, 1999). Although it is a main predictor of achievement outcomes, the development of self-efficacy has hardly been studied (Wigfield et al., 2008).

The development of school investment has mostly been studied in secondary school. Van der Veen and Peetsma (2009) found investment to decline during secondary school. Stoel et al. (2001) showed that school investment decreased from start of primary school, but started to increase slightly toward the end of primary school.

Almost all of the aforementioned studies, except those by Stoel et al. (2001) and De Fraine et al. (2007), examined linear growth trends. However, students' motivation does not necessarily develop linearly. The present study therefore also examined possible curvilinearity in motivational growth patterns.

1.3. Group differences

Achievement outcomes are found to vary by socio-economic and ethnic background (Park & Sandefur, 2010; Roeleveld, Driessen, Ledoux, Cuppen, & Meijer, 2011), and according to some, also a gender gap has emerged to the disadvantage of boys (e.g., Steinmayr & Spinath, 2008; Tyre, 2006). Given the reciprocal nature of the relation between motivation and achievement (Wigfield & Cambria, 2010), these achievement gaps could be reflected in students' motivation for school. Other reasons to expect motivation to vary by gender or background can include, for example, differences in school-related attitudes that are encouraged at home or different expectations from parents (e.g., Van der Veen, 2003) or teachers (Van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010). Although group differences in motivation have been studied before, not much is known about differences in motivational developments over time.

1.4. Present study

As research on motivational developments during primary school is scarce, the present study examined developmental patterns of task-orientation, self-efficacy, and school investment in upper primary school and how these relate to developments in achievement, taking into account cognitive ability and background factors. The study focused specifically on group-specific differences. The following research questions were addressed:

1. How do task-orientation, self-efficacy, and school investment develop during the second half of primary school? To what extent do these developments differ by gender, social and ethnic background?
2. To what extent do developments in task-orientation, self-efficacy, and school investment relate to developments in academic achievement? To what extent does this differ by gender, social and ethnic background?

Table 1
Schematic overview of waves of data collection.

Wave	Grade	Months
1 (COOL-1)	Half way through grade 3	January/February, 2008
2	Beginning of grade 5	September/October, 2009
3	Half way through grade 5	January/February/March, 2010
4	Beginning of grade 6	September/October, 2010
5 (COOL-2)	Half way through grade 6	January/February/March, 2011

2. Methodology

2.1. Sample and procedure

Data on students' motivation in third and sixth grade were available from the triennial "COOL" study, a national Dutch cohort study on students' educational careers (Driessen, Mulder, Ledoux, Roeleveld, & van der Veen, 2009). The COOL study includes cohorts of students from kindergarten, grade three, and grade six (N = 38,060). A subsample from the third grade cohort of 722 students from 37 classes of 25 schools across The Netherlands participated in this additional study. Three additional waves of data were collected from this subsample.[1] Students and teachers filled out questionnaires during each measurement wave. Table 1 shows a schematic overview of the data collection.

During the first COOL-measurement, students' average age was 9 years. 361 (50.0%) students were boys and 361 (50.0%) girls. Schools provided information on students' background characteristics. Ethnicity was based on the mothers' country of origin. When a student was from a single-parent family, ethnicity was determined based on the ethnicity of this parent. A dichotomy was made between ethnic majority and ethnic minority students (see Table 2). Even though the group of ethnic minority students consisted of students with backgrounds in a wide variety of countries, these students were considered one group in the larger COOL-study and in the present study, because of their similarities (Driessen et al., 2009). Likewise, students with parents from another European or western country were included in the group of majority students.[2]

Parental educational level (PEL) was considered an indication of students' socio-economic status. Three groups were distinguished based on the highest educational level attained by either of the parents (see Table 2). From 121 students, PEL information was missing. Analyses showed a significant relation between ethnicity and PEL of students in this sample (Spearman's Rho = .112, $p < .05$).

2.2. Measures

2.2.1. Motivation

Questionnaires on motivation were administered to students and their teachers during regular class time. These included self-reports on

[1] Analyses showed that in grade three, the motivation of the students in the subsample of schools only slightly differed from the motivation of students in a representative sample of schools (effect sizes between −0.13 and 0.01).

[2] Additional analyses of variance (MANOVA's) showed that the different ethnicities within the groups of ethnic minority and majority students did not significantly differ in terms of their self-efficacy, task-orientation, and school investment.