# Motivational developments in primary school: Group-specific differences in varying learning contexts

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## Group-specific differences in various learning contexts

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# MOTIVATIONAL DEVELOPMENTS IN PRIMARY SCHOOL

## Group-specific differences in varying learning contexts

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# CHAPTER 1

## GENERAL INTRODUCTION

Motivation is essential to students' learning. Motivation for school has been found to affect achievement outcomes beyond students' background characteristics, personality and intelligence (Gottfried, 1985; Gottfried, Marcoulides, Gottfried, Oliver, & Guerin, 2007; Spinath, Spinath, Harlaar, & Plomin, 2006; Steinmayr, 2009, Steinmayr & Spinath, 2009; or for a review see Wigfield & Cambria, 2010). Previous research has consistently found a decline in students' motivation for school after the transition to secondary school. In secondary school, students' motivational beliefs are found to decrease, which goes alongside a decline in motivated behaviours, such as investment in their school work (De Fraine, Damme, & Onghena, 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Furrer, Marchand, & Kindermann, 2008; Van der Veen & Peetsma, 2009). Although research on motivational developments in primary school is scarce, there are some indications that the decline in motivation may start before students make the transition to secondary school (e.g., Nurmi & Aunola, 2005; Skinner et al., 2008; Spinath & Spinath, 2005; Stoel, Peetsma, & Roeleveld, 2001). Given the strong relation between motivation and students' achievement outcomes, this decline can be considered worrisome. It suggests that those students who are not optimally motivated may not achieve to their potential. Moreover, a desire for learning, feeling competent, and a willingness to invest effort are not only important because they could potentially enhance achievement, they could also be considered to be desirable in their own right. This dissertation therefore aimed to examine the nature of motivational developments during upper primary school and the relations between these developments and achievement growth, taking into account differences in students' socio-economic and ethnic background as well as gender differences.

Motivational developments cannot be understood without taking the learning context into consideration. It is increasingly recognized that the learning context is an important factor in explaining students' motivation for school and their learning outcomes (Pintrich, 2004). Therefore, this dissertation focused on how different aspects of the learning context, in particular innovative learning and the classroom composition, are related to developments in students' motivation during upper primary school. In comparison to more traditional learning environments, innovative learning environments in which students get a more active role in their learning process are believed to foster students' motivation (Volet & Järvelä, 2001; Boekaerts & Niemivirta, 2000). It will be addressed whether aspects of innovative learning are indeed related to developments in motivation. Moreover, not much research has addressed the question whether innovative learning is similarly beneficial for different student populations. Many schools in the Netherlands are quite homogenous in classroom composition, which implies that students from groups that on average lag behind in school – students with ethnic minority or socio-economically disadvantaged backgrounds – are often taught among students with similar backgrounds (Peters & Walraven, 2011). The extent to which teachers adopt innovative teaching practices may be related to the characteristics of their classroom population. In order to examine whether these aspects of the learning context may contribute to existing achievement gaps and to a potential decline in motivation during upper primary school, a second aim of this dissertation was therefore to examine to what extent classroom composition and innovative learning are related to developments in motivation and achievement. Students' ethnic and socio-economic backgrounds, as well as gender differences were taken into account.

# THEORETICAL FRAMEWORK

## MOTIVATION FOR SCHOOL

Contemporary motivation theory has built on the work of Atkinson (1957, 1964) and McClelland (1961). In their work in the 1950's and 1960's, behaviour of individuals was considered the result of internal "drives" or "motives". These were considered trait-like characteristics that direct individuals towards actions and can be described as learned, yet stable individual dispositions. Two main achievement motives were formulated: striving for success and avoiding failure. Atkinson (1964) furthermore argued that in addition to motives, also the probability for success and the incentive value of the task at hand were predictors of achievement behaviour. A combination of a high striving for success, feeling able to succeed, and valuing the task was assumed to lead to individuals to engage in achievement behaviours. While this early work focused on internal drives, needs, and motives, more recent theories of motivation have shifted the focus more towards cognitions and beliefs (Maehr & Meyer, 1997). Yet, the formulation of motives, expectancies, and values as the underlying forces of achievement behaviour is still shaping current motivational theories.

In line with the early work of Atkinson (1957, 1964) and McClelland (1961), current theories of motivation underline that individuals strive towards success and avoid failure. What is considered as success or failure depends on the type of goals that are being pursued. Achievement goal theory (Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Elliot & Dweck, 1988; Nicholls, 1984) posits that individuals consciously pursue certain goals and this process of goal pursuit guides their behaviours. In the context of schooling, a distinction is made between task-oriented goals and ego-oriented goals (e. g., Nicholls, 1984). Task-oriented goals, sometimes also referred to as learning goals (e.g. Dweck, 1986) or mastery goals (e.g. Ames, 1992), reflect an orientation towards developing understanding, increasing skills and competence and mastering tasks at hand (Ames, 1992, Dweck, 1986; Maehr & Midgley, 1991; Pintrich 2000). Students

adopting task-oriented goals have been argued to consider ability a malleable characteristic which can be enhanced by effort. Subsequently, such students enjoy challenges and show greater persistence when faced with difficulties (Dweck, 1986). Ego-oriented goals on the other hand, also referred to as performance goals (e.g. Ames, 1992) or relative ability goals (Urdan, 1997), reflect an orientation toward demonstrating ability relative to others. Individuals with ego-oriented goals subsequently are concerned with outperforming others or trying not to perform less than others (Ames, 1992; Dweck & Leggett, 1988). Task-oriented goals have been consistently associated with adaptive learning behaviours and outcomes, such as higher engagement in learning and more use of deep learning strategies (see for example Anderman, Austin, & Johnson, 2002, Maehr & Zusho, 2009 for reviews), as well as higher achievement outcomes (see the meta-analysis by Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). Ego-oriented goals however, have been associated with positive as well as negative learning behaviours and outcomes (Hulleman et al, 2010). Although ego-oriented goals are relevant to motivation, this dissertation has limited its focus to task-oriented goals that have been unequivocally associated with positive learning outcomes.

Students' expectancies are another important construct in current motivational theories. Expectancies refer to one's perceived academic competence (Eccles & Wigfield, 2002). Expectancies are closely related to competence beliefs. They are however conceptually distinct. Whereas competence beliefs focus on present abilities, expectancies are predictions for future outcomes (Pajares, 1997). Academic self-efficacy is the most thoroughly studied expectancy-related concept. It refers to judgments about one's capabilities to carry out actions that are needed to complete academic tasks successfully (Bandura, 1977). Self-efficacy is rooted in Social Cognitive Theory (Bandura 1977; 1986; 1993; 1997; 2001; Bandura & McClelland, 1977), which assumes that motivated behaviour is goal-directed and initiated and sustained by the extent an individual feels efficacious in performing the tasks at hand. Self-efficacy 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).

Motivational beliefs or cognitions are believed to be reciprocally associated to performance outcomes through the learning behaviours they instigate (Schunk, Pintrich, & Meece, 2008). Investment of students in their schoolwork, which Maehr and colleagues have referred to as personal investment (e.g., Maehr & Braskamp, 1986; Maehr & McInerney, 2004; Maehr & Meyer, 1997) is the result of the motivational beliefs. Students' investment in school thus refers to the behavioural activity which results from motivational beliefs. School investment can vary in terms of the intensity, persistence, and direction of school-related behaviours (Maehr & Meyer, 1997; Pintrich, 2004; Schunk, et al., 2008).

As described, motivation was originally mainly considered an innate characteristic of an individual that affected (learning) behaviour (Schunk et al, 2008). In more recent theories, however, the dynamic, contextual nature of motivation is stressed. Accordingly, motivation will depend upon the characteristics of the specific situation in which learning takes place (e.g., Boekaerts, 2001; Linnenbrink & Pintrich, 2002; Zimmerman, 2008). Niemivirta (2002) argued that these different views – this situational, dynamic view on motivation on the one hand, and the concept of motivation as a more stable disposition on the other hand – are not contradicting, but rather complementary. A person can have certain preferences or tendencies to behave in certain ways which are characteristic for this individual. At the same time, characteristics of a situation can induce certain beliefs or behaviours, especially those for which a person has a general preference (Niemivirta, 2002).

Motivation research has been described as "fragmented and diffuse" (Pintrich, 2000, p. 667) as there are various different perspectives on the concept of motivation, both theoretical and methodological (Wentzel & Wigfield, 2009). These different perspectives often include related, but slightly different concepts. Notwithstanding these conceptual differences, contemporary theories of motivation, also share a number of important basic assumptions (Schunk, et al., 2008):

1. Motivational processes are believed to underlie human behaviour.
2. Motivation involves cognitions, stressing the causal role of mental processes.
3. The relations between motivation and learning behaviours and achievement are believed to be reciprocal.
4. Motivation is considered a complex phenomenon that is dependent on personal, social, and situational characteristics.
5. Motivation is an aspect of human development and changes over time.
6. Motivation can vary as the result of individual, group and cultural differences.

In this dissertation, these six assumptions guide our conceptualization of motivation. Furthermore, the focus of this dissertation is on those concepts that have unambiguously been associated with adaptive learning behaviour and academic performance, namely task-orientated goals, self-efficacy, and students' investment in school.

## LEARNING CONTEXT

Factors associated with the learning context are believed to affect students' motivation for learning (Pintrich, 2004; Urdan & Schoenfelder, 2006), because in different learning contexts, children experience different learning opportunities. Hickey and McCaslin (2001) described three possible perspectives on how the learning context is related to student motivation. First, the behavioural or empiricist perspective describes the learning context as the only determinant of learning. Learning is considered a bottom-up process during which associations are formed, strengthened or adjusted. In this view, motivation is by definition extrinsic. Accordingly, academic motivation is solely the result of extrinsic cues and considered an extrinsically activated activity. Contrarily, according to the cognitive or rationalist perspective, learning is a top-down process. Motivation is mostly determined by expectancy-related and

value-related constructs, and is considered internal. In this view, the learning context only provides expectancy-related or value-related information. Another way to look at the relation between the learning context and students' motivation for school is the situative perspective, which has increasingly affected ideas about what constitutes learning. In line with current motivational perspectives discussed above stressing the dynamic nature of motivation (Niemivirta, 2002; Schunk et al., 2008), the situative perspective does not consider learning as a process of mere knowledge acquisition. Instead, engagement in learning is considered a process of active and meaningful participation in a learning context. In line with the situative perspective, Hickey and McCaslin (2001) argue for an approach in motivation research in which there is a "continued reliance on individually-oriented constructs … as well as enhanced study of social and environmental preconditions and interactions." (2001 p. 44). These interactions between the learning context and individual characteristics are also central to the "person-environment fit" perspective (Cronbach, 1967; Hunt 1975; Roeser, Eccles, & Sameroff, 2000). When schools are able to provide students with a learning context that fits with their individual needs, skill levels, interests, developmental stage, and preferences, they provide an optimal environment for students to be motivated and achieve to their potential. A good fit between students and their learning environment could thus prevent or decrease the decline in students' motivation.

### CLASSROOM COMPOSITION

According to Berliner (2012), relations between the learning context and motivation and achievement are often attributed to teacher effects, but very often they are due to the composition of the classroom, or to the complex interplay between the teacher effects and classroom composition. As children not only learn from their teachers, but also from each other, the social and ethnic composition of the classes students attend affects their learning opportunities. Many schools in the Netherlands, as in other countries, are homogeneous in classroom composition with regard to students' socio-

economic status (SES) and their ethnic background (Bakker, Denessen, Peters, & Walraven, 2011; Karsten, 2006; Karsten, Felix, Ledoux, Meijnen, Roeleveld, & Van Schooten, 2006). Ethnic minority students and low SES students are often taught at segregated "disadvantaged schools" among other ethnic minority or low SES students, while ethnic majority students, especially those from high SES backgrounds, attend more "privileged schools" (Bakker et al., 2011).

In general, segregation is often believed to lead to adverse outcomes for those students in disadvantaged classrooms. The common held fear is that students groups that are considered disadvantaged based on their average achievement levels., in particular ethnic minority students or students from social-economically disadvantaged backgrounds, will "bring down" other students in the classroom and that these students themselves will not be able to benefit from the potential of more privileged classrooms (Bakker et al., 2011 ). There are a number of different explanations of the underlying processes through which a disadvantaged classroom composition would negatively affect students.

The *instructional quality explanation* states that quality is lower in disadvantaged classrooms because of several reasons. Teachers adapt their general instructional level to the average level of their students (Beckerman & Good, 1981), teacher expectations may be lower (Jussim, Eccles, & Madon, 1996; Jussim & Harber, 2005; Van den Bergh, Denessen, Hornstra, Voeten & Holland, 2010) and as a result the standard may be lowered (Westerbeek, 1999). Moreover, teachers may prefer to work at schools with more privileged student populations (Karsten et al, 2006) and disadvantaged schools may therefore have more problems finding qualified and motivated staff (OECD, 2005).

The *language contact hypothesis* brought forward by Driessen, Doesborgh, Ledoux, Van der Veen, and Vergeer (2003) furthermore states that ethnic minority students, who usually speak a different language at home than the language spoken at their school, in segregated classrooms will have less opportunities to come into contact with the school language than ethnic minority students in classrooms with more majority students. Accordingly, ethnic minority students

in integrated classrooms will thus become more proficient in the language spoken at school, which will also help them in other academic subjects as well (Driessen et al., 2003). The language contact hypothesis may hold especially for ethnic minority students, but to some extent it may also hold for socio-economic background differences, considering the distinction in 'restricted' and 'elaborated' code (Bernstein, 1964).

Moreover, the *social contagion explanation* states that through social interactions students affect each other's motivation and learning outcomes and students will thus become more alike, either positively or negatively (Erbring & Young, 1979; Kelly, 2009). Likewise, the *normative explanation* states that students will become like their peers because of the norm that is being set in the classroom (Goldsmith, 2011). Based on these two explanations, it is often assumed that students in disadvantaged classrooms will 'bring each other down' in terms of motivation and achievement. In disadvantaged classrooms, students are often believed devalue achievement (Goldsmith, 2011) and group dynamics may lead a culture of where motivation is discouraged (Paulle, 2002).

While most of the aforementioned explanations suggest that being in a classroom with many ethnic minority or low SES students will negatively impact motivation and achievement, others have argued that students in disadvantaged classrooms could also benefit from school segregation. Students from more disadvantaged backgrounds have more to gain from education in terms of upward mobility (Van der Veen, 2003), suggesting that – also in line with the aforementioned *normative* explanation – students in 'disadvantaged' classrooms may set a norm of high motivation and may encourage achievement. Moreover, according to the *big-fish-little-pond effect*, students form their self-concept based on their own ability levels as well as on a comparison with the ability levels of classmates. When students are in a classroom where overall ability levels are higher than their own ability level, their expectancies about their own abilities are expected to develop more negatively (Marsh, 1987). In more disadvantaged classes where overall ability levels are lower, self-efficacy and consequent learning outcomes are more likely to develop more positively.

The *specialization hypothesis* furthermore suggests that in disadvantaged classrooms, teachers may be better able to tailor their instruction to the needs of their specific classroom (Driessen et al., 2003). This could for example refer to the pace or content of instructional practices, such as focusing more on language in classrooms with many students with language delays. Specialization may also refer to adapting the instructional style to students' particular backgrounds. Teacher expectancy literature (e.g., Rosenthal 1994) showed that teacher perceptions of their students' ability or background can affect many aspects of teaching and learning outcomes. As such, teachers in classrooms with different student populations may find different instructional styles suitable for their students. Important sources that shape teacher perceptions are students' ability levels (Madon, Jussim, Eccles, 1997), gender (Madon et al., 1997), social background (Jussim et al., 1996), or ethnic background (Tenenbaum & Ruck, 2007). Perceptions of these characteristics can cause differential teacher behaviours. Most teacher expectancy research has focused on within-classroom differences and subsequent differential teacher practices of teachers toward low versus high expectancy students (Rubie-Davies, 2010). Recently, two studies examined how classroom characteristics affect teachers' instructional strategies, showing teacher perceptions of classroom characteristics affect use of extrinsically or intrinsically oriented motivational strategies (Rubie-Davies, Flint, & McDonald, 2012) and students' learning outcomes (Archambault, Janosz, & Chouinard, 2012), suggesting that also classroom practices may depend on teachers' perceptions of their students. Effects of classroom composition may thus be explained by the instructional style teachers adopt in classes with different student populations.

### INNOVATIVE LEARNING

For decades, learning environment research has examined which types of instructional environments are best suited to foster students' motivational needs. Boekaerts and Niemivirta (2000) made a distinction between optimal and non-optimal learning conditions for self-regulated learning to occur. They

argued that classroom environments that foster self-set learning episodes, including learning in a natural context, appear to offer better conditions for motivation than teacher-centred learning environments. The main aim of these 'innovative learning' environments is to offer students a more optimal learning environment to increase motivation and enhance learning (Blok et al., 2006).

Innovative learning (IL) refers to a variety of instructional approaches – also referred to as new learning, natural learning, powerful learning, or active learning – that allow for a more active role of students in their own learning process compared to more traditional approaches (Hickey, 1997; O'Donnell, 2012; Schuitema, Peetsma, & Van der Veen, 2011; Simons, Van der Linden, & Duffy, 2000; Wilson, 2011). Aspects of IL include collaborative learning, self-directed, self-regulated learning, authentic learning, and innovative forms of assessment. In recent decades, IL environments have become increasingly popular in many different countries (Wilson, 2011). The theoretical basis of IL lies within socio-constructivism, which describes a wide range of views that share the basic assumption that learning can be defined as an active and social process of constructing knowledge and meaning rather than merely a process of knowledge transmission (Duffy & Cunningham, 1996; Gijbels, Van de Watering, Dochy, & Van den Bossche, 2006; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011). In practice, most schools cannot be considered strictly innovative or strictly traditional. IL is a multifaceted concept which entails multiple aspects and schools can vary along a continuum on each of these aspects (Duffy & Cunningham, 1996; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011)

The principles of socio-constructivism suggest a different role for teachers in IL environments in comparison to traditional learning environments. Teachers in IL environments focus more on collaborative learning in order for students to construct knowledge in interaction with each other (De Corte, Verschaffel, & Masui, 2004; De Lisi & Golbeck, 1999; Gijbels et al., 2006). Moreover, in IL environments, students mostly direct their own learning in contrast to more traditional learning environments in which the teacher mostly directs the learning process (Bolhuis, 2003; Fosnot, 1996; Gijbels et al., 2006; Land &

Hannafin, 2000; Phillips, 1995; Simons et al., 2000; Wilson, 2011) and teachers focus on the process of learning rather than solely on the learning outcomes (Boekaerts, 1997; Bolhuis, 2003). IL thus tends to emphasize the process by which students learn in order to enhance learning and self-regulatory skills (Boekaerts, 1997; Loyens & Gijbels, 2008). Furthermore, teachers in IL environments provide students with authentic and meaningful learning experiences to elicit a more active learning process in their students (Gijbels et al., 2006; Loyens & Gijbels, 2008; Roelofs & Terwel, 1999). Finally, in order for assessment to connect to these innovative ways of teaching, assessment methods differ from traditional assessment methods. Teachers in IL environments assess student progress in formative rather than summative ways (Birenbaum & Dochy, 1996; De Kock, Sleegers, & Voeten, 2004).

In all, IL thus suggests different roles for both teachers and students. Whereas in traditional education, teachers deliver instruction and control their students' learning process, their role shifts to providing an optimal learning context that invites students to actively construct their own knowledge and to provide guidance during learning. Likewise, the role of students shifts from rather passive receivers of instruction to autonomous participants who are actively involved and responsible for their own learning process (Furtak & Kunter, 2012). Theories on IL are therefore highly reconcilable with self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000a). According to SDT, teachers' instructional practices can vary along a continuum that ranges from very autonomy-supportive to very controlling (e.g., Deci, Vallerand, Pelletier, & Ryan, 1991; Reeve & Jang, 2006; Ryan & Deci, 2000a; Stroet, Opdenakker & Minnaert, 2012; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Vallerand, 1997). Autonomy-supportive practices are aimed at nurturing students' inner motivational resources and volitional intentions to act. Students' autonomy can be facilitated by transferring responsibility of the learning process to students, providing choice, connecting to students' interests, providing explanatory rationales, and by creating meaningful and relevant learning activities. Such practices are aimed at increasing students' own willingness to engage in learning activities.

In general, support has been found for a positive relation between different aspects of IL and motivational beliefs (Dignath, Buettner, & Langfeldt, 2008; Guthrie, Wigfield, & VonSecker, 2000; Hänze & Berger, 2007; Hickey, Moore, & Pellegrino, 2001; Lau, 2012; Nie & Lau, 2010; Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2010; Salinas & Garr, 2009; Wigfield & Guthrie, 2010) as well as different aspects of motivated behaviour (Baeten, Kyndt, Struyven, Dochy, 2010; Dignath et al. 2008; Gow & Kember, 1993; Lau, 2012; Nie & Lau, 2010; Marton, & Säljö, 2011; Opdenakker & Minnaert, 2011; Roozendaal, Minnaert, & Boekaerts, 2005; Schuitema et al., 2011; Trigwell, Prosser, & Waterhouse, 1999). Also autonomy-supportive teaching practices have been found to relate positively to student motivation (for a review, see Stroet et al., 2012). However, research on differential effects of IL is scarce and outcomes are not conclusive. Some studies found that students from lower socio-economic backgrounds would benefit mostly from a highly structured, teacher-centered learning environment with much direct instruction focusing on basic skills in which students from these groups lag behind (Guthrie, 1989; Hopkins & Reynolds, 2001; Scheerens & Bosker, 1997). Other studies on the other hand found small differences indicating that disadvantaged student populations benefited from IL in terms of both achievement and non-cognitive outcomes (e.g., Salinas & Garr, 2009) of found no differences in the extent students with different background characteristics benefited from IL (Opdenakker & Minnaert, 2011).

There are several reasons to argue that IL may indeed relate differently to motivational developments and achievement growth for students with different background characteristics. IL environments require active, self-directive, and collaborative types of participation and the academic language required for such learning activities is less typical for interactions in low SES and ethnic minority families (Leseman & De Jong, 2001; Leseman, Scheele, Mayo, & Messer, 2007). Particularly those students from lower socio-economic backgrounds or ethnic minority students with backgrounds from collectivist cultures are believed to be accustomed to more directive, stringent parenting styles (Frosh, 2004; Hermans, 1995; Shucksmith, Hendry, & Glendinning, 1995; Stewart & Bond, 2002).

Types of communication that are required in IL, such as asking why questions or expressing a different opinion, are less likely to be encouraged in their home environments (Heemskerk, Brink, Volman, & Ten Dam, 2005; Pels, Nijsten, Oosterwegel, & Vollebergh, 2006). Due to such cultural differences, traditional teacher-centered learning environments have been argued to suit students from ethnic minority backgrounds better than learning environments in which students self-direct their own learning (Kitayama, Snibbe, Markus, & Suzuki, 2004; Littlewood, 1999; Markus & Kitayama, 1991). Iyengar and Lepper (1999) for example showed that higher levels of student responsibility increased motivation of Anglo American children, but Asian children were more motivated when to perform a task when trusted authority figures made choices for them. Consequently, lower socio-economic backgrounds or ethnic minority students may prefer or feel more comfortable in traditional learning environments, and IL may be less beneficial for their motivation. However, that does not indicate that such learning environment are most desirable for these groups students. In more traditional learning environments, they could also be withheld opportunities to develop themselves as autonomous self-directed learners.

According to some studies, boys have less successful educational careers compared to girls (e.g., Driessen & Van Langen, 2011; Epstein, Elwood, Hey, & Maw, 1998; Tyre, 2006). IL has also argued to be less suitable for boys in comparison to girls (Legewie & DiPrete, 2012). Research on gender differences with respect to IL has mainly focused on students' learning preferences. Johnson and Engelhard (1992) for example found that girls tend to prefer collaborative learning more than boys. Philbin, Meier, Huffman, and Boverie (1995) studied learning environment preferences of adult learners, and found men to prefer more traditional learning environments. These results suggest that boys may prefer traditional education whereas girls may prefer IL. Demirbas and Demirkan (2007), on the other hand, did not find any differences in learning style preferences between male and female learners. In their review, Severiens and Ten Dam (1997) described that gender differences in learning styles are quite small on average, but there is much variation across

studies. The few studies that have examined differential effects of IL for students with different social or ethnic backgrounds were mostly cross-sectional and focused mainly on achievement outcomes. Not much is known about the relation of IL for different groups with regard to long-term developments in both achievement and motivation.

## THIS DISSERTATION

Through a variety of approaches, this dissertation aimed to examine the nature of motivational developments during upper primary school and the relations between these developments and achievement growth. It also aimed to investigate to what extent classroom composition and IL are related to developments in motivation and achievement for students that vary in gender, ethnic, and socio-economic background in order to examine whether the learning context may contribute to existing achievement gaps and to a potential decline in motivation during upper primary school.

### CHAPTER OVERVIEW

First, motivational developments in upper primary school and the relation between developments in motivation and achievement were examined in **chapter 2**. In a sample of 722 students, it was examined how different aspect of motivation developed from third to sixth grade and how aspects of their motivation related to achievement in reading comprehension. Moreover, it was studied whether these motivational developments and relations between developments in motivation and achievement varied by gender, ethnicity, and socio-economic background.

Next, in **chapter 3**, it was examined among the same sample of students whether developments in motivation and achievement were related to ethnic and socio-economic classroom composition. It was taken into account whether

classroom composition effects varied by students' ethnicity, and socio-economic background

According to the specialization hypothesis (Driessen et al., 2003), classroom composition effects may occur because teachers adapt their practices to their student population. This could refer to the content of instruction, but as an extension of the specialization hypothesis, it may also refer to the instructional style that teachers adopt. To investigate whether the student population affects the instructional style teachers adopt, **chapter 4** explored teacher beliefs underlying their teaching practices. A subsample of nine teachers from schools that varied in student population and teaching practices participated in this study. It first examined teachers' personal beliefs toward autonomy-supportive teaching practices which are more typical to IL environments or toward more controlling teaching practices which are more typical to traditional education. It was furthermore examined how these beliefs, in combination with their perceptions of their student population affected their self-reported teaching practices. Other contextual pressures, such as formal regulations or school policies, were also included.

After taking teacher beliefs and their self-reported teaching practices into account, **chapter 5** focused on students' perceptions of their learning environment as well as their preferences with regard to the instructional style. In this chapter, five students of each of the nine teachers of chapter 4 were interviewed. Students' learning preferences toward aspects of traditional or innovative learning, as well as their perceptions of their actual classroom environment were examined. It was examined whether their learning preferences, their perceptions of the learning environment, as well as the alignment between those, differed by gender, and ethnic and socio-economic background.

In **chapter 6**, it was examined whether students' backgrounds indeed affected the extent to which they benefit from IL. In this chapter, the full sample of 722 students participated and it was studied how different aspects of IL (collaborative learning, authentic learning, and focusing on self-regulation)

related to developments in students' motivation and achievement in upper primary school and how this varied by students' gender, ethnicity, and socio-economic background.

Finally, in **chapter 7**, the main findings of the studies in this dissertation are summarized and discussed, and limitations as well as implications for future research and educational practice are considered.

## METHODOLOGY

*Participants.* To address the research aims of this dissertation, 722 students from 37 classes of 25 schools across the Netherlands and their teachers participated. These students form a subsample from the third grade cohort of the triennial "COOL" study, a national Dutch cohort study on students' educational careers (Driessen, Mulder, Ledoux, Roeleveld, & van der Veen, 2009). Analyses showed that the students in this subsample were comparable to the students in the COOL study. Information on background characteristics, motivation and achievement of these students in grade three and grade six was available from the COOL study and for the sake of this dissertation, three additional waves of data were collected from this subsample. During each measurement wave, students and their teachers filled out questionnaires. Table 1 shows a schematic overview of the data collection.

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 |

For the two qualitative studies (chapter 4 and 5) a sample of nine teachers and 45 of their students at nine schools were selected from the larger sample based on their self-reported degree of innovative learning with intent that their scores represented maximum variability.

*Measures.* Questionnaires on motivation were administered to students and their teachers during regular class time. These included self-reports on task-orientation and academic self-efficacy, and teacher reports on students' investment. Although self-report measures have some limitations, as they are susceptible to self-presentation bias (Jobe, 2000), the internal nature of motivational beliefs makes self-reports one of the most suitable measures. Motivated behavior, however, is a visible part of motivation and was therefore assessed by teacher ratings. This scale included items that represent two key aspects, intensity and perseverance, of school investment. The task-orientation and school investment scales were formulated in Dutch. The self-efficacy scale was originally formulated in English and translated to Dutch for use in the COOL study. Moreover, all scales were validated for use in the COOL study (Driessen et al., 2009; Jungbluth, Roede, & Roeleveld, 2001). To check whether the motivational variables reflected the same construct over time and across groups, a series of multi-group factor analyses were performed, yielding satisfactory results. Students' achievement scores on tests from the Dutch National Institute for Educational Measurement (CITO) were provided by the schools. For the two qualitative studies, teachers' beliefs and self-reported teaching practices and students' perceptions of the learning environment and their learning preferences were assessed through in-depth interviews.

*Analyses.* Because of methodological advances, it is now possible to combine complex statistical techniques such as growth curve and autoregression modelling with multilevel techniques, making it easier to investigate how factors of the learning context are associated with developments in students' motivation and achievement growth (Reynolds, Sammons, De Fraine, Townsend, & Van Damme, 2011). These techniques also allow for examining

group differences. These techniques were combined in this dissertation and complemented with qualitative studies to also provide a more in-depth understanding of teacher and student perceptions of the learning environment.

## SCHEMATIC OVERVIEW

Figure 1 provides an schematic overview of the chapters in this dissertation.

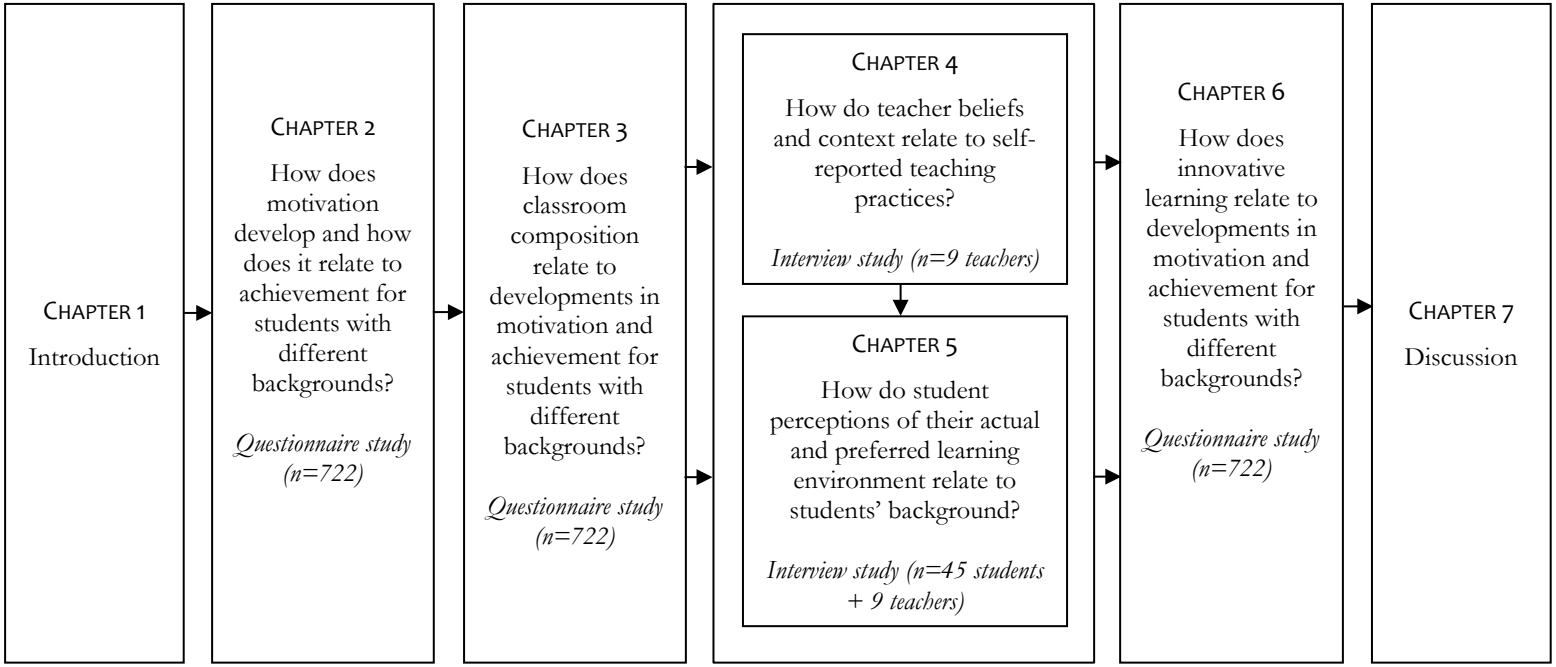



*Figure 1.* Schematic overview of this dissertation

# CHAPTER 2

## DEVELOPMENTS IN MOTIVATION AND ACHIEVEMENT DURING PRIMARY SCHOOL: A LONGITUDINAL STUDY ON GROUP-SPECIFIC DIFFERENCES [1]

**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.

**Keywords**: *motivation, academic achievement, growth trajectories, primary school*

[1] Published as Hornstra, L., Van der Veen, I., Peetsma, T., & Volman, M. (2013). Developments in motivation and achievement during primary school: A longitudinal study on group-specific differences. *Learning and Individual Differences, 23,* 195-204. doi: 10.1016/j.lindif.2012.09.004

## 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.

### 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, 2000b), 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 towards 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; Peetsma, Hascher, Van der Veen, & Roede, 2005; Pajares, 1997). 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), although 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.

## 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.

### GROUP DIFFERENCES

Achievement outcomes are found to vary by socio-economic and ethnic background (Park & Sandefur, 2010; Roeleveld et al., 2011) and, according to some, a gender gap has emerged to the disadvantage of boys (e.g., Tyre, 2006; Steinmayr & Spinath, 2008). 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

differences in motivation have been studied before, not much is known about differences in motivational developments over time.

### 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?

## METHODOLOGY

### 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 ($N$=38060). 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 [2]. Students and teachers filled out questionnaires during each measurement wave. Table 1 shows a schematic overview of the data collection.

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 |

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. Parental educational level was considered an indication of students' socio-economic status (SES). Three groups were distinguished based on the highest educational level attained by either of the parents (see table 2). From 121 students, SES information was missing. Analyses showed a significant relation

[2] 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).

between ethnicity and SES of students in this sample (*Spearman's Rho*=.112, $p<.05$).

Table 2.
*Ethnic background and socio-economic status of participants in the study*

| Ethnic background | N | % | SES (parental education) | N | % |
|---|---|---|---|---|---|
| Ethnic majority (Dutch, other Western and European countries) | 644 | 89.2% | Low: maximum lower vocational education | 96 | 16.0% |
| Ethnic minority (Morocco, Turkey, Dutch-Antilles, Surinam, Iraq and other non-western countries) | 78 | 10.8% | Middle: maximum intermediate vocational education | 301 | 50.1% |
| | | | High: higher education | 204 | 33.9% |

## MEASURES

*Motivation.* Questionnaires on motivation were administered to students and their teachers during regular class time. These included self-reports on task-orientation and academic self-efficacy, and teacher reports on students' investment. Although self-report measures have some limitations, as they are susceptible to self-presentation bias (Jobe, 2000), the internal nature of motivational beliefs makes self-reports one of the most suitable measures. Motivated behavior, however, is a visible part of motivation and was therefore assessed by teacher ratings. This scale included items that represent two key aspects, intensity and perseverance, of school investment. The task-orientation and school investment scales were formulated in Dutch. The self-efficacy scale was originally formulated in English and translated to Dutch for use in the COOL study. Moreover, all scales were validated for use in the COOL study (Driessen et al., 2009; Jungbluth, Roede, & Roeleveld, 2001). All items were on a 5-point Likert-scale ranging from totally not applicable to me (1) to totally applicable to me (5). Further information about the scales is reported in table 3. Furthermore, to check whether the motivational variables reflected the same

construct over time and across groups, a series of multi-group factor analyses were performed, yielding satisfactory results.

Table 3.
*Example items, number of items, and reliabilities of the scales used in the study*

| Scale | Example items | *N* of items | Reliability m1 – m5 |
|---|---|---|---|
| *Task-orientation* from Goal Orientation Questionnaire (Seegers, Van Putten, & De Brabander, 2002) | *"I like when I learn something new in school."* | 5 | .65 - .82 |
| *Academic self-efficacy* from 'Patterns of Adaptive Learning Survey' (PALS) (Midgley et al., 2000) | *"I can do even the hardest work in school if I try."* | 6 | .70 - .84 |
| *School investment* from COOL student profiles (Jungbluth, Peetsma, & Roeleveld, 1996) | *"This student quickly gives up when he/she does not succeed."* *"This child works accurately"* | 3 | .82 - .85 |

*Achievement in reading comprehension*. Reading comprehension scores were used as a measure of achievement, as this is an essential skill for gaining understanding in all other subject domains (Hulme & Snowling, 2011). Tests from the Dutch National Institute for Educational Measurement (CITO) are administered to students in the Netherlands each year to monitor student progress. Students' scores from grade four to grade six were provided by the schools. The test has good reliability ($\alpha$>0.80) (Evers, 2002).

*Cognitive ability*. To exclude the possibility that motivational differences between groups could be attributed to cognitive ability, cognitive ability was included in the study as a control variable. It was measured in grade three by a cognitive ability test. This test consists of 85 verbal and non-verbal items. There are five subtests: 'composition of figures', 'exclusion', 'number series', 'categories', and 'analogies'. Factor analyses revealed that these subtests form one general cognitive ability factor. Reliability of the test was 0.91 (Van Batenburg & Van der Werf, 2004).

## DATA ANALYSES

Students with missing data are often removed from the analysis (listwise deletion), although this practice has been criticized (Little & Rubin, 1987; Little & Rubin, 1989) as it assumes that missing values are completely at random (MCAR) and not related to for example scores on specific variables or group membership. Instead of removing participants with missing values from the analyses, missing values were estimated by full-information maximum likelihood estimation (FIML), which is based on the assumption that missing values are missing at random (MAR) and can be predicted from the available data. Imputation of missing data thus prevents bias that may occur by removing cases when missingness may be related to for example group membership.

The data were analyzed using multivariate Latent Growth Curve Analyses (LGCA) (McArdle & Epstein, 1987). The analyses were performed with Mplus (Muthén & Muthén, 2007). The underlying assumption of LGCA is that, individuals can vary in their initial scores and growth patterns. For each individual, LGCA estimates an intercept (initial level in grade three) and slope (growth a year) on each variable. These latent variables are estimated based on observed scores on multiple measurement occasions. To examine potential curvilinear growth patterns, a quadratic growth term can also be estimated for each individual.

Beforehand, a series of multi-group factor analyses were performed to check whether the variables reflected the same construct over time and across groups,. For measurement invariance across groups (boys vs. girls, ethnic majority vs. minority students, and low vs. middle vs. high SES), a model was estimated for each variable in which measurement parameters were held equal across groups. Likewise, to check for measurement invariance across measurement occasions, multi-group factor analyses were performed with groups being the measurement occasions. All models fitted the data well (CFI and TLI were above .95) and fit was not significantly better in less restrictive models.

To study motivational developments (research question 1), univariate growth curves were fitted to the data of each motivational variable. The error terms of

subsequent measurements of motivation were allowed to covary. In estimating each model, the multilevel nested structure of the data (students within classes) was taken into account. Linear and quadratic growth models were compared to determine whether developments showed a linear or quadratic growth pattern. Model fit was determined by Chi-square difference tests, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). A significant Chi-square difference indicates whether or not model fit significantly improved by adding quadratic growth. A CFI above .90 indicates good fit of a model. An RMSEA below .05 indicates good fit of a model and scores between .05 and .08 indicate reasonable fit (Hu & Bentler, 1999). After determining which type of growth model –linear or quadratic– fitted the data best, multigroup latent growth curve analyses were performed on the univariate models with groups being boys vs. girls, ethnic majority vs. minority, and low, medium and high SES students. For these multigroup analyses, first a model with no equality constraints was defined. One by one, equality constraints were added to the model. Fit indices indicated whether model fit significantly declined by adding the equality constraint, indicating that a parameter differed across the groups. If model fit did not significantly worsen by adding the equality constraint, the parameter was considered equal. To evaluate the size of differences between groups, effect sizes for differences in intercepts, slopes or quadratic terms were calculated by means of Cohen's *d*, with 0.2 being indicative of a small effect, 0.5 a medium, and 0.8 a large effect size (Cohen, 1988).

To answer research question 2 on the relation between developments in motivation and reading comprehension, models relating the intercept (initial level) and slopes (growth a year) – and quadratic growth term, if applicable – of each motivational variable and reading comprehension were related to each other (see figure 1 for an example). Three of these models, one for each motivational variable, were examined with gender, ethnicity, SES, and cognitive ability as control variables. Again, we corrected for the multilevel structure of the data. Relations between initial levels of motivation and achievement are comparable to relations that can be examined in cross-sectional data. The

longitudinal nature of these data, however, also allowed for examining relations between slopes, or in other words, whether developments in motivation over time related to developments in achievement. Effect sizes to assess the strength of these relations were estimated based on the standardized coefficients of the relations between intercepts and/or slopes. Standardized correlations of 0.1, 0.3, and 0.5 are indicative of small, medium, and large effects, respectively (Cohen, 1988). Subsequently, we examined multigroup differences in the relation between motivation and achievement with similar groups, while controlling for the remaining control variables. For these multigroup analyses, first a model with no equality constraints was defined. One by one, equality constraints were added to the model. Fit indices again indicated whether parameters differed across groups.

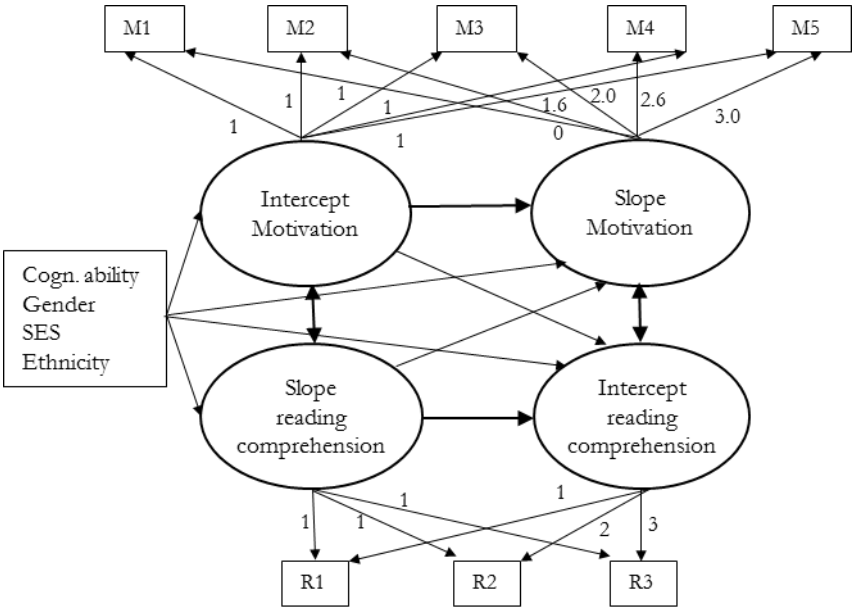



*Figure 1.* Example model examining the relation between motivation and reading comprehension (variance and error terms not depicted).

Table 4.

*Descriptive statistics and correlations of task-orientation (TO), self-efficacy (SE), school investment (SI), and reading comprehension (RC) (N=722).*

| | | *M* | *sd* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | TO gr 3 | 4.11 | 0.60 | 1.00 | | | | | | | | | | | | | | | | | |
| 2. | TO gr 5_1 | 4.05 | 0.54 | .07 | 1.00 | | | | | | | | | | | | | | | | |
| 3. | TO gr 5_2 | 3.92 | 0.60 | .09* | .50* | 1.00 | | | | | | | | | | | | | | | |
| 4. | TO gr 6_1 | 3.92 | 0.59 | .05 | .41* | .59* | 1.00 | | | | | | | | | | | | | | |
| 5. | TO gr 6_2 | 3.85 | 0.61 | .04 | .33* | .43* | .57* | 1.00 | | | | | | | | | | | | | |
| 6. | SE gr 3 | 3.71 | 0.62 | .44* | .04 | .06 | .02 | .01 | 1.00 | | | | | | | | | | | | |
| 7. | SE gr 5_1 | 3.62 | 0.61 | .06 | .47* | .27* | .27* | .21* | .07 | 1.00 | | | | | | | | | | | |
| 8. | SE gr 5_2 | 3.65 | 0.57 | .03 | .34* | .43* | .32* | .21* | .02 | .56* | 1.00 | | | | | | | | | | |
| 9. | SE gr 6_1 | 3.72 | 0.57 | .07 | .31* | .41* | .48* | .34* | .02 | .49* | .66* | 1.00 | | | | | | | | | |
| 10. | SE gr 6_2 | 3.76 | 0.61 | .02 | .27* | .25* | .34* | .52* | -.01 | .40* | .52* | .61* | 1.00 | | | | | | | | |
| 11. | SI gr 3 | 3.38 | 0.89 | .15* | .04 | .02 | -.01 | .02 | .06 | .02 | .01 | .02 | .03 | 1.00 | | | | | | | |
| 12. | SI gr 5_1 | 3.43 | 0.93 | .07 | .10* | .13* | .14* | .13* | .12* | .13* | .15* | .09* | .15* | -.02 | 1.00 | | | | | | |
| 13. | SI gr 5_2 | 3.44 | 0.97 | -.03 | .07 | .11* | .11* | .10* | .04 | .15* | .15* | .09* | .13* | .01 | .77* | 1.00 | | | | | |
| 14. | SI gr 6_1 | 3.43 | 0.88 | .01 | .11* | .21* | .20* | .15* | .02 | .17* | .15* | .14* | .17* | .06 | .58* | .60* | 1.00 | | | | |
| 15. | SI gr 6_2 | 3.53 | 0.87 | .06 | .09 | .15* | .17* | .16* | .02 | .15* | .14* | .16* | .20* | .11* | .57* | .63* | .70* | 1.00 | | | |
| 16. | RC gr 4 | 34.5 | 13.8 | .10 | .04 | .04 | .01 | -.04 | .12* | .11* | .16* | .11* | .09 | .01 | .37* | .27* | .26* | .27* | 1.00 | | |
| 17. | RC gr 5 | 44.0 | 14.1 | .01 | .04 | .14* | .08 | -.01 | .08 | .18* | .25* | .21* | .15* | .01 | .40* | .40* | .38* | .42* | .69* | 1.00 | |
| 18. | RC gr 6 | 57.9 | 16.5 | -.04 | .02 | .13* | .06 | .01 | .00 | .19* | .30* | .21* | .17* | -.01 | .41* | .42* | .32* | .37* | .53* | .68* | 1.00 |

**$p < 0.01$ level (2-tailed); *$p < 0.05$ level (2-tailed).

# RESULTS

## DESCRIPTIVE STATISTICS

Table 4 shows means and standard deviations of task-orientation, self-efficacy, school investment, and reading comprehension for each measurement and correlations between these variables.

## UNIVARIATE GROWTH MODELS OF MOTIVATION

To examine developments in task-orientation, self-efficacy and school investment, univariate latent growth models were defined. Table 5 shows the estimates of the means, variances and fit indices as well as the outcomes of the multigroup comparisons for each variable. Table 5 shows that a linear growth model of *task-orientation* fitted the data reasonably well ($\chi^2$ (6) = 20.77, CFI=0.98, RMSEA=0.06), while the quadratic model fitted the data significantly worse ($\chi^2$ (2) = 12.02, CFI=0.98, RMSEA=0.08). Task-orientation thus showed a linear negative trend during the second half of primary school. Boys and girls as well as children with different SES backgrounds did not differ in development of task-orientation. Ethnic majority and minority students showed the same initial level of task-orientation, but the growth rates significantly differed. While task-orientation of ethnic minority students remained stable, task-orientation of majority students declined between third and sixth grade. Figure 2 shows the development in task-orientation for the total group, and separately for ethnic majority and minority students.

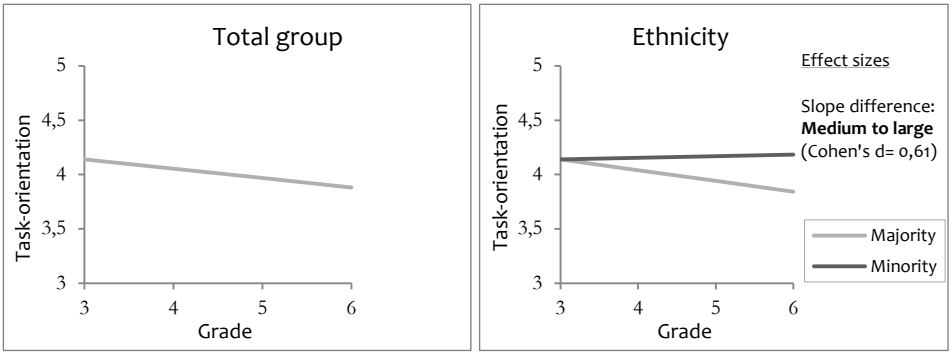



*Figure 2.* The development of task-orientation for the total group, and ethnic minority and majority students.

Table 5.

*Unstandardized means and variances for univariate (multi-group) latent growth curves of task-orientation, self-efficacy, and school investment and model fit statistics*

| | Intercept | | Slope | | Quadratic | | Fit indices | | |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *Var* | *M* | *Var* | *M* | *Var* | $\chi^2$ (df) | CFI | RMSEA |
| Task-orientation | | | | | | | | | |
| Total group | 4.14 | 0.09 | -0.09* | 0.04 | | | 2.77 | 0.98 | 0.06 |
| Boys | 4.14 | 0.08 | -0.09 | 0.04 | | | 37.37 | 0.97 | 0.06 |
| Girls | 4.14 | 0.10 | -0.09 | 0.04 | | | | | |
| Ethnic | 4.14 | 0.11 | *-0.10* | 0.03 | | | 31.91 | 0.99 | 0.04 |
| Ethnic | 4.14 | 0.00 | *0.02* | 0.04 | | | | | |
| Low SES | 4.15 | 0.00 | -0.10* | 0.03 | | | 37.17 | 0.99 | 0.03 |
| Middle SES | 4.15 | 0.11 | -0.10* | 0.03 | | | | | |
| High SES | 4.15 | 0.19 | -0.10* | 0.05 | | | | | |
| Self-efficacy | | | | | | | | | |
| Total group | 3.70 | 0.00 | -0.13* | 0.18 | 0.05 | 0.02 | 2.20 | 1.00 | 0.00 |
| Boys | 3.70 | 0.00 | *-0.06* | 0.17 | *0.03* | 0.02 | 9.35 | 1.00 | 0.00 |
| Girls | 3.70 | 0.00 | *-0.20* | 0.19 | *0.07* | 0.02 | | | |
| Ethnic | *3.69* | 0.00 | -0.14* | 0.18 | 0.06 | 0.02 | 8.21 | 1.00 | 0.00 |
| Ethnic | *3.94* | 0.00 | -0.14* | 0.19 | 0.06 | 0.03 | | | |
| Low SES | 3.72 | 0.00 | *-0.19** | 0.21 | 0.06 | 0.03 | 18.84 | 1.00 | 0.00 |
| Middle SES | 3.72 | 0.00 | *-0.17** | 0.16 | 0.06 | 0.02 | | | |
| High SES | 3.72 | 0.00 | *-0.14** | 0.15 | 0.06 | 0.02 | | | |
| School investment | | | | | | | | | |
| Total group | 3.36 | -0.06 | 0.05* | 0.06 | | | 5.06 | 1.00 | 0.00 |
| Boys | *3.28* | 0.00 | *-0.02* | 0.09 | | | 17.85 | 1.00 | 0.00 |
| Girls | *3.47* | 0.00 | *0.10** | 0.07 | | | | | |
| Ethnic | 3.37 | 0.00 | *0.06** | 0.08 | | | 24.98 | 0.99 | 0.02 |
| Ethnic | 3.37 | 0.00 | *-0.06* | 0.12 | | | | | |
| Low SES | *3.24* | 0.00 | *0.03* | 0.08 | | | 47.42 | 0.98 | 0.04 |
| Middle SES | *3.38* | 0.00 | *0.03* | 0.08 | | | | | |
| High SES | *3.38* | 0.00 | *0.10** | 0.08 | | | | | |

* $p < 0.05$

*Note.* Parameter estimates printed in italics indicate significant differences between groups.

With regard to *self-efficacy*, a quadratic growth model fitted the data best ($\chi^2(2) = 2.20$, CFI=1.00, RMSEA=0.00). In general, students' self-efficacy first declined after third grade and then increased. This curvilinear "u-shape" was stronger for girls than for boys. Ethnic majority and minority students only differed in their initial level of self-efficacy, with ethnic minority students having higher self-efficacy than majority students. For the three SES groups, self- efficacy became more differentiated over time. All three SES groups had equal intercepts in grade 3, and first showed a decline and then an increase, but the slopes of the three groups significantly differed. At the end of primary school, self-efficacy was thus higher in groups with higher SES. Figure 3 shows the development of self-efficacy for the total and separate groups.

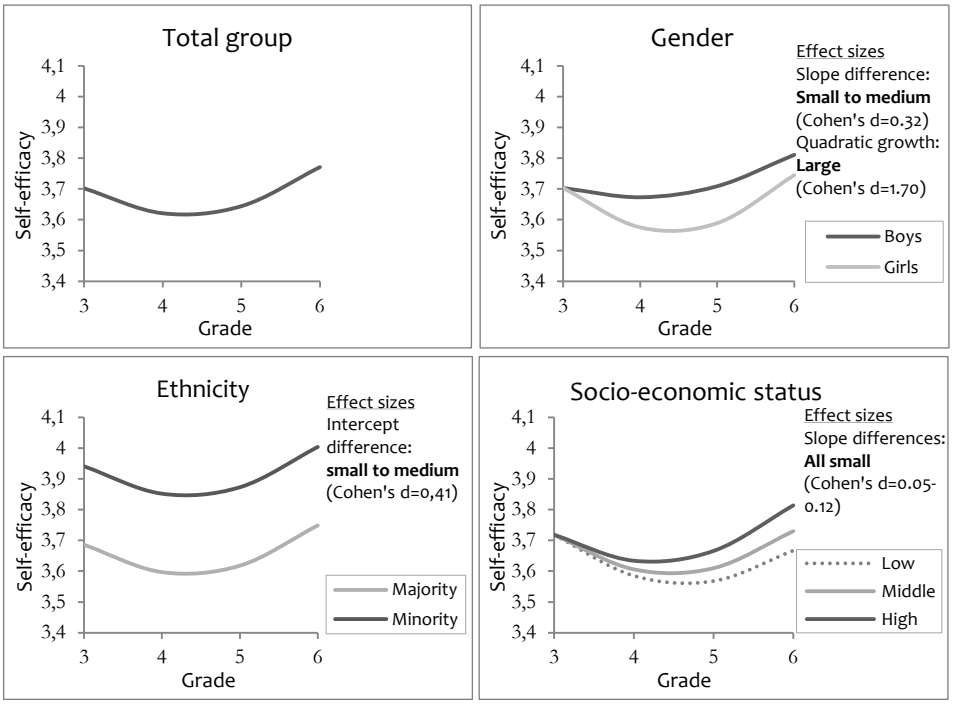



*Figure 3.* The development of self-efficacy for the total group, and separately for boys and girls, ethnic minority and majority students, and low, middle and high SES students.

For *school investment*, both the linear and quadratic model had a good fit to the data. The quadratic model ($\chi^2(6) = 4.63$, CFI=1.00, RMSEA=0.00) did not significantly fit better than the linear model ($\chi^2(8) = 9.40$, CFI=1.00, RMSEA=0.02). Also, the mean of the quadratic term was not significant ($M$=0.02, p>.05). Students' investment in school thus linearly increased over time (see figure 4). Multigroup analyses showed that girls' initial level of investment was higher than that of boys and this gap widened over time as girls showed a significant increase in school investment from grade three to six, while boys remained stable. Teacher ratings of investment of ethnic majority and minority students did initially not differ. However, investment of majority students became more positive over time, while investment of minority students remained stable. The high and middle SES group had higher initial levels of investment than low SES students. Investment of the high SES group increased between grade three and six while investment of the low and middle SES did not significantly change.

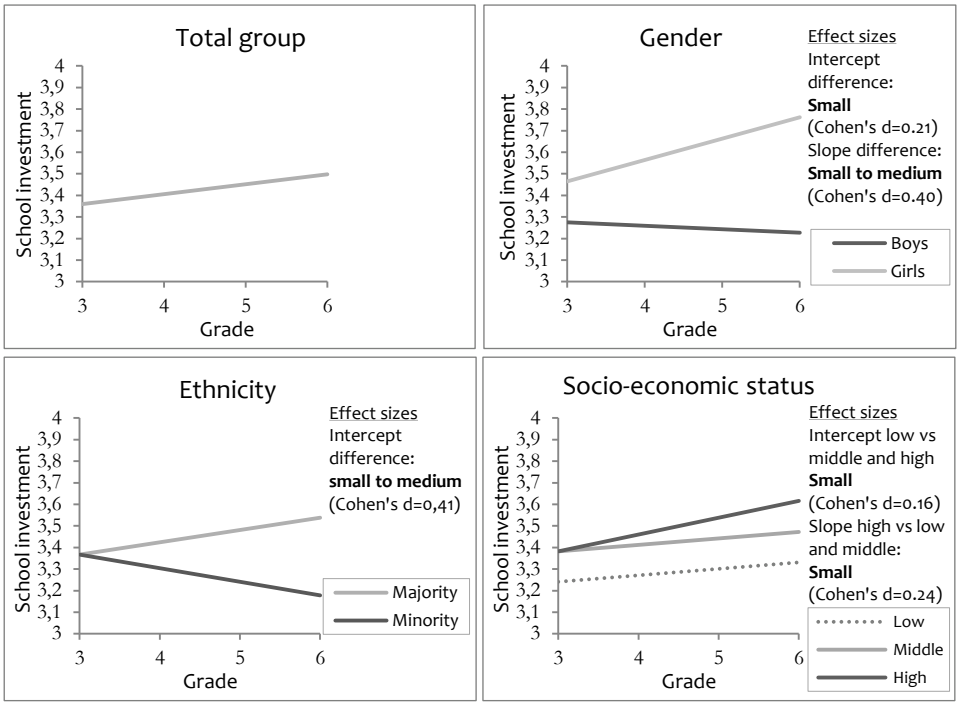



*Figure 4*. The development of school investment for the total group, and separately for boys, girls, ethnic minority and majority students, low, middle and high SES students.

## MULTIVARIATE GROWTH MODELS OF MOTIVATION AND ACHIEVEMENT

After the univariate models were estimated, the relations between developments in motivation and reading comprehension were examined. Results are displayed in table 6. First, the relation between developments in *task-orientation* and reading comprehension was examined. The initial levels of task-orientation and reading comprehension were not related. The growth curves of both variables were however positively related to each other. More specifically, an increase of one point in task-orientation a year resulted in an increase of an extra 0.12 points a year in achievement. Although this does not give information with regard to the causal direction, this finding indicates that either positive or negative developments in task-orientation are associated with similar developments in achievement. The effect size of this relation is small to medium ($r$=0.19). Note that this was after controlling for background characteristics and cognitive ability.

Table 6.

*Multivariate growth models of relations between developments in motivation and reading comprehension: Unstandardized path coefficients are displayed and standard errors in parentheses*

| | Total group | Gender | | Ethnicity | | SES | | |
|---|---|---|---|---|---|---|---|---|
| | | Boys | Girls | Majority | Minority | Low | Middle | High |
| *Task-orientation* | | | | | | | | |
| Task-orientation: Int ↔ Slope | - | - | - | - | - | - | - | - |
| Achievement: Int ↔ Slope | -38.36* (14.72) | -38.67*(14.56) | -38.67*(14.56) | -37.01* (14.62) | -37.01* (14.62) | -40.56* (16.84) | -40.56* (16.84) | -40.56* (16.84) |
| Int Task-orientation ↔ Int achievement | - | - | - | - | - | - | *0.57* (0.26)* | - |
| Sl Task-orientation ↔ Sl achievement | 0.12* (0.04) | 0.13* (0.04) | 0.13* (0.04) | 0.12* (0.04) | 0.12* (0.04) | *0.16 (0.12)* | - | *0.31* (0.09)* |
| Int Task-orientation → Sl achievement | - | - | - | - | - | - | - | - |
| Int achievement → Sl Task-orientation | - | - | - | - | - | - | - | - |
| *Fit statistics* | | | | | | | | |
| $\chi^2$ (df) | 104.70 (51) | | 149.85 (94) | | 135.52 (93) | | | 192.54 (136) |
| CFI | 0.96 | | 0.96 | | 0.97 | | | 0.95 |
| RMSEA | 0.04 | | 0.04 | | 0.06 | | | 0.05 |
| *Self-efficacy* | | | | | | | | |
| Self-efficacy: Int ↔ Slope | - | - | - | - | - | - | - | - |
| Self-efficacy: Int ↔ Q | - | - | - | - | - | - | - | - |
| Self-efficacy: Slope ↔ Q | - | -0.05* (0.02) | -0.05* (0.02) | -0.05* (0.02) | -0.05* (0.02) | *-.0.09* (0.05)* | *-.06* (0.02)* | - |
| Achievement: Int ↔ Slope | -37.31* (14.51) | -28.98*(12.77) | -28.98*(12.77) | -24.09 †(14.55) | -24.09 †(14.55) | -26.41 (16.91) | -26.41 (16.91) | -26.41 (16.91) |
| Int Self-efficacy ↔ Int achievement | - | - | - | - | - | - | *1.13* (0.31)* | *1.13* (0.31)* |
| Sl Self-efficacy ↔ Sl achievement | 0.52* (0.14) | 0.28* (0.06) | 0.28* (0.06) | 0.21* (0.05) | 0.21* (0.05) | *0.26* (0.07)* | - | *0.26* (0.07)* |
| Int Self-efficacy → Sl achievement | - | - | - | - | - | - | - | - |
| Int achievement → Sl Self-efficacy | 0.010* (.002) | 0.008* (.002) | 0.008* (.002) | 0.009* (.003) | 0.009* (.003) | - | *0.003 † (.001)* | *0.003† (.001)* |
| Intl achievement ↔ Q Self-efficacy | -0.002* (.001) | -0.003* (.001) | -0.003* (.001) | -0.003* (.001) | -0.003* (.001) | - | - | *-0.002* (.001)* |
| Sl achievement ↔ Q Self-efficacy | -0.013* (.005) | *-0.004* (.001)* | - | - | - | - | - | - |
| *Fit statistics* | | | | | | | | |
| $\chi^2$ (df) | 88.28 | | 123.23 (85) | | 128.02 (89) | | | 129.60 (121) |
| CFI | 0.97 | | 0.98 | | 0.98 | | | 0.99 |
| RMSEA | 0.04 | | 0.04 | | 0.04 | | | 0.02 |

Table 6 (*continued*)

| | Total group | Gender | | Ethnicity | | SES | | |
|---|---|---|---|---|---|---|---|---|
| | | Boys | Girls | Dutch | Ethic minority | Low | Middle | High |
| *School investment* | | | | | | | | |
| Investment: Int ↔ Slope | -0.06† (0.03) | - | - | - | *-0.10 (0.13)* | - | - | - |
| Achievement: Int ↔ Slope | -34.77* (14.42) | -32.94* (14.21) | -32.94* (14.21) | -37.56* (14.54) | -37.56* (14.54) | -34.98* (16.66) | -34.98* (16.66) | -34.98* (16.66) |
| Int Investment ↔ Int achievement | 1.37* (0.36) | *0.51 (0.53)* | *2.02* (0.49)* | - | *2.40* (1.10)* | - | - | - |
| Sl Investment ↔ Sl achievement | 0.41* (0.08) | *0.57* (12)* | *0.28* (0.09)* | 0.55* (0.06) | 0.55* (0.06) | 0.55* (0.07) | 0.55* (0.07) | 0.55* (0.07) |
| Int Investment → Sl achievement | - | - | - | - | - | - | - | - |
| Int achievement → Sl Effort | - | - | - | - | - | - | - | - |
| *Fit statistics* | | | | | | | | |
| $\chi^2$ (df) | 105.24 (46) | | 149.57 (87) | | 174.73 (92) | | | 174.00 (136) |
| CFI | 0.97 | | 0.97 | | 0.96 | | | 0.98 |
| RMSEA | 0.04 | | 0.05 | | 0.05 | | | 0.04 |

*$p$< .05, †$p$<.10

Multigroup comparisons only showed differences in the relation between task-orientation and reading comprehension between groups with different SES. The results for students with either a low or high SES were comparable to the results of the total group. For the middle SES group, however, growth in task-orientation and reading comprehension were not related, but the initial levels were ($B$=0.56, $p$<.05). Middle SES students with higher initial levels of task-orientation in grade three on average also had higher reading comprehension scores. Changes over time in task-orientation and reading comprehension were however not related for this group of students.

Initial levels of *self-efficacy* and reading comprehension were not related for the total group, but growth in self-efficacy was positively related to growth in reading comprehension ($B$=*0*.52, $p$<.05). Growth of one point a year in self-efficacy related to an increase of 0.52 point in reading comprehension. The effect size was large ($r$=0.55). Again, this was after controlling for background and cognitive ability. Furthermore, students with higher initial levels of reading comprehension showed more growth in self-efficacy ($B$=0.01, $p$<.05), with a small to medium effect size ($r$=0.32). Because of the curvilinear growth pattern of self-efficacy, the relation between self-efficacy and reading comprehension became a bit more complex, as not only the initial level and linear growth (slope), but also the quadratic growth of self-efficacy related to developments in reading comprehension. The initial level and linear growth of reading comprehension were slightly negatively related to the quadratic growth rate of self-efficacy ($B$=-0.002, $p$<.05; $B$=-0.013, $p$<.05, respectively). This means that students with lower initial levels or less growth in reading comprehension showed a slightly stronger u-shape in their development of self-efficacy. The relation between self-efficacy and reading comprehension only varied by SES. The results again showed that the outcomes for students with either low or high SES resembled the outcomes of the total group, which means that for those groups, the initial levels were not related, but linear growth in self-efficacy was related to growth in reading comprehension (for both groups: $B$=0.26, p<.05). For the middle SES group however, growth in self-efficacy and reading

comprehension were not related, but the initial levels were positively related ($B$=1.13, $p$<.05).

*School investment* was positively related to reading comprehension through both the initial level ($B$=1.37, $p$<.05) and the growth rates ($B$=0.41, $p$<.05). These results indicate that students, who are initially rated one point higher on investment, score 1.37 points higher on reading comprehension. Moreover, an increase of one point in investment a year can be associated with a 0.41 increase a year in reading comprehension. This effect size was medium to large (r=0.41), after controlling for background and cognitive ability. Multigroup comparisons first of all showed differences between boys and girls. The relation between initial levels of investment and reading comprehension was only significant for girls ($B$=2.02, $p$<.05) but not for boys ($B$=0.51, $p$>.05), but the relation between the developments in investment and reading comprehension was stronger for boys ($B$=0.57, $p$<.05) than for girls ($B$=0.28, $p$<.05). This indicates that a similar increase in investment would relate to bigger reading comprehension gains for boys than for girls. Furthermore, for ethnic minority students, there was a positive relation between the initial levels of investment and reading comprehension ($B$=2.40, $p$<.05), while for majority students, initial levels of investment and reading comprehension were not related. When ethnic minority students were rated higher on investment at the first measurement, they showed better reading comprehension at this measurement. For both groups, a similar significant positive relation between developments in investment and reading comprehension was found ($B$=0.55, $p$<.05). There were no differences between the three SES groups with regard to the relation between investment and reading comprehension.

## DISCUSSION

This study aimed to extend previous research on motivation by focusing on group-specific developments in task-orientation, self-efficacy, and school investment during primary school and examined whether these developments related to developments in achievement. Overall, we found evidence for

negative developments in task-orientation, but self-efficacy showed a curvilinear pattern that over time remained relatively stable, and school investment even increased over time. However, these developments differed considerably across groups. Furthermore, regardless of gender, ethnic or social background, developments in motivation were substantially related to developments in achievement, beyond students' background and cognitive ability. Below, we will discuss the results more in depth.

In line with previous research (Gottfried et al., 2001; Jacobs et al., 2002; Spinath & Spinath, 2005), task-orientation was found to decline during the second half of primary school. Given the relation with achievement outcomes, such a decline can be considered undesirable. However, this decrease was only found for ethnic majority students. Ethnic minority students' task-orientation remained stable over time and as a result, ethnic minority students were more task-oriented than majority students at the end of primary school. Previous research showed ethnic minority parents to value school more and to have higher expectations of their children's school success than non-immigrant parents (Van der Veen, 2003). The outcomes of the present study may suggest that these parents are indeed more likely to encourage positive school-related attitudes. Nevertheless, although ethnic minority students did not decline in task-orientation, this did not seem to result in a decrease in the achievement gap, as both ethnic minority and majority students on average showed similar growth in reading comprehension.

Self-efficacy showed the strongest relation to developments in reading comprehension, as has been found before (e.g., Eccles & Wigfield, 2002). As a result of the "u-shaped" curvilinear shape, self-efficacy increased toward the end of primary school and thus did not show an overall decline. The mixed findings of previous research on developments in self-efficacy may actually be accounted for by the nonlinear nature of the development of self-efficacy, that previous studies often have not taken into account. Some interesting group differences in self-efficacy were found. Girls showed a stronger "dip" in their self-efficacy around fourth and fifth grade than boys. Although earlier research on competence beliefs has suggested that with age gender differences increase,

these results show that for self-efficacy, this is only found initially. These outcomes may indicate that around age ten, especially girls, may experience a vulnerable phase with regard to their sense of efficacy, but fortunately, they also seem to make a quick recovery toward the later grades. Furthermore, self-efficacy differences due to socio-economic status became more pronounced towards the end of primary school. As students with higher SES indeed tend to do better in school, this suggests that over time students' self-efficacy becomes more in accordance with actual achievement levels. Bandura (1981) has argued that experiences of success and failure in school may make students' efficacy judgments more accurate. Moreover, with age, children become more able to accurately make efficacy judgments. Ethnic minority students, however, reported higher self-efficacy than majority students, while their actual achievement levels are lower than that of majority students. A similar incongruence has been reported by Graham (1994) for African American students. Although they tend to lag behind in school, they still report optimistic expectations with regard to their success in school (Usher & Pajares, 2008). Ethnic minority students may be held up to lower standards, as teacher expectations of ethnic minority students tend to be lower (Van den Bergh et al., 2010). Therefore, it may be easier for ethnic minority students to reach these standards and live up to expectations. This may lead to positive reinforcement and higher self-efficacy.

Teacher ratings of school investment indicated that students become more invested in their schoolwork toward the end of primary school, contrary to previous studies that found school investment to decrease (e.g., Van der Veen & Peetsma, 2009). It seems that students' investment may actually develop more positively than what is often concluded based on self-reports. However, group comparisons revealed that school investment developed less favorably for boys, ethnic minority students, and low SES students. Teacher judgments may be susceptible to bias and such differences could reflect a teachers preference for behaviors that are more typical for girls, majority students, or students with higher SES. However, it is noteworthy that these differences were much smaller, or even absent, in the earlier grades, making it less likely that

teacher bias sufficiently explains the increasing group differences in school investment. These findings may thus also represent real differences that suggest that boys, ethnic minority students and low SES students show less favorable developments in school investment in comparison to other groups. It seems that differences in motivational beliefs cannot account for these findings, as our results show that task-orientation and self-efficacy in most instances did not develop more negatively for these groups. The differences in school investment were not found initially, but only started to emerge in later years, suggesting that less beneficial developments in school investment could be the result of lagging behind in school, rather than the other way around. Since our results also show that the relations between developments in investment and achievement were actually somewhat stronger for boys, ethnic minority students and students with lower SES than for the other groups, the question of *why* school investment of these students develops more negatively, seems crucial to address in further in future research.

Some limitations of the study need to be acknowledged. First, the groups of ethnic minority students and low SES students were both relatively small. Therefore, the conclusions have to be interpreted with caution. Moreover, some of the outcomes may be specific to the Dutch societal and educational context, which could limit the generalizability of the findings. Still, it is worth noting that the study shows the importance of taking students' background characteristics into account when examining developments in motivation. Second, in the present study, developments in task-orientation, self-efficacy, and investment were related to developments in achievement, but not to each other, as the sample size did not allow for more complex models that also include such interactions. Further research could help unravel the relations between these different aspects of motivation over time. Third, given that the focus of the study was on developmental patterns in motivation and group differences, we did not specifically address the causal direction between the different aspects of motivation and achievement. Based on previous studies, however, it seems that the relations between motivation and achievement appear to be bidirectional (Wigfield & Cambria, 2010).

In conclusion, despite the aforementioned limitations, the present study gives more insight into developments in motivation during primary school and has some important implications for theory and practice. The outcomes show that developments in motivation depend, at least partly, on students' gender and background. These factors are thus important to consider when examining why many students become less motivated during their educational careers. Regardless of these differences, the findings show that for all types of students, positive developments in motivation are clearly related to achievement gains. As many schools deal with diverse student populations, it is important to find out what types of learning environments are motivating to different types of students. Future research is thus needed to examine factors that explain differences in developmental patterns and to gain more insight into what types of learning contexts are associated with positive developments in motivation for all types of students.

# CHAPTER 3

## DOES CLASSROOM COMPOSITION MAKE A DIFFERENCE? EFFECTS ON DEVELOPMENTS IN MOTIVATION, WELL-BEING, AND ACHIEVEMENT IN UPPER PRIMARY SCHOOL [1]

**Abstract** The present study investigated effects of socio-economic and ethnic classroom composition on developments in students' motivation, well-being, and achievement. A sample of 722 primary school students filled out questionnaires from third to sixth grade. Latent Growth Curve Analyses showed that during each measurement, reading comprehension scores of low SES students were lower in more social-economically disadvantaged classes. Contrarily, reading comprehension scores were higher in classes with more ethnic minority students. These effects may often partial each other out. Furthermore, in classes with higher numbers of low SES or ethnic minority students, students of all backgrounds showed more positive developments in motivation. These findings did not support commonly held fears that disadvantaged students "bring the rest down". Relations between classroom composition and initial levels of achievement and motivation in grade three were distinct from relations between classroom composition and developments in motivation and achievement, showing the relevance of studying longitudinal developments.

**Keywords**: *classroom composition; school composition; peer effects; motivation; achievement*

[1] Based on Hornstra, L., Van der Veen, I., Peetsma, T., & Volman, M. (resubmitted). Does classroom composition make a difference? Effects on developments in motivation, well-being, and achievement in upper primary school.

## INTRODUCTION

Students' motivation for school and their achievement can be affected by many contextual factors including instructional, interpersonal, and organizational factors (Roeser, Eccles, & Sameroff, 2000). Moreover, poor integration of students in their school environment has been found to decrease students' motivation for school and negatively affect learning outcomes (e.g., Eccles & Roeser, 2011; Roeser et al., 2000). By definition, classrooms are 'social environments' in which social interactions with the teachers, but also classmates shape the learning process (Urdan & Schoenfelder, 2006). The composition of the classroom may thus be essential for students' motivational and learning outcomes.

Like in many other countries, there is a large diversity between schools in the Netherlands with regard to social and ethnic classroom composition. Especially in urban areas, socio-economic and ethnic school segregation is a common phenomenon (Bakker, Denessen, Peters, & Walraven, 2011; CBS, 2010; Karsten, 2006; Karsten, Felix, Ledoux, Meijnen, Roeleveld, & Van Schooten, 2006). Although schools in the Netherlands receive additional funding for students with disadvantaged backgrounds (OECD, 2012), it is still feared that students in classrooms with many peers from disadvantaged backgrounds are negatively affected in comparison to similar students in classrooms with a different composition.

Many studies on classroom composition focused solely or predominantly on achievement outcomes (e.g., Driessen & Sleegers, 2000; Goldsmith, 2004; Opdenakker & Van Damme, 2007; Peetsma, van der Veen, Koopman, & Van Schooten, 2006). But as important as achievement levels may be, good grades may not be the only desired outcome of education. The context in which children learn can also affect other school related outcomes, such as their desire for learning, feelings of competence, and well-being in the classroom (Volet & Järvelä, 2001). These aspects are not only important because they could potentially enhance achievement, they could also be considered to be desirable in their own right. This study will therefore not only focus on socio-economic

and ethnic composition effects on academic achievement, but also on motivational outcomes and students' well-being with other students.

## ETHNIC BACKGROUND AND SOCIO-ECONOMIC STATUS

There are three main types of immigrant groups in the Netherlands: (a) guest workers and their families from Mediterranean countries, such as Morocco and Turkey; (b) immigrants from former Dutch colonies, including Suriname and the Netherlands Antilles; and (c) refugees from countries such as Iran, Iraq, former Yugoslavia, and Somalia. Overall, immigrant students with an non-western background from each of these groups show considerable educational disadvantages compared to their Dutch peers as well as immigrant students with a western background. Therefore, educational policies in the Netherlands, often distinguish between ethnic minority and majority students instead of immigrant and non-immigrant students (The Netherlands Institute for Social Research, 2010). A similar distinction is made in this paper.

Also low SES students lag behind in school compared to higher SES students (Roeleveld et al., 2011; The Netherlands Institute for Social Research, 2010). Both in research and policy, the characteristics of ethnic minority and low SES students are often considered interchangeable. Although ethnic minorities are more likely to have a lower socio-economic status, ethnic minority students and low SES students differ from each other in many aspects, such as their historical and cultural background. Furthermore, ethnic minority students in the Netherlands usually speak Dutch as a second language (The Netherlands Institute for Social Research, 2010). Because of these differences, socio-economic and ethnic classroom composition may have different effects on students, and therefore classroom effects with regard to ethnicity and SES are considered separately in this study.

## EXPLANATIONS FOR CLASSROOM COMPOSITION EFFECTS

In general, segregation is often believed to lead to adverse outcomes for those students in disadvantaged, segregated classrooms. The common held fear is that students groups that are considered disadvantaged based on their average achievement levels., i.e., ethnic minority students or students from social-economically disadvantaged backgrounds, will "bring down" other students in the classroom and that these students themselves will not be able to benefit from the potential of more privileged classrooms. There are a number of different explanations of the underlying processes through which a disadvantaged classroom composition would negatively affect students.

The *instructional quality* explanation states that quality is lower in disadvantaged classrooms because of several reasons. Teachers adapt their general instructional level to the average level of their students (Beckerman & Good, 1981), teacher expectations may be lower (Jussim, Eccles, & Madon, 1996; Jussim & Harber, 2005; Van den Bergh, Denessen, Hornstra, Voeten & Holland, 2010) and as a result the standard may be lowered. Moreover, disadvantaged schools may have more problems finding qualified and motivated staff (OECD, 2005). The *language contact* hypothesis brought forward by Driessen, Doesborgh, Ledoux, Van der Veen, and Vergeer (2003) furthermore states that ethnic minority students in segregated classrooms will have less opportunities to come into contact with Dutch language than ethnic minority students in classrooms with more Dutch students. Accordingly, ethnic minority students in integrated classrooms will thus become more proficient in Dutch language, which will also help them in other academic subjects as well (Driessen et al., 2003). The language contact hypothesis may hold especially for ethnic minority students, but to some extent it may also hold for socio-economic background differences, considering the distinction in 'restricted' and 'elaborated' code (Bernstein, 1964). Moreover, the *social contagion* explanation states that through social interactions students affect each other's motivation and learning outcomes and students will thus become more alike, either positively or negatively (Erbring & Young, 1979; Kelly, 2009). Likewise, the *normative explanation* states that students will become like their peers because of the norm that is being set in the classroom (Goldsmith, 2011). Based on these

two explanations, it is often assumed that students in disadvantaged classrooms will 'bring each other down' in terms of motivation and achievement. In disadvantaged classrooms, students are often believed to discourage motivation and devalue achievement (Goldsmith, 2011) and group dynamics may lead a culture of amotivation within the class (Paulle, 2002).

While most of the aforementioned explanations suggest that being in a classroom with many ethnic minority or low SES students will negatively impact motivation and achievement, others have argued that students in disadvantaged classrooms could also benefit from school segregation. Previous research (e.g., Hornstra, Van der Veen, Peetsma, & Volman, 2013) has indicated that especially ethnic minority students report higher motivation than majority students. These students have more to gain from education in terms of upward mobility (Van der Veen, 2003), suggesting that – also in line with the aforementioned *normative* explanation – students in 'disadvantaged' classrooms may set a norm of high motivation and may encourage achievement. Moreover, according to the *big-fish-little-pond effect*, students form their self-concept based on their own ability levels as well as on a comparison with the ability levels of classmates. When students are in a classroom where overall ability levels are higher than their own ability level, their expectancies about their own abilities are expected to develop more negatively (Marsh, 1987). In more disadvantaged classes where overall ability levels are lower, self-efficacy and consequent learning outcomes are more likely to develop more positively. The *specialization hypothesis* furthermore suggests that in disadvantaged classrooms, teachers may be better able to tailor their instruction to the needs of their specific classroom (Driessen et al., 2003). This could for example refer to the pace or content of instructional practices, such as focusing more on language in classrooms with many students with language delays. Specialization may also refer to adapting the instructional style to students' particular backgrounds. Teacher expectancy literature (e.g., Rosenthal 1994) showed that teacher perceptions of their students' ability or background can affect many aspects of teaching and learning outcomes. As such, teachers in classrooms with different student populations may find different instructional styles suitable for their students.

## PREVIOUS RESEARCH ON CLASSROOM COMPOSITION EFFECTS

Many studies have examined classroom composition effects. Most studies focused on achievement and effects seem to differ across countries (Bakker et al., 2011; Opdenakker & Van Damme, 2007). A majority of studies (Alexander & Eckland, 1975; Caldas & Bankston III, 1997; Driessen & Sleegers, 2000; Driessen, 2002; Driessen et al., 2003; Duru-Bellat & Mingat, 1998; Goldsmith, 2011; Hanushek & Rivkin, 2009; Opdenakker & Van Damme, 2001; Opdenakker & Van Damme, 2006; Opdenakker & Van Damme, 2007; Palardy, 2008; Peetsma, Van der Veen, Koopman, & Van Schooten, 2006; Resh & Dar, 2011; Van der Slik, Driessen, & De Bot, 2006) found support for explanations that suggest harmful effects of being in a disadvantaged classroom. Outcomes of these studies indicated that when students are taught in disadvantaged classes, their achievement will be lower than in more privileged classes. Some of these studies found rather substantial effects (e.g., Caldas & Bankston III, 1997; Opdenakker & Van Damme, 2006), while other studies found weak effects of classroom composition (e.g., Alexander & Eckland, 1975; Driessen, 2002). Other studies found no effects at all (e.g., Bondi, 1991; Hauser, Sewell, & Alwin, 1974). In line with the *specialization* hypothesis, some studies that took into account differential effects found that for disadvantaged students being taught among other disadvantaged peers could be beneficial (Peetsma et al., 2006).

Most of the aforementioned studies only included cross-sectional data. Also the aforementioned explanations do not explicitly refer to developments over time. It seems however likely that processes described in these explanations will increasingly affect students over time. For example, lower instructional quality will probably not directly lead to lower achievement outcomes in disadvantaged schools, but students will probably progress less over time in comparison to students in schools where instructional quality is higher. The same may hold for the explanations that state that students will be negatively affected by their peers in disadvantaged schools – either through social contagion, the norm that is being set, or through the language levels of peers. These peer effects probably cumulate over time, and according to these explanations it can be

expected that students in these classrooms also show less progress. Likewise, according to *specialization* hypothesis, it may be expected that students show most progress over time when being taught among similar students. Only few studies have examined composition effects longitudinally. However, longitudinal studies can provide valuable insights in addition to cross-sectional studies. With longitudinal research, progress can be taken into account. Longitudinal studies thus allow for examining whether classroom composition characteristics can explain why students in some classes show more progress than in other classes.

Not only longitudinal studies are scarce. Studies on outcomes other than achievement are especially scarce. Only few studies have focused (also) on outcomes such as well-being and self-concept (e. g., Peetsma et al., 2006; Van Landeghem, Van Damme, Opdenakker, De Frairie De Frairie, & Onghena, 2002). Outcomes of these studies are inconclusive, but seem to indicate that composition effects on achievement are somewhat stronger than on motivational outcomes or well-being. In all, more longitudinal research is thus needed to gain more insight into composition effects on achievement as well as other outcomes.

In addition to achievement, the present study will therefore also take into account developments in students self-reported well-being with fellow students, and motivational outcomes, including task-orientation, referring to the extent to which students are oriented towards mastering and understanding school-related tasks (Pintrich, 2000), self-efficacy, referring to judgments about one's capabilities to carry out actions that are needed to complete academic tasks successfully (Bandura, 1977), and school investment, which refers to motivated behaviors. These motivated behaviors can vary in terms of the intensity, persistence, and direction. Previous research (Hornstra et al., 2013) has shown that developments in students' task-orientation, self-efficacy, and school investment differ for students with different ethnic and socio-economic backgrounds. No differences were found when students were younger, but toward the end of primary school, ethnic minority students reported higher task-orientation, and self-efficacy compared to majority students, but were

rated lower on school investment by their teachers. Low SES students did not differ from other students in task-orientation, but reported lower self-efficacy at the end of primary school and were rated lower on school investment. These differences became more pronounced toward the end of primary school. Yet, to our knowledge, no studies have examined to what extent these differences in developments can be explained by socio-economic and ethnic characteristics of the classroom.

## HYPOTHESES

In the present study, we examine the influence of class composition on learning gains in academic achievement as well as changes in students' well-being with fellow students and motivation during third to sixth grade of primary school.

1. Based on previous research, and in line with the instructional quality, the language contact, and the social contagion/normative explanations, it was hypothesized that a high number of low SES and/or ethnic minority students would negatively affect achievement. Negative effects were expected on both initial levels of achievement in grade three and on progress over time, as effects are expected to cumulate over time. Although previous literature is less clear on outcomes other than achievement, based on the strong relationship between motivation, well-being and achievement (e.g., Hornstra et al., 2013; Wigfield & Cambria, 2010), it was expected that composition effects on motivation and well-being would be in the same direction as composition effects on achievement. It was thus also hypothesized that a high number of low SES and/or ethnic minority students would negatively affect initial levels and developments in motivation, well-being and achievement.
2. In line with the specialization hypothesis and previous literature on differential effects (e.g. Peetsma et al, 2006), it was expected that the aforementioned effects may only hold for middle and high SES and ethnic majority students. It was hypothesized that low SES and ethnic minority students themselves may actually benefit in terms of achievement from a

high number of low SES and/or ethnic minority students in terms of initial levels and especially developments over time. Similar differential effects are expected with regard to motivational outcomes and well-being.

## METHODOLOGY

### SAMPLE AND PROCEDURE

A subsample of a larger national cohort study ("COOL" study) participated in the present study. The COOL study includes cohorts of students from kindergarten, grade three, and grade six. This subsample consisted of 722 third grade students from 37 classes of 25 schools across the Netherlands. Data on students' motivation in third and three years later in sixth grade were available from the triennial "COOL" study (Driessen, Mulder, Ledoux, Roeleveld, & Van der Veen, 2009). In between the two COOL measurements, three additional waves of data were collected from this subsample[2]. Students and teachers filled out questionnaires during each measurement wave. Table 1 shows a schematic overview of the data collection.

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 |

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).

During the first COOL-measurement, students' average age was nine 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. 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[3]. 78 students (11%) were from ethnic minority (mostly Turkish or Moroccan) backgrounds, 644 students (89%) were from a western background.

Parental educational level 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. (1) Of 96 students (16%), SES was considered low (primary school to junior vocational education). (2) The middle category (senior vocational education) consisted of 301 (50%) students, and (3) 204 (34%) students had a high SES background (higher education). From 121 students, SES information was missing. Analyses showed a significant relation between ethnicity and SES of students in this sample (*Spearman's Rho*=.112, $p<.05$).

## MEASURES

*Motivation and well-being with fellow students.* Questionnaires on motivation and well-being with fellow students were administered to students and their teachers during regular class time. Motivation scales included self-reports on task-orientation and academic self-efficacy, and teacher reports on students'

[3] 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 well-being, self-efficacy, task-orientation, and school investment.

investment. Although self-report measures have some limitations, as they are susceptible to self-presentation bias (Jobe, 2000), the internal nature of motivational beliefs makes self-reports one of the most suitable measures. Motivated behaviour, however, is a visible part of motivation and was therefore assessed by teacher ratings. This scale included items that represent two key aspects, intensity and perseverance, of school investment. Like task-orientation and self-efficacy, students' well-being with fellow students was measured with self-reports. The task-orientation, school investment, and well-being scales were formulated in Dutch. The self-efficacy scale was originally formulated in English and translated to Dutch for use in the COOL study. Moreover, all scales were validated for use in the COOL study (Driessen et al., 2009; Jungbluth, Roede, & Roeleveld, 2001). All items were on a 5-point Likert-scale ranging from totally not applicable to me (1) to totally applicable to me (5). In table 3, more information on the scales is reported.

Table 3.
*Example items, number of items, and reliabilities of the scales used in the study*

| Scale | Example items | *N* of items | Reliability m1 – m5 |
|---|---|---|---|
| *Task-orientation* from Goal Orientation Questionnaire (Seegers, Van Putten, & De Brabander, 2002) | *"I like when I learn something new in school."* | 5 | .65 - .82 |
| *Academic self-efficacy* from 'Patterns of Adaptive Learning Survey' (PALS) (Midgley et al., 2000) | *"I can do even the hardest work in school if I try."* | 6 | .70 - .84 |
| *School investment* from COOL student profiles (Jungbluth, Peetsma, & Roeleveld, 1996) | *"This student quickly gives up when he/she does not succeed." "This child works accurately"* | 3 | .82 - .85 |
| *Well-being with fellow students* (Peetsma, Wagenaar, & De Kat, 2001) | "*I like spending time with other students in my class*" | 6 | .76 - .85 |

*Mathematics achievement.* Students' mathematics achievement scores on national tests from the Dutch National Institute for Educational Measurement (CITO) were obtained from the school records. These tests are administered to students in the Netherlands twice a year to monitor student progress. For eachstudent, four scores on these tests were available: from the end of fourth grade until the middle of sixth grade. Two different versions of this test were used by the schools because the test was updated by the CITO in 2007. Some schools (N=6) in the sample used the older version, while other schools (N=18) administered the updated version to their students. The scores on both versions were not comparable; therefore scores of the older version were transformed so that the mean and standard deviation of the scores on the older version of the test were the same as those of the newer version.

*Reading comprehension achievement.* Students' reading comprehension scores on the national tests (CITO) were also obtained from the school records. The reading comprehension tests are administered once a year to monitor student progress. For each student, three scores on these tests were available: from the middle of fourth grade until the middle of sixth grade. The reading comprehension tests were updated by the CITO in 2008. Sixteen schools in the sample used the older version, while eight schools administered the updated version to their students. One school did not administer reading comprehension tests of CITO to their students. Both versions of the test use the same scale and analyses showed scores on both versions to be comparable indeed (Feenstra, Kamphuis, Kleintjes, & Krom, 2010). Both versions had good reliability ($\alpha > 0.80$) (Evers, 2002; Feenstra et al., 2010).

*Classroom composition.* The composition of the class by socio-economic background was computed by calculating the percentage of students with low SES (i.e. children whose parents have had no more than junior vocational education). With regard to the ethnic classroom composition, the percentages of ethnic minority students were not normally distributed across classes. Three types of classrooms were therefore distinguished: (1) classrooms with no ethnic

minority students; (2) classrooms with <50% ethnic minority students; (3) classrooms with >50% ethnic minority students.

### DATA-ANALYSES

The data were analysed using multivariate Latent Growth Curve Analyses (LGCA) with Mplus (Muthén & Muthén, 2007). With LGCA, for each individual participant, two latent variables, the initial rate (intercept) and level of growth a year (slope) of each dependent variable (i.e., task-orientation, self-efficacy, school investment, well-being, math and reading comprehension) can be estimated based on the observed scores at each measurement occasion. This allows for examining how classroom composition relates to the initial levels as well as developments in the dependent variables. Effects of classroom composition on initial levels indicate that differences between classrooms with different compositions were found in grade three and remained stable during each measurement. Composition effects on growth indicate that differences between classrooms with different compositions emerged between grade three and six.

Before analysing the relations between classroom composition and the dependent variables, preliminary analyses were conducted. Participants with missing values were not removed from the analyses. Instead, missing values were estimated by full-information maximum likelihood estimation (FIML). The FIML estimation is based on the assumption that missing values are missing at random (MAR). MAR assumes that missing values can be predicted from the available data. Removing all cases with missing values (listwise deletion) is based on the more strict assumption that the missing values are completely at random (MCAR). Furthermore, to check whether the variables reflected the same construct over time and across groups, a series of multi-group factor analyses were performed, yielding satisfactory results. For measurement invariance across groups (boys vs. girls, ethnic majority vs. minority students, and low vs. middle vs. high SES), a model was estimated for each variable in which measurement parameters were held equal across groups.

Likewise, to check for measurement invariance across measurement occasions, multi-group factor analyses were performed with groups being the measurement occasions. All models fitted the data well (CFI and TLI were above .95) and fit was not significantly better in less restrictive models.

Next, all models were first estimated for the total group of students (hypothesis 1) while controlling for the individual background variables ethnicity, SES, gender, and cognitive ability. In this first step, for each dependent variable, the intercept and slope were estimated and both classroom composition variables were included in the model. Both composition variables were included to take into account potential overlap between the ethnic and socio-economic classroom composition. As the data have a nested structure (students within classes), we corrected for the multilevel structure of the data. Non-significant paths were omitted from the model to find the most parsimonious model. To examine whether classroom composition affected developments in achievement, motivation, and well-being with fellow students, it was examined whether model fit significantly declined by removing the composition variables from the model. Model fit was determined by Chi-square difference tests, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). A significant Chi-square difference indicates whether or not model fit significantly worsened by omitting an estimate. A CFI above .90 indicates good fit of a model, and an RMSEA below .05 indicates good fit and scores between .05 and .08 indicate reasonable fit (Hu & Bentler, 1999).

To investigate differential effects of classroom composition, multi-group LGCA's were performed. In the first multigroup comparison, the effects of socio-economic classroom composition were compared for low, middle, and high SES students. In the other multigroup comparison, the effects of ethnic classroom composition were compared for ethnic minority and majority students. For these multigroup analyses, first a model with no equality constraints was defined. One by one, equality constraints were added to the model. Fit indices indicated whether or not model fit significantly declined by adding the equality constraint, indicating that a parameter differed across the

groups. If the model fit did not significantly worsen by adding the equality constraint, the parameter was considered equal.

To evaluate the size of the relations between classroom composition and developments in motivation, well-being, and achievement, standardized coefficients (i.e., correlations) of the relations were calculated and the size of the effect was indicated by means of Cohen's *d*. A standardized correlation of 0.10 is indicative of a small, 0.30 a medium, and 0.50 a large correlation (Cohen, 1988).

## RESULTS

### DESCRIPTIVE STATISTICS

Table 3 provides an overview of the descriptive statistics of each dependent variable (task-orientation, self-efficacy, school investment, well-being with fellow students, math achievement, and reading comprehension achievement) at every measurement occasion.

Table 3. *Descriptive statistics and correlations of task-orientation (TO), self-efficacy (SE), school investment (SI), well-being with fellow students (WB), math, and reading comprehension (RC)* (*N*=722)

| | | *M* | *sd* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | TO gr 3 | 4.11 | 0.60 | 1.00 | | | | | | | | | | | | | | |
| 2. | TO gr 5_1 | 4.05 | 0.54 | .07 | 1.00 | | | | | | | | | | | | | |
| 3. | TO gr 5_2 | 3.92 | 0.60 | .09* | .50** | 1.00 | | | | | | | | | | | | |
| 4. | TO gr 6_1 | 3.92 | 0.59 | .05 | .41** | .59** | 1.00 | | | | | | | | | | | |
| 5. | TO gr 6_2 | 3.85 | 0.61 | .04 | .33** | .43** | .57** | 1.00 | | | | | | | | | | |
| 6. | SE gr 3 | 3.71 | 0.62 | .44** | .04 | .06 | .02 | .01 | 1.00 | | | | | | | | | |
| 7. | SE gr 5_1 | 3.62 | 0.61 | .06 | .47** | .27** | .27** | .21** | .07 | 1.00 | | | | | | | | |
| 8. | SE gr 5_2 | 3.65 | 0.57 | .03 | .34** | .43** | .32** | .21** | .02 | .56** | 1.00 | | | | | | | |
| 9. | SE gr 6_1 | 3.72 | 0.57 | .07 | .31** | .41** | .48** | .34** | .02 | .49** | .66** | 1.00 | | | | | | |
| 10. | SE gr 6_2 | 3.76 | 0.61 | .02 | .27** | .25** | .34** | .52** | -.01 | .40** | .52** | .61** | 1.00 | | | | | |
| 11. | SI gr 3 | 3.38 | 0.89 | .15** | .04 | .02 | -.01 | .02 | .06 | .02 | .01 | .02 | .03 | 1.00 | | | | |
| 12. | SI gr 5_1 | 3.43 | 0.93 | .07 | .10* | .13** | .14** | .13** | .12** | .13** | .15** | .09* | .15** | -.02 | 1.00 | | | |
| 13. | SI gr 5_2 | 3.44 | 0.97 | -.03 | .07 | .11** | .11* | .10* | .04 | .15** | .15** | .09* | .13** | .01 | .77** | 1.00 | | |
| 14. | SI gr 6_1 | 3.43 | 0.88 | .01 | .11* | .21** | .20** | .15** | .02 | .17** | .15** | .14** | .17** | .06 | .58** | .60** | 1.00 | |
| 15. | SI gr 6_2 | 3.53 | 0.87 | .06 | .09 | .15** | .17** | .16** | .02 | .15** | .14** | .16** | .20** | .11* | .57** | .63** | .70** | 1.00 |
| 16. | WB gr 3 | 3.38 | 0.89 | .28** | .07* | .05 | .01 | .03 | .25** | .07 | -.01 | .09* | .01 | .12** | .01 | -.04 | -.05 | -.05 |
| 17. | WB gr 5_1 | 3.44 | 0.93 | -.02 | .23** | .15** | .17** | .13** | -.01 | .17** | .14** | .12** | .08** | .02 | .07 | .10** | .06 | .02 |
| 18. | WB gr 5_2 | 3.44 | 0.98 | -.01 | .19** | .25** | .23** | .14** | -.04 | .14** | .25** | .19** | .10** | .05 | .13** | .12** | .12** | .08 |
| 19. | WB gr 6_1 | 3.43 | 0.88 | .08 | .15** | .13** | .24** | .17** | .01 | .13** | .18** | .26** | .17** | .01 | .11* | .09* | .06 | .07 |
| 20. | WB gr 6_2 | 3.53 | 0.87 | .06 | .11* | .14** | .17** | .21** | -.06 | .08 | .16** | .14** | .18** | .00 | .12** | .13** | .11** | .13** |
| 21. | RC gr 4 | 34.58 | 13.80 | .10 | .04 | .04 | .01 | -.04 | .12* | .11* | .16** | .11* | .09 | .01 | .37** | .27** | .26** | .27** |
| 22. | RC gr 5 | 44.02 | 14.15 | .01 | .04 | .14** | .08 | -.01 | .08 | .18** | .25** | .21** | .15** | .01 | .40** | .40** | .38** | .42** |
| 23. | RC gr 6 | 57.93 | 16.58 | -.04 | .02 | .13** | .06 | .01 | .00 | .19** | .30** | .21** | .17** | -.01 | .41** | .42** | .32** | .37** |
| 24. | Math gr 4_2 | 85.78 | 15.22 | .01 | .06 | -.01 | -.06 | -.03 | .05 | .28** | .22** | .17** | .19** | -.01 | .26** | .27** | .15** | .13* |
| 25. | Math gr 5_1 | 95.58 | 15.43 | .02 | .04 | .02 | -.02 | .00 | .15* | .27** | .25** | .21** | .22** | .05 | .26** | .27** | .21** | .23** |
| 26. | Math gr 5_2 | 103.22 | 12.46 | -.01 | .08 | .12* | .02 | .03 | .00 | .39** | .36** | .32** | .27** | .00 | .37** | .38** | .34** | .38** |
| 27. | Math gr 6_1 | 107.71 | 15.13 | -.04 | .10 | .06 | .03 | .06 | -.08 | .23** | .23** | .23** | .22** | -.02 | .11 | .11 | .19** | .22** |

Table 3 (*continued*).

| | | *M* | *sd* | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16. | WB gr 3 | 3.38 | 0.89 | 1.00 | | | | | | | | | | | |
| 17. | WB gr 5_1 | 3.44 | 0.93 | .11** | 1.00 | | | | | | | | | | |
| 18. | WB gr 5_2 | 3.44 | 0.98 | .01 | .61** | 1.00 | | | | | | | | | |
| 19. | WB gr 6_1 | 3.43 | 0.88 | .07 | .50** | .60** | 1.00 | | | | | | | | |
| 20. | WB gr 6_2 | 3.53 | 0.87 | .05 | .47** | .52** | .65** | 1.00 | | | | | | | |
| 21. | RC gr 4 | 34.42 | 13.36 | .01 | -.02 | .00 | -.07 | -.04 | 1.00 | | | | | | |
| 22. | RC gr 5 | 43.78 | 13.86 | .02 | .08 | .09 | .03 | .05 | .69** | 1.00 | | | | | |
| 23. | RC gr 6 | 57.75 | 16.10 | -.08 | .03 | .03 | .03 | .04 | .53** | .68** | 1.00 | | | | |
| 24. | Math gr 4_2 | 85.78 | 15.22 | .05 | .04 | .00 | .00 | .00 | .36** | .41** | .48** | 1.00 | | | |
| 25. | Math gr 5_1 | 95.58 | 15.43 | .08 | .07 | .01 | -.02 | -.05 | .24** | .42** | .36** | .61** | 1.00 | | |
| 26. | Math gr 5_2 | 103.22 | 12.46 | .09 | .02 | .04 | -.02 | -.02 | .35** | .52** | .54** | .64** | .70** | 1.00 | |
| 27. | Math gr 6_1 | 107.71 | 15.13 | .05 | -.06 | .03 | -.03 | .01 | .15* | .26** | .25** | .44** | .45** | .59** | 1.00 |

**$p < 0.01$ level (2-tailed); *$p < 0.05$ level (2-tailed).

## GENERAL CLASSROOM COMPOSITION EFFECTS

First it was examined for all students whether a higher number of ethnic minority or low SES students in the class would negatively affect initial levels and developments in achievement, motivation, and well-being with fellow students. Results from latent growth analyses on the direct relations between the socio-economic and ethnic classroom composition and initial levels and developments in motivation, well-being with fellow students, and achievement are presented in table 4. In all analyses, we controlled for individual SES, gender, ethnicity, and cognitive ability to examine whether classroom composition affected motivation, well-beding and achievement beyond individual background variables. Fit indices indicate that each of the models fitted the data well. Below, results on socio-economic and ethnic classroom composition are discussed separately.

*Socio-economic classroom composition.* The outcomes of table 4 show that after controlling for students' individual SES and other individual background variables, the percentage of low SES students in the class did not relate to the intercept, but related to growth in task-orientation. In other words, in classes with more low SES students, students had similar initial levels of task-orientation compared to classes with lesser low SES students, but showed more progress in task-orientation toward the end of primary school. 10% of growth in task-orientation can be explained by socio-economic classroom composition. The effect size for this effect can be considered small to medium. Moreover, the socio-economic classroom composition related negatively to the initial level of reading comprehension, indicating that in classes with more low SES students, reading comprehension scores were lower across all grades. Note, that is after controlling for individual background characteristics, i.e., individual SES, ethnicity, gender, and cognitive ability. 4% of variance in initial levels of reading comprehension could be explained by the socio-economic classroom composition. The effect size of this relation was small to medium. No relation with growth rate of reading comprehension was found. Socio-economic classroom composition did not relate to initial levels or developments in self-efficacy, school investment, well-being, or math achievement.

Table 4.
*Standardized estimates of socio-economic and ethnic classroom composition effects on intercepts (Int) and slopes (Sl; growth a year) of motivation, well-being with fellow students and achievement for the total group of students.*

| | Socio-economic composition | | | | Ethnic composition | | | | Fit indices | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Int | $R^2$ | Sl | $R^2$ | Int | $R^2$ | Sl | $R^2$ | $\chi^2$ (df) | CFI | RMSEA |
| Task-orientation | *ns* | | 0.25 | 10% | *ns* | | *ns* | | 47.076 (25) | .974 | .029 |
| Self-efficacy | *ns* | | *ns* | | 0.15 | 2% | *ns* | | 20.871 (25) | 1.000 | .000 |
| School | *ns* | | *ns* | | *ns* | | *ns* | | 50.622 (33) | .977 | .027 |
| Well-being | *ns* | | *ns* | | *ns* | | *ns* | | 47.496 (28) | .978 | .031 |
| Mathematics | *ns* | | *ns* | | *ns* | | *ns* | | 34.995 (22) | .900 | .029 |
| Reading comprehension | -0.25 | 4% | *ns* | | 0.23 | 4% | *ns* | | 28.839 (11) | .954 | .047 |

*Note.* Control variables: individual SES, ethnicity, gender, and cognitive ability.

*Ethnic classroom composition.* Table 4 furthermore shows that after taking into account individual ethnicity, SES, gender, and cognitive ability, ethnic composition significantly related to students' initial level of self-efficacy, suggesting that in classes with more ethnic minority students, self-efficacy was on average higher during each measurement. This explained 2% of variance in initial levels of self-efficacy. The effect size was small. No relation with growth rate of self-efficacy was found. After controlling for individual ethnicity and other individual background variables, ethnic classroom composition also positively related to the initial level of reading comprehension. This showed that at each measurement, students with similar background characteristics achieved higher in classes with higher numbers of ethnic minority students as compared to classes with less ethnic minority students. The effect size of this relation was small to medium. Ethnic classroom composition did not relate to initial levels or developments in task-orientation, school investment, well-being, or math achievement.

## DIFFERENTIAL CLASSROOM COMPOSITION EFFECTS

After examining composition effects for the total group of students, differential effects were examined to compare the effects of classroom composition across groups. Results are reported in table 5 and 6. Fit indices indicate that each of the models had reasonable to good fit to the data. Below results with regard to differential effects of socio-economic classroom and ethnic classroom composition are considered separately.

*Differential effects of socio-economic classroom composition.* The outcomes of table 5 show that some effects of socio-economic classroom composition differed for low, medium, and high SES students. The positive relation between socio-economic classroom composition and growth in task-orientation was however similar for these groups. Being in a classroom with more low SES students thus related positively to progress in task-orientation, regardless of students' own socio-economic background. For low SES students this explained more variance in growth in task-orientation, than for medium and high SES students (7%, 3%, and 1%, respectively). Effect sizes were small to medium. Furthermore, for medium and high SES students, a significant positive effect of socio-economic classroom composition on growth in self-efficacy was found, while for low SES students, socio-economic classroom composition did not relate to growth in self-efficacy. For both the middle and high SES groups, a higher number of low SES students in the class related to more growth in their self-efficacy, explaining 3 to 1% of variance respectively. Table 5 also shows that only for low SES students, developments in their well-being with fellow students was affected by the socio-economic classroom composition. While initially no differences in the relation between classroom composition and well-being were found, results showed that for low SES students, well-being with fellow students decreased when being in a classroom with more other low SES students, explaining 15% of variance of growth in well-being. The effect size of this effect was medium to large. Finally, table 5 also shows that only for low SES students, the initial level of reading comprehension was negatively affected by a higher number of low SES students in the class, explaining 15% of

variance in the intercept of reading comprehension. This outcome shows that when low SES students were taught in classes with more low SES students, their reading comprehension scores were lower during each measurement than when they would be in classes with more middle or high SES students. The effect size was medium.

*Differential effects of ethnic classroom composition.* The outcomes of table 6 show the differential effects of ethnic classroom composition. Table 6 first shows that after controlling for individual background variables, ethnic majority students in classrooms with more ethnic minority students show higher initial levels of task-orientation, self-efficacy, math achievement, and reading comprehension, explaining 1-13% of variance. Effect sizes are small, and medium for task-orientation. For ethnic majority students, ethnic classroom composition did not relate to growth rates in any of the dependent variables. For ethnic minority students, growth rates of task-orientation and well-being with fellow students were both higher in classes with more ethnic minority students, suggesting that ethnic minority students increase more in task-orientation and well-being when being in a classroom with other ethnic minority students. This explained 10 and 16% of variance in growth rates, respectively. Effect sizes were both medium. For ethnic minority students, a medium negative effect of the number of ethnic minority students on the initial level of mathematics achievement was found, indicating that ethnic minority students achieved better on mathematics, during each measurement, when they are in classrooms with more majority students. This explained 10% of variance in the intercept of mathematics achievement. Contrarily, for ethnic minority students, also a small positive effect of the number of ethnic minority students on the initial level of reading comprehension was found, indicating that ethnic minority students achieved better on reading comprehension during each measurement in classrooms with more ethnic minority students. 10% of variance in the intercept of reading comprehension was explained by ethnic classroom composition.

Table 5.

*Standardized estimates of ethnic classroom composition effects on intercepts (Int) and slopes (Sl; growth a year) of motivation and achievement for the total group of students and separately effects for Dutch background and ethnic minority students*

| | Socio-economic background | | | | | | | | | | | | Fit indices | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low | | | | Middle | | | | High | | | | | | |
| | Int | $R^2$ | Sl | $R^2$ | Int | $R^2$ | Sl | $R^2$ | Int | $R^2$ | Sl | $R^2$ | $\chi^2$ (df) | CFI | RMSEA |
| Task-orientation | *ns* | | 0.26 | 7% | *ns* | | 0.26 | 3% | *ns* | | 0.26 | 1% | 81.740 (79) | .996 | .013 |
| Self-efficacy | *ns* | | *ns* | | *ns* | | 0.10 | 3% | *ns* | | 0.17 | 1% | 121.143 (77) | .974 | .055 |
| Investment | *ns* | | *ns* | | *ns* | | *ns* | | *ns* | | *ns* | | 99.030 (80) | .983 | .032 |
| Well-being | *ns* | | -.39 | 15% | *ns* | | *ns* | | *ns* | | *ns* | | 119.826 (74) | .948 | .055 |
| Mathematics | *ns* | | *ns* | | *ns* | | *ns* | | *ns* | | *ns* | | 91.285 (47) | .919 | .068 |
| Reading Compr. | -.35 | 15% | *ns* | | *ns* | | *ns* | | *ns* | | *ns* | | 52.674 (32) | .960 | .057 |

*Note.* Control variables: individual ethnicity, gender and cognitive ability.

Table 6.

*Standardized estimates of ethnic classroom composition effects on intercepts and slopes (growth a year) of motivation and achievement for the total group of students and separately effects for Dutch background and ethnic minority students*

| | Ethnic background | | | | | | | | Fit indices | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Majority | | | | Minority | | | | | | |
| | Int | $R^2$ | Sl | $R^2$ | Int | $R^2$ | Sl | $R^2$ | $\chi^2$ (df) | CFI | RMSEA |
| Task- | 0.13 | 2% | *ns* | | *ns* | | 0.32 | 10% | 71.236 (50) | .969 | .034 |
| Self-efficacy | 0.35 | 13% | *ns* | | *ns* | | *ns* | | 84.135 (45) | .957 | .049 |
| Investment | *ns* | | *ns* | | *ns* | | *ns* | | 84.954 (53) | .976 | .041 |
| Well-being | *ns* | | *ns* | | *ns* | | 0.39 | 16% | 82.136 (49) | .966 | .043 |
| Mathematics | 0.11 | 1% | *ns* | | -0.28 | 10% | *ns* | | 87.372 (34) | .926 | .066 |
| Reading | 0.08 | 1% | *ns* | | 0.08 | 10% | *ns* | | 61.091 (23) | .944 | .068 |

*Note.* Control variables: individual SES, gender and cognitive ability.

## DISCUSSION

This study examined socio-economic and ethnic classroom composition effects on achievement, motivation, and well-being in grade three, and on developments in achievement, motivation, and well-being from grade three to grade six. Furthermore, it was examined whether these effects differed for different groups of students. In all, our outcomes present a mixed picture, but for low SES and ethnic minority students, results were mostly in line with the *specialization* explanation (Driessen et al., 2003), suggesting that in disadvantaged classes, teachers are better able to meet the specific needs of their student population. Especially ethnic minority students seemed to benefit from being taught in classes with other ethnic minority students in terms of motivational outcomes as well as achievement in reading comprehension, but not with regard to mathematics achievement. Low SES students also benefited from being taught among other low SES students with regard to their motivation but not their well-being with fellow students or achievement in reading comprehension. Moreover, groups of students that are generally doing comparatively well in school, i.e., middle and high SES and majority students were not negatively affected by higher numbers of low SES or ethnic minority students in the class, and with regard to motivation they were found to be positively affected. Below, the results will be discussed in more detail.

We expected that being taught in a class with a high number of low SES or ethnic minority students would negatively affect initial levels and growth in achievement. This hypothesis was only partly confirmed. Growth in achievement did not depend on classroom composition, but initial levels of reading comprehension scores were lower in classes with more low SES students and remained lower. This was after controlling for individual background characteristics. However, surprisingly, initial reading comprehension scores were found to be higher in classes with more ethnic minority students and to remain higher. This was again after controlling for individual background characteristics. Since there is an overlap between the socio-economic and ethnic classroom composition, these effects will probably

partial each other out and may often go undetected in research. This indicates socio-economic and ethnic classroom characteristics, although sometimes overlapping, are distinctly different and affect students in different ways. These are thus important to study separately.

Differential analyses showed that the aforementioned negative effect of being in a class with many low SES students only held for low SES students. This outcome may be explained by the *language contact* hypothesis (Driessen et al., 2003). In classes with many low SES students, these students may be deprived of language opportunities they would have in classes with more middle and high SES students. However, in classes with many ethnic minority students, and in support of the specialization explanation, language delays may be more prominent and visible, and in these schools financial resources may be especially allocated at language, benefiting both ethnic minority and majority students. The additional funding schools used to receive for ethnic minority students (OECD, 2012) thus seems to have been successfully invested in combatting language delays. Funding policies have recently changed and funding is now only based on the educational level of the parents (Roeleveld et al., 2011). The extra focus of schools with more ethnic minority students on language may have a downside; this could be at the expense of mathematics achievement for ethnic minority students, as ethnic minority students in classes with many more ethnic minority students, showed less progress in mathematics achievement.

Contrary to our expectations, but in line with the *big-fish-little-pond* effect, students in classes with more ethnic minority students or low SES students, actually showed more positive developments in self-efficacy. Ethnic majority students were higher in self-efficacy from grade three onwards when they were in a class with a higher number of ethnic minority students, and middle and high SES students became more self-efficacious over time in more socio-economically disadvantaged classrooms. Furthermore, all students, especially ethnic minority students, became more task-oriented over time when their class consisted of more low SES or ethnic minority students. Previous research (Hornstra et al., 2013) showed that ethnic minority students report higher

motivation. A positive process of *social contagion* (Erbring & Young, 1979; Kelly, 2009) may thus explain these composition effects. Especially in more disadvantaged classes, the importance of schooling may be stressed and this may create a classroom climate where learning is fostered. Moreover, in line with the specialization hypothesis, teachers in these disadvantaged classes may find ways to adapt to students needs and consequently encourage motivation.

The strongest effects were found with regard to well-being with fellow students. While low SES students decreased in well-being when in a classroom with other low SES students, ethnic minority students increased in well-being when they were in a classroom with more other ethnic minority students. This again illustrates that socio-economic and ethnic composition effects are not always similar and the complex underlying processes need to be studied taking into account different aspects of classroom composition.

Furthermore, the relations of classroom composition with initial levels of achievement and motivation in grade three were distinct from the relations of classroom composition with progress in achievement and developments in motivation, showing the relevance of focusing on longitudinal developments. Whereas composition effects on achievement were already present in grade three and remained stable throughout the years, composition effects on motivation and well-being mainly developed over time. In upper primary school, student become increasingly aware of and concerned with what their peers think about them (Molloy, Gest, & Rulison, 2011), and peer group effects on motivation and well-being may therefore become especially important as students get older. Contrarily, composition effects on achievement may have had their onset in earlier years of primary school when students start to develop important basic skills with regard to mathematics and reading. The first measurement of our study – and therefore what we named the "initial level" – was in grade three. However, the actual initial level of schooling is before that, when students enter kindergarten or in first grade when they start their formal schooling in mathematics and reading. Unfortunately, we do not have insight into the developmental process that have taken place before our study started.

To gain further insight into longitudinal classroom composition effects, also studies are needed that focus on earlier grades.

Some other limitations of the present study should also be noted. In the present study, the number of classes with high numbers of ethnic minority or low SES students was relatively limited in comparison to the number of other classes. However, results were in line with other longitudinal studies on classroom composition (e.g., Peetsma et al., 2006). Second, the relation between classroom composition and each separate aspect of motivation and achievement was examined in this study. We did not take into account these different aspects simultaneously. A larger sample would have allowed for such statistical analyses and could have strengthened the outcomes of the present study. Finally, the biggest limitation of the study may be that the processes by which classroom composition affects developments in students' achievement outcomes, motivation, and well-being were not examined. Future research could aim at identifying the processes that take place within classrooms with varying classroom composition that may explain the current findings.

In spite of the aforementioned limitations, due to its longitudinal design and focus on more than achievement, the present study provided some interesting new insights. The findings of the present study did not support commonly held fears that high numbers of disadvantaged students would bring down the rest. Students that are doing relatively well, will do so despite the composition of the class. Furthermore, especially ethnic segregation in schools can have benefits for ethnic minority students. This does not imply however that we should aim for segregated schools. There may be other arguments that may perhaps weigh more heavily, such as social integration, to continue to aim for schools with a balanced student population.

# CHAPTER 4

## TEACHER PRACTICES: THE ROLE OF BELIEFS AND CONTEXT [1]

**Abstract** Teacher practices can vary from autonomy-supportive to controlling. The present study examined how teachers' personal beliefs and contextual pressures related to their self-reported teaching practices. Nine grade-six teachers at schools with varying student populations were interviewed. Although almost all teachers favoured autonomy-supportive practices, controlling practices were reported often. Especially in disadvantaged schools, teachers reported frequent use of controlling practices, as most of these teachers believed that 'at-risk' students benefited more from controlling practices. Teachers at other schools reported more autonomy-supportive ways of teaching, but most of them also reported frequent use of controlling practices with the 'at-risk' students within their class. Teacher perceptions of their students appeared to be the main reason for controlling practices. Previous research mainly examined how pressures 'from above' such as national standards or high stakes testing, affect teachers' teaching practices. However, these outcomes suggest that teacher perceptions of their students weigh more heavily in teachers' decision making processes than pressures from above. Outcomes furthermore indicated that more controlling teachers provided a higher degree of relatedness. Implications are drawn and suggestions for further research are provided.

**Keywords**: *student motivation; student autonomy; teacher beliefs; teaching practices; at-risk students; teacher expectations*

[1] Based on Hornstra, L., Mansfield, C., Van der Veen, I., Peetsma, T., & Volman, M. (resubmitted). Motivating teacher practices: The role of beliefs and context.

## INTRODUCTION

One of the most important tasks of a teacher is to enhance and sustain students' motivation and to engage students in learning. The present study focuses on the extent to which teachers' self-reported practices are autonomy-supportive versus controlling and their underlying reasons for these practices.

According to Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000a), autonomy is an innate psychological need for students, and autonomy-supportive teaching practices are believed to foster students' intrinsic motivation (Niemic & Ryan, 2009; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). However, studies in various countries have demonstrated that many teachers rely on controlling practices using extrinsic rewards and punishments to encourage learning (Pelletier, Se'guin-Le'vesque, & Legault, 2002; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Turner, Christensen, & Meyer, 2009; Turner, 2010). This can partly be explained by teachers' underlying personal beliefs about what motivates students, but previous literature also indicated that contextual conditions, such as school regulations, national standards, or high stakes testing, can pressure teachers toward controlling practices (e.g., Reeve, 2009). These have been referred to as pressures from above (Pelletier et al., 2002).

Moreover, teaching practices may also be affected by pressures from below, i.e., their classroom population. Teacher expectancy literature (e.g., Rosenthal 1994) showed that teacher perceptions of their students' ability or background can affect many aspects of teaching and learning outcomes. Yet, little research has examined how teacher perceptions of their students relate to the type of teaching practices teachers believe to be effective and consequently adopt in their classrooms.

Given the importance of teaching practices for students' motivation and learning outcomes, the purpose of this paper is to gain a more thorough understanding of how teachers negotiate their personal beliefs with contextual pressures and how this influences the extent to which they adopt a more autonomy-supportive or controlling teaching style.

## AUTONOMY-SUPPORT VERSUS CONTROL

According to Self-Determination Theory (SDT; Ryan & Deci, 1985), teaching practices can vary along a continuum that ranges from very autonomy-supportive to very controlling (e.g., Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2000b; Vansteenkiste et al., 2004; Vallerand, 1997). Autonomy-supportive practices are aimed at nurturing students' inner motivational resources and volitional intentions to act. Students' autonomy can be facilitated by transferring responsibility of the learning process to students, providing choice, connecting to students' interests, providing explanatory rationales, and by creating meaningful and relevant learning activities. Such practices are aimed at increasing students' own willingness to engage in learning activities.

Conversely, controlling teaching practices are aimed at pressuring students to think, feel, or act in certain ways and overruling students' own perspectives. Controlling teachers motivate students by external incentives, pressure, or control instead of relying on students' inner motivational resources. Such practices include the use of external rewards such as grades or directive language (Jang, Reeve, & Deci, 2010; Niemic & Ryan, 2009; Reeve & Jang, 2006; Reeve, Deci, & Ryan, 2004; Vansteenkiste et al., 2004). Whereas autonomy-supportive teaching has been associated with students being intrinsically motivated and showing more beneficial educational outcomes, controlling teaching can result in students becoming extrinsically motivated or even amotivated (Jang et al., 2010; Ryan, Deci, 2000a; Reeve et al., 2004; Stroet, Opdenakker, & Minnaert, 2012; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste et al., 2004). However, the effectiveness of autonomy-supportive teaching may depend on characteristics of the learning context and student characteristics (e.g., Furtak & Kunter, 2012; Iyengar and Lepper, 1999).

## TEACHERS' PERSONAL BELIEFS AND THEIR TEACHING PRACTICES

Teachers usually hold very stable long-term beliefs about what motivation is and what type of practices will be beneficial to their students (e.g., Pajares,

1992; Turner et al., 2009; Turner, 2010). Teacher beliefs are developed through teachers' own experiences as learners (Mansfield & Volet, 2010; Richardson, 2003), their initial teacher training (Avalos, 2011; Mansfield & Volet, 2010; Richardson, 2003), as well as their professional experiences as teachers (Avalos, 2011; Turner et al., 2009).

Often, teachers use controlling practices, even though that is at odds with motivational theories (e.g., Reeve, 2009; Turner, 2010). Several reasons may account for this difference between motivational theory and actual teacher behaviours. Teachers' personal beliefs about motivation and learning or their role as a teacher may account for some differences (Eisenhart, Schrum, Harding, & Cuthbert, 1988). Teachers may find controlling strategies more effective in making students work without encouraging students' inner motivational resources (Reeve, 2009). Furthermore, the belief that extrinsic rewards will encourage motivation seems to be deeply rooted for many teachers. Also, some teachers may feel they will more efficiently reach their instructional goals when using controlling strategies (Reeve, 2009).

Previous research has also shown that teachers' practices do not always correspond with their own beliefs (Mansour, in press; Raymond, 1997). Some teachers may have personal beliefs favouring autonomy-supportive practices, but there may be factors in the educational context that constrain teachers from teaching according to those beliefs (Mansour, in press).

## TEACHERS PERCEPTIONS OF CONTEXTUAL PRESSURES AND THEIR TEACHING PRACTICES

Pelletier et al. (2002) described several contextual conditions that may pressure teachers to teach in controlling ways. Contextual pressures can be understood as 'pressures from above' and 'pressures from below'. Pressures from above, that teachers in many countries are faced with, include performance standards (Deci, Spiegel, Ryan, Koestner, & Kaufman, 1982), high stakes testing (Ryan & Brown, 2005; Ryan & Weinstein, 2009; Nolen, 2011) or pressure from school

administrations, colleagues, as well as parents (Reeve, 2009). Contrary to pressures from above, 'pressures from below' arise from the day-to-day interactions within the classroom. Pressures from below refer to the motivational characteristics of the student population (Pelletier et al., 2002). Pelletier et al. (2002) found teachers resort to more extrinsically-oriented controlling motivational strategies when students appear unmotivated. Furthermore, Oakes (1985), found teachers in low-ability schools more inclined toward controlling teaching practices that stress conformity and obedience. Thus far, research on the relation between pressures from below and teachers' autonomy-supportive versus controlling practices is scarce, even though forty years of research on teacher expectancies has shown that teacher perceptions of students are very powerful in shaping teaching behaviours and subsequent learning outcomes (Jussim & Harber, 2005; Jungbluth, 2003; McKown & Weinstein, 2008; Nurmi, Viljaranta, Tolvanen, & Aunola; 2012; Rosenthal & Jacobson, 1968; Van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010).

Important sources that shape teacher perceptions are students' ability levels (Madon, Jussim, Eccles, 1997), social background (Jussim et al., 1996), or ethnic background (Tenenbaum & Ruck, 2007; Van den Bergh, et al., 2010). In many western countries, teachers are faced with diverse student populations in terms of abilities and background (Bakker, Denessen, Peters, & Walraven, 2011). Perceptions of these characteristics can cause differential teacher behaviours. Teachers have been found to show less warmth toward low expectancy students, give fewer opportunities to respond, and provide less feedback, resulting in lower achievement (Rosenthal, 1994). Tenenbaum and Ruck (2007) furthermore showed that teacher behaviours toward students from different ethnic groups differed significantly. Teachers were friendlier and more encouraging towards European American students than towards ethnic minority students. A recent study by Nurmi et al. (2012) showed that teachers were more actively involved with low achieving students, providing more structure to guide their learning.

Most teacher expectancy studies have focused on within-classroom differences and subsequent differential teacher practices of teachers toward low versus high expectancy students (Rubie-Davies, 2010). Recently, two studies examined how classroom characteristics affect teachers' instructional strategies, showing teacher perceptions of classroom characteristics affect use of extrinsically or intrinsically oriented teaching strategies (Rubie-Davies, Flint, & McDonald, 2012) and students' learning outcomes (Archambault, Janosz, & Chouinard, 2012), suggesting that teaching practices may indeed depend on teachers' perceptions of the whole classroom.

Other than the aforementioned studies, few studies have examined how teacher perceptions of their students affect teachers' controlling versus autonomy-supportive practices. If teaching practices are dependent on their perceptions of the classroom, and teachers in perceived 'at-risk' classrooms resort to more controlling strategies, they may actually be undermining students' intrinsic motivational resources. As such, already existing differences in motivation and learning outcomes may actually be exacerbated.

## CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

Figure 1 presents an overview of our conceptual model. In the model, teachers' personal beliefs are negotiated with the pressures from above and below they experience, with some pressures probably weighing more heavily than others. This process can be deliberate and intentional, but in daily interactions with students, negotiation of personal beliefs and contextual pressures can presumably also be unconscious or implicit.

In line with our conceptual model, and aim to investigate how personal beliefs and contextual pressures influence self-reported teaching practices, the following research questions were addressed:

1. What types of teaching practices do teachers report and what are underlying personal beliefs toward autonomy-supportive and controlling teaching practices?

2. What pressures from below do teachers experience and how do these appear to relate to teachers' personal beliefs and self-reported teaching practices?

3. What pressures from above do teachers experience and how do these appear to relate to teachers' personal beliefs and self-reported teaching practices?

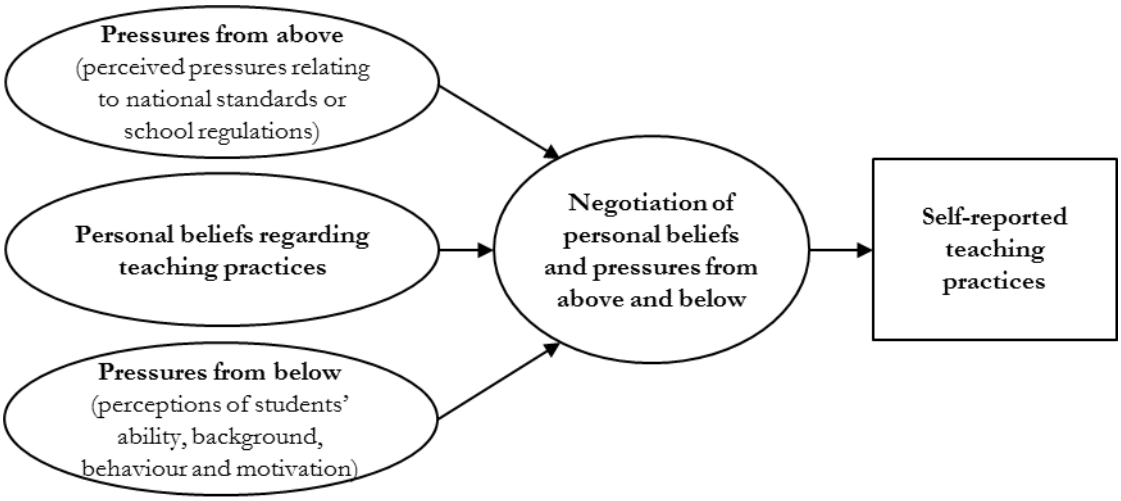



*Figure 1.* Conceptual model of relations between personal beliefs, contextual pressures and self-reported teaching practices.

# METHOD

## PARTICIPANTS

Nine grade six teachers (six female, three male) from different primary schools across the Netherlands participated. In grade six, students are eleven to twelve years old. It is the last year of primary school. The average age of the participating teachers was 40 years and ranged from 25 to 57. On average, they had 12 years of teaching experience, ranging from two to 34 years. The teachers were selected from a sample of 37 teachers participating in larger quantitative study about innovative teaching methods. Selection of teachers for interviews was based on self-report questionnaires with intention the sample would represent maximum variation from teachers that used mostly innovative to mostly traditional teaching methods. On these questionnaires, teachers indicated the level of innovativeness of their teaching methods (collaborative learning, process-oriented instruction, authenticity of the learning environment, and student responsibility) on five-point Likert scales. Scores on these subscales were averaged and ranged from 2.9 to 4.6. Table 1 presents an overview of the characteristics of the teachers, classes and schools. Pseudonyms are used in this paper. Even though schools varied in innovativeness, all schools are held to national standards and use national standardized tests (developed by the Central Institute for Test Development, "CITO"). In grade six, students take a final CITO test that weighs heavily in determining the track students will be referred to (Driessen, Sleegers, Smit, 2008). This test can be considered high stakes, as students' educational futures are largely dependent on outcomes of these tests and outcomes weigh heavily in how the inspectorate judges quality of schools. The participating schools furthermore varied in their social and ethnic classroom composition, which is typical for the Dutch educational system.

Table 1.

*Teacher characteristics, background characteristics of the school, number of students in each class and self-reported level of innovativeness.*

| Teacher | Background characteristics of school | Nr of students | Innovativeness (scale 1-5) |
|---|---|---|---|
| Cathy (female, 31) | Public school is a larger town; the school population consists of only ethnic minority students, almost all with low SES. The inspectorate judged the school as "very weak" during multiple inspections, and forced the school to close. The school year in which the interviews were held, was the last year before closure. | 10 (+8 grade 5) | 2.9 |
| Bert (male, 50) | Christian school. The school was originally a Jenaplan school* but decided to change to more traditional teaching methods. The school is in a neighbourhood that is known to be a bit disadvantaged. Mostly medium SES students. There are about 10% ethnic minority students. | 24 | 3.0 |
| Rachel (female, 35) | Public school in a small town. The population consists of mostly low SES students and around 40% ethnic minority students. The inspectorate judged the school as "weak" during the last inspection. | 14 | 3.1 |
| Tom (male, 29) | Protestant school in a small to middle sized town. SES of the students is mostly medium or high, few ethnic minority students. | 20 | 3.9 |
| Sam (male, 38) | Public school in the centre of a middle sized town. SES of the students is mostly medium to high, few ethnic minority students. | 28 | 4.1 |
| Gemma (female 55) | Public school in a small town, it is in a trajectory to become a "BAS" school ("building an adaptive school"). The school has mostly low and medium SES students. There are no ethnic minority students. | 24 | 4.2 |
| Anne (female, 25) | Catholic school in a larger town. The school is in progress of becoming a Dalton school*. Population consists of students of low, medium and high SES. There are a few ethnic minority students attending this school. | 17 (+10 grade 5) | 4.3 |
| Ella (female, 57) | Protestant school in a middle sized town. Jenaplan school*. Mostly high SES students, some average SES students. | 24 | 4.4 |
| Jane (female 36) | Catholic school in a small town. The school consists of students of low, medium and high SES and very few ethnic minority students. | 31 | 4.6 |

* Jenaplan and Dalton schools originate from the reform movement that also Montessori schools originated from. In both types of schools, there is a focus on autonomy, active learning and cooperation.

## INTERVIEWS

A single semi-structured in-depth interview was conducted with each teacher. The advantage of using interviews for this study is that it can provide a deeper understanding of the beliefs underlying teaching practices and the contextual pressures they experience. Halfway through the school year, teachers were interviewed at their own schools by either the main researcher or a trained research assistant. Interviews lasted 45 to 60 minutes.

The questions explored what teaching practices teachers were engaged in and their underlying beliefs and reasons behind these teaching practices. To first get a general idea of the practices teachers employed in their classes, teachers were presented with several vignettes describing schools with varying teaching

methods ranging from traditional to innovative. These were used as a starting point to elicit responses regarding why and how they used certain methods, and how they believed it affected student motivation. Teachers were encouraged to give explanations and examples. Next teachers were asked about how they perceived their student population and what types of teaching practices they felt suited their student population and why. We focused on teacher perceptions of the student population, rather than on objective information about classroom composition, because teachers' views of their students are probably affecting their decision making process more than actual classroom characteristics. The last part of the interview was aimed at beliefs about motivating students ('What do you think is motivating to students?', 'Can you describe a student that you feel is very motivated?' 'How do you try to keep this student motivated?', 'Can you describe a student that is difficult to motivate?', 'How do you try to keep this student motivated?').

## ANALYSIS

All interviews were transcribed for analysis. All interviews were conducted in Dutch and analysed in Dutch. Each unit of meaning, referring to a consistent theme or idea, was given a code, using a content analysis approach (Miles &

Huberman, 1994). In the first part of the data analyses, the interview data were coded using both inductive and deductive approaches, meaning that predetermined categories were coded, but additional codes were added as new themes emerged during coding. Table 2 presents the final coding scheme. First, all units were coded into five broad target concepts. Next, the units were coded into predetermined subcategories (for example, autonomy-supportive or controlling beliefs) and as analysis progressed, additional subcategories were added. For example, even though this study focused on autonomy-supportive and controlling teaching practices, teachers' personal beliefs about supporting students' competence and relatedness emerged as important themes relating to these teaching practices. Some units were coded more than once as they were simultaneously covering multiple topics.

Next, the first author and a trained research assistant both coded 22% of the interview data independently. Full agreement was reached on 64% of individual codes. The statements where full agreement was not reached were discussed. Disagreement was mostly due to inconsistencies, so the coding system was refined. These statements were then independently re-examined and full agreement was reached on a further 11%, so full agreement was reached on 76% of statements. After examining and discussing disagreements again and refining the coding scheme further, another set of interview data was then independently recoded and final inter-coder agreement was 86%. Table 2 provides the final coding scheme.

In the final part of the analyses, relationships between the target concepts were identified. It could be that in their statements, teachers explicitly addressed such relationships or relationships were inferred by the researchers.

Table 2
*Final coding scheme*

| Target concepts | Subcategories |
|---|---|
| Personal beliefs or preferences | Beliefs toward autonomy-supportive teaching practices<br>Beliefs toward controlling teaching practices<br>Beliefs about providing structure*<br>Beliefs about other competence-supporting practices*<br>Beliefs about relatedness* |
| Self-reported teaching practices | Autonomy-supportive teaching practices<br>Controlling teaching practices<br>Providing structure*<br>Other competence-supporting practices*<br>Providing a sense of relatedness* |
| Pressures from above | Pressure from school administration<br>Pressure from teaching methods used at the school<br>Pressure from parents |
| Perceptions of the student population | Statements related to at-risk characteristics (low ability, disadvantaged/ethnic-minority backgrounds, difficult behaviour, low motivation)<br>Neutral/average comments about students<br>Statements related to high ability, motivation, good behaviour or high social background<br>Differential perceptions* |
| Pressures from below | Pressures referring to whole-class characteristics<br>Pressures referring to individual students |

* Codes that emerged during coding.

# RESULTS

In this results section, the outcomes of the interviews will be presented according to each of the research questions. Within each section different elements that are relevant for answering the research question will be discussed.

## 1. What type of teaching practices do teachers report and what are underlying personal beliefs toward autonomy-supportive and controlling teacher practices?

### SELF-REPORTED TEACHING PRACTICES

When teachers were asked about their teaching practices, they reported a variety of teaching practices from very controlling to mostly autonomy-supportive. In line with previous literature (e.g. Reeve, 2009), all teachers – even the most autonomy-supportive teachers – reported using some controlling teaching practices, such as using extrinsic rewards and directing students without providing choice or rationale. Still, clear differences between the teachers emerged, and based on their self-reported teaching practices three distinct clusters of teachers were distinguished (for an overview, see table 3). Two teachers, Sam and Ella, were classified as *highly autonomy-supportive (HA)*. They reported mostly autonomy-supportive teaching practices. They also reported some controlling practices, but not very frequently. Teachers in this cluster described encouraging student responsibility, for example by cooperative learning or letting students plan their own work. These teachers explained they provided students with choice, gave rationales when choices were limited, and always tried to connect to students' interests. Four teachers, Gemma, Tom, Jane, and Anne, were classified as moderately autonomy-supportive (MA). They also reported mostly autonomy-supportive teaching practices, but to a lesser extent than teachers in the HA cluster. Moreover, the MA teachers also reported using controlling teaching practices quite regularly, such as giving directions without providing a clear rationale. A third cluster

Table 3
*Overview of clustering of teachers based on their self-reported teaching practices*

| Cluster and members | Supporting statements |
|---|---|
| Highly autonomy-supportive (HA)<br><br>- Ella<br>- Sam | Mostly autonomy-supportive teaching practices<br>*"A while ago, we did a project on Shakespeare. … With group assignments, often they designate the tasks themselves. … They plan a lot of the work themselves. … Children can decide whether they want to work together, what task they want to start with, who they want to work with. They may even choose where in the school they want to work on it."* (Sam) |
| Moderately autonomy-supportive (MA)<br><br>- Gemma<br>- Tom<br>- Jane<br>- Anne | Mostly autonomy-supportive teaching practices with regular use of controlling teaching practices<br>*"If they run into any problems [while working on their tasks], I first look: 'What problems are you running into, did you read it carefully?' That way, you try to get the students to think for themselves. 'Well, and how will you solve it?' … but other times you say 'No, I think you should do it like that'."* (Tom) |
| Controlling (C)<br><br>- Rachel<br>- Cathy<br>- Bert | Mostly controlling teaching practices.<br>*"For example, how do you learn words for a dictation? Because, I taught them how. What's the best way to do that? Well, you read, you see the word, you copy it. After you've done that a couple of times, then cover the word and write it down. Is it correct? Yes, okay, than it's good. No, then you made some mistake and I'll tell them to write it down again three times."* (Bert) |

consisted of three teachers, Bert, Cathy, and Rachel, who mostly referred to controlling teaching practices. Teaching practices in this *controlling (C)* cluster included using extrinsic rewards, pressure or control and being restrictive. Especially two teachers, Cathy and Bert reported very controlling teaching practices. Rachel sometimes also reported autonomy-supportive practices, although not very frequently. Not surprisingly, the teachers that had rated

their teaching methods higher on innovativeness in the larger quantitative study, also reported higher levels of autonomy-support during the interviews.

### PERSONAL BELIEFS

According to Reeve (2009), one of the reasons controlling teaching practices are common is because many teachers have personal beliefs favouring such practices. However, when asked about their beliefs, most teachers in our study expressed preferences towards autonomy-supportive ways of motivating students. As expected, teachers that were clustered as HA or MA based on their self-reported teaching *practices,* also described personal *beliefs* emphasising autonomy-supportive teaching practices:

> Question*: "What do you believe is motivating to students?"*
>
> *"When you give them the feeling that they are responsible, that they are engaged with the learning materials. If you'll tell them, already during instruction, why they are learning this. And because of that they want to learn it, not because they have to."* (Ella, HA)
>
> *"If you are giving instruction and somebody answers a question correctly you can just continue, but if you ask 'how did you get to that answer' then all at once, they have to think and reflect on their own solution. … They learn very much from that."* (Tom, MA)

Remarkably, two teachers from the controlling cluster, Rachel and Cathy, also expressed very clear preferences toward autonomy-supportive teaching practices, stating the importance for students to be responsible for their own learning and the importance of creating relevant and authentic learning experiences.

> *"Even at my previous school, education was not child-focused; it was focused at the books. What I would want. . . Well they learn about longitude and latitude from the book. They didn't get it, not even northern and southern half. Well, then I went to get a watermelon and started cutting."* (Rachel, C)

Only one teacher, Bert, expressed a clear overall preference towards a more controlling teaching style in line with his self-reported teaching practices.

> *"The teacher decides. A rule is a rule, simple! … Some students just learn for me. Because the teacher has got to have a high grade for the inspector, so that's what I'll work for."* (Bert, C)

Although most teachers were in favour of autonomy-supportive teaching approaches, some teachers found autonomy-supportive teaching methods less efficient or felt external rewards were motivating to students.

> *"I believe they are really motivated by grades. They want tests and grades."* (Cathy, C)

Thus, even though a majority of teachers mostly expressed clear preferences toward autonomy-supportive teaching, across all three clusters, teachers also expressed beliefs toward some aspects of more controlling practices.

### THE ROLE OF STRUCTURE

According to SDT theory, it is important for teachers to provide students with structure in order for students to feel competent. Structure includes communication of clear expectations, giving directions, providing guidelines, and setting limits. However, according to Reeve (2009), many teachers confuse structure and control, believing they need to be directive or emphasize external rewards to provide structure. This ambiguity between structure and control can come about as structure can be delivered in both controlling and autonomy-supportive ways (Jang et al., 2010; Reeve, 2009; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). In some teacher statements, especially among the MA teachers, structure and control indeed appeared to be entangled.

> *"You're not going to offer ten strategies to the weaker students, they'll crash. They have to be told one way, very directive. You'll do this, this fits you."* (Tom, MA)

In the statement above, Tom limits the choices of his weaker students to provide them with structure, but Tom provides this structure by directing students without offering a rationale. Other statements report more autonomy-supportive ways of providing structure.

> *"Some children, you'll keep them closer, because you know that's what they need. You'll talk to them about 'what steps are you taking', but that really depends on their level."* (Anne, MA)

All teachers referred to structure as an important aspect of teaching. The MA and HA teachers mostly considered structure an important condition for autonomy-supportive teaching practices to be successful.

> *"There is a lot of freedom, but that freedom requires responsibility. That means that I regularly check 'how far are you?'. I also tell the children 'Keep in mind your planning, because at the end of the week it needs to be done'."* (Sam, HA)

> *"I can let the children work independently, and then it's checking, helping and guiding them."* (Anne, MA)

Although there were a few statements that referred to autonomy-supportive ways of providing structure, controlling ways of providing structure seemed more common for teachers in all three clusters.

### SUPPORTING COMPETENCE

According to SDT, providing structure will support students' competence beliefs by offering guidelines for students to accomplish goals (Sierens et al., 2009). Other strategies for supporting competence beliefs include positive feedback and promoting opportunities for success (Niemic & Ryan, 2009). Teachers from all three clusters referred to such strategies.

> *"It's motivating when tasks are challenging, but only as long as they are able to do it."* (Sam, HA)

> *"Being positive, it's just motivating. You shouldn't tell children every time like 'this is not right', 'you're not doing this correctly.' That's just demotivating."* (Anne, MA)

> *"What I find motivating? … To compliment them, encourage them to show them they can do it. They get good grades, so also show them it's good."* (Bert, C)

Regardless of teachers' perceptions and self-reported use of autonomy-supportive versus controlling teaching strategies, all felt it important to encourage students' competence beliefs. So, irrespective of the type of teaching practices reported, teachers felt they should be accompanied by praise, encouragement and positive feedback.

**2. What pressures from below do teachers experience and how do these appear to relate to teachers' personal beliefs and their self-reported teaching practices?**

### PERCEPTIONS OF THE STUDENT POPULATION

Teachers were asked to describe the characteristics of their student population Both HA teachers reported their students were from middle to higher class families and were positive about their students' abilities.

> *"On average, these are children with highly educated parents, high social status absolutely. . . . What you notice is that when children come from a family where mom and dad went to college, they are people who perceive life in a different way. They are more explorative, more philosophically oriented."* (Sam, HA)

The MA teachers, with the exception of Gemma, mostly emphasized differences within the classroom.

> *"You have the extremes. And well, some are average some are . . . Some are just doing fine, others tend to fluctuate, some do well, and others are below average. Well, it differs."* (Tom, MA)

Contrary to the other MA teachers, Gemma described that she was dealing with a more at-risk student population.

> *"When they came in, their achievement was low, a difficult group. . . . Difficult children, a lot of bullying, bad results. Almost beat the . . . out of each other, so to speak."* (Gemma, MA)

The teachers in cluster C also considered their student population to be at-risk, indicating that their students were either of low ability, from a disadvantaged background, or having behavioural difficulties.

> *"Their socio-emotional behaviour was like . . . Let's just say, it was pretty bad. That's why we decided to seat the students individually, because they were attacking each other with pencils and scissors."* (Rachel, C)

> *"This neighbourhood is socially pretty weak. The nickname of this neighbourhood is "vale of tears", that says enough. . . . A lot of people from socially disadvantaged backgrounds came here. The number of ethnic minority children at this school is quite large. All those people, they bring their own culture, their own way of life, and ehm, yes, socially, together… doing things by themselves, it's not as well developed here."* (Bert, C)

Especially when there were many ethnic minority students in the class, and when there were few opportunities for these students to come into contact with Dutch children – which was especially the case in Cathy's class, which consisted of only ethnic minority students – students' language ability levels were considered problematic.

> *"They live in this neighbourhood, where they have a lot of family. They visit each other but don't have any contact with Dutch children. . . . If you ask them to read a text and indicate which words they don't know, they'll give you a huge list. You think, o my, I didn't expect there to be so many. So when you tell them you want them to read the text and answer the questions by themselves, you know in advance there's no use. They just don't know enough."* (Cathy, C)

## PRESSURES FROM BELOW: WHOLE-CLASS PERCEPTIONS AND TEACHING PRACTICES

An interesting pattern thus emerged, suggesting that teachers who perceived their classrooms in more positive ways (with regard to ability level, behaviour, motivation) or indicated that their students were from more privileged backgrounds were also the ones reporting more autonomy-supportive teaching practices. Figure 2 presents an overview of this relationship. The only exception to this pattern was Gemma who described her students to be at-risk in terms of ability levels and behaviour when they first entered her class, yet she reported a teaching style that could be considered moderately autonomy-supportive.

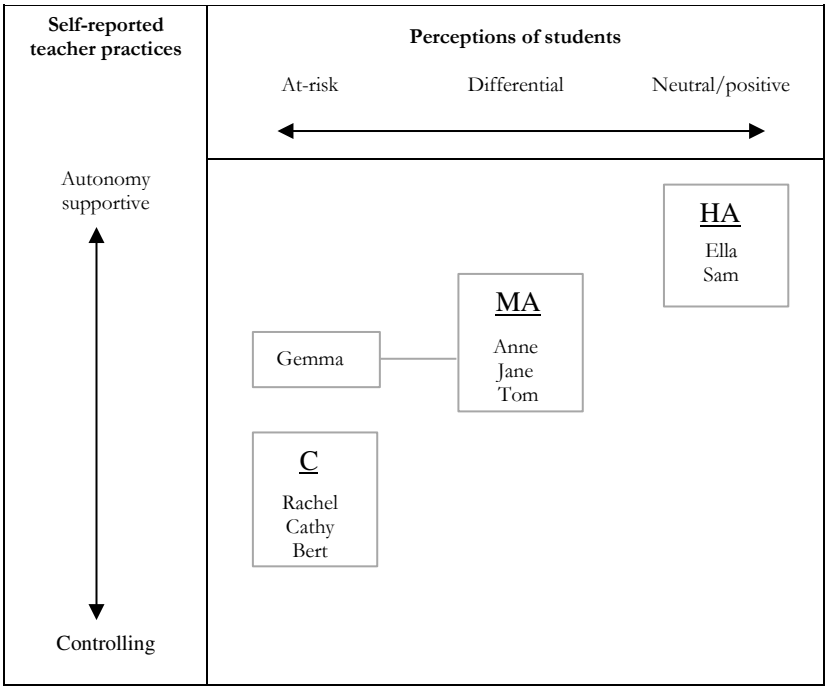



*Figure 2.* Overview of relation between teachers' perceptions of their students and their self-reported teaching practices.

Gemma explained that the characteristics of her students did not determine her teaching practices. In her opinion, the characteristics of the classroom population do not have to define teaching practices, as long as sufficient structure is offered.

> *"For years now, I am the grade six teacher at this school, so you hear, that [difficult] group is coming. Well, I actually did not care about that from day one. Yes, well, I do of course, but you try to shape that, to work on that and results are shooting up. … You have to be consistent and strict. . . . That's when they can learn by themselves or together."* (Gemma, MA)

Moreover, Gemma considered the at-risk characteristics of her group something that could be turned around. Conversely, all three controlling teachers felt their students lacked the characteristics necessary for autonomy-supportive teaching, and considered this to be a given. Perceptions of their students' background and abilities were the main reason behind their controlling teaching practices.

> *"Most of the students, they cannot handle responsibility. . . . Responsibility is something far out of reach. I doubt whether these children will ever develop that. They don't even learn that at home."* (Rachel, C)

> *"Some are like 'okay, I can decide for myself and not everything gets checked? O, then I'll just say I finished. Fine!' They see it is a perfect way to get away with it. Well, then you'll be like, maybe it's a process of learning for them too, but it's not exactly what we envisioned. . . . A bit too loose and independent and they don't know how to handle freedom"* (Cathy, C)

According to Pelletier et al. (2002), teachers that perceive their students as unmotivated are more likely to rely on controlling teaching practices, referred to as pressures from below. In addition, when the teachers in this study perceived their class to include many low ability, low SES, ethnic minority, or many behaviourally difficult students, they also experienced significant pressures from below towards controlling teaching methods. For example,

Cathy felt her class, which consisted of only ethnic minority students with Dutch as their second language, had such severe delays in language and other areas that she had to resort to controlling teaching practices.

> *"They lag behind in so many areas, that you just pump as much information into them as possible. . . . They'll drown when they have to do anything by themselves. It's like 'I don't know' or 'I don't get it'."* (Cathy, C)

Based on experiences with autonomy-supportive practices and what they believed would best suit their student population, both Cathy's and Bert's schools changed to more controlling practices, which was something both teachers seemed to agree with.

> *"We used to be a Jenaplan school. . . . But the school population cannot handle it. Many children are not used to working independently. So we abandoned that Jenaplan idea a couple of years ago."* (Bert, C)

> *Before, we intentionally introduced independent learning, planning their own work. . . . For many students it did not lead to the results we had hoped for, because they don't seem to pick up on it. So now there was a conscious decision that, in this last year, we would try to cram as much into them as possible and hope they'll reach a nice level. And working independently, how useful it may be, it's not a priority. Well, at least they've worked with it . . . The choice really was 'the teacher decides and the students have to follow'."* (Cathy, C)

On the contrary, after some negative evaluations by the inspection, Rachel was among a group of teachers hired specifically to implement autonomous teaching methods to improve results. But even though Rachel personally strongly favoured autonomy-supportive teaching methods and felt supported by the school administration, she experienced difficulties implementing that with her current class.

> *"We hope to work towards [more independent learning], but we are very realistic. We don't think we'll ever reach the same level as in our old school."* (Rachel, C)

Like Cathy and Bert, Rachel often felt she could not use autonomy-supportive teaching practices with her students, suggesting that all three controlling teachers felt severe pressures from below. For Bert who preferred controlling ways of teaching, these pressures corresponded with his personal beliefs, but for Rachel and Cathy, who preferred more autonomy-supportive methods, the experienced pressures from below were the main reason they relied on controlling strategies.

Anne (MA), had previously worked at a more disadvantaged school and described being more controlling with those students. She felt her current student population with more privileged backgrounds was more suited to autonomy-supportive teaching methods than the students at her previous school.

> *"Last year, I taught at … an "educational opportunities school". The majority had ethnic minority parents or were from unstable homes. … You have to adjust to that…. The kids I have now, I can let them work independently, just because I see that they can do that and they are able to manage that. I just have to check, support them, and guide them. And if I look back at last year, that was not possible. I really had to take them by the hand, I had to keep a close eye on them, and just tell them what to do, all the time."* (Anne, MA)

### ADDITIONAL PRESSURES FROM BELOW: DIFFERENCES WITHIN THE CLASS AND TEACHING PRACTICES

All three cluster C teachers already considered their students to be an at-risk group, but experienced additional pressures from below from individual students that were perceived even lower in ability, motivation, or more difficult in behaviour, resulting in more controlling, extrinsically orientated, teaching practices.

> "*. . . sometimes it works best to motivate [students] in a harsh way. To just burn them down completely. Take for example this one boy. I just burned him down to the ground, the whole class was there. I punished him unmercifully, because he*

> *point-blank refuses to hand in his assignment. . . . For some students, that motivates."* (Bert, C)

Although the MA and HA teachers did not experience pressures from below from their whole classroom, they did experience differences within their classrooms that affected teaching practices. This was especially the case for the MA teachers. In their experience, some students in their class, mostly those lower in ability, less motivated, or more difficult in behaviour, needed to be offered less autonomy.

> *"We focus very much on 'learning to learn', our text books are also like that. For some students that's difficult. I'll just tell them 'This is how you must do it', otherwise they'll get confused. They barely understand one approach and then something else comes up, that confuses them. . . . I offer multiple strategies, that's just in the text books, and you'll say to those children just pick that one and forget about the others. Other children are able to do that, they don't find that difficult."* (Jane, MA)

> *"With learning stuff it's hard [to motivate him]. But if you say 'Come on, than you can go play soccer outside for ten minutes' then he might go on for a bit."* (Ella, HA)

Contrarily, a few of other statements showed that teachers sometimes also found ways to motivate their at-risk students through more autonomy-supportive practices, such as appealing to students' own responsibility or addressing their interests.

> *"He is almost impossible to motivate. We'll try every trick in the book to get him involved. We try to relate to his interests. He is for example crazy about the Muppets and making puppets, so he can write a story about the Muppets. He loves Alice Cooper, so we did that with music lessons."* (Sam, HA)

> *"That unmotivated student, I talk with him. What is going on? Why is that? And also address it: Okay, here we are, I'd like to see change. So you'll know what I want, how are you going to do that?"* (Tom, MA)

Although there are exceptions as shown above, in all, the paragraphs above show a pattern that indicates that teachers who perceive their class or individual students within that class to be at-risk find controlling teaching strategies more suitable for those students, feeling that not all students have similar needs for autonomy or that some students lack the skills necessary to handle any autonomy.

### PRESSURES FROM BELOW AND THE ROLE OF RELATEDNESS

During the interviews, most teachers (Ella, HA; Tom and Gemma, MA; Rachel, Bert, and Cathy, C) talked about the importance of creating a good relationship with their students as a way of motivating them. This corresponds with SDT theory, which suggests that students need to feel related in order to be intrinsically motivated (Ryan & Deci, 1985).

> *"They only learn when they are in a nice environment. Nice is nice. Just having a good atmosphere and everybody is themselves. . . . You got to have that flair of teaching, being a fun teacher. I'll only have to do this [blinks] and they'll do everything."* (Gemma, MA)

Interestingly, those teachers that considered their classroom population to be at-risk emphasized the importance of relatedness the most. Several reasons may account for that. Creating a warm classroom climate may be more urgent and a bigger challenge to teachers with more difficult classrooms. Because they invest more effort in establishing good relationships with students, they may focus more on supporting students' relatedness.

> *"That bond I feel with them, especially now… The first three weeks it was a battle, that bond had to develop, but now I just feel it's coming from both sides. When I'm enthusiastic, they are."* (Rachel, C)

Moreover, teachers with a more controlling teaching style may also focus more on relationships as they may feel that learning activities are not very

enjoyable to students. Establishing good relationships may be more important under such conditions.

> *"I build a good relationship with them. The jokes I pull, the things we are able to say to each other… Because of that they are more motivated to do the work."* (Bert, C)

> *"They like to relax in between, just to talk and we make time for that. Like 'guys, who has something nice to talk about?' or 'Has anything happened?' and if somebody has a story, we make time for that or just for a joke. And after that, it's 'Let's go again! Back to work!'"* (Cathy, C)

Finally, teachers with students from more disadvantaged backgrounds seemed to experience a greater need for relatedness from their students, as illustrated below.

> *"You just feel that this student is all alone. At the beginning of the year he was a real bully … but that totally turned around. I feel like he has to do everything by himself, all alone. … The first thing he does in the morning is wave until I see him. Just now he came in for his football, but without the ball he would've been here too. [He is] just looking for contact. Well, if I can be the save haven in his rough life, I'm happy to do that. … And there are more students…"* (Rachel, C)

Contrary to SDT that emphasizes the universality of needs (Ryan & Deci, 1985), Hamre and Pianta (2001) suggest that students from more disadvantaged backgrounds may have a greater need for relatedness. Especially for students from more disadvantaged backgrounds, school culture may be different from what they are accustomed to at home. A good relationship with teachers may be essential in preventing this disparity between home and school environment from being harmful. Moreover, these students are at greater risk for disengagement and good relationships with teachers may have a preventative, 'buffering' effect (e.g., Hamre & Pianta, 2001). Accordingly, the teachers in our sample that considered their students

to be an at-risk population (Gemma, MA, and the cluster C teachers) seemed to experience a greater need for relatedness and addressed this by focusing more on establishing a good relationship and a pleasant classroom atmosphere. Most teachers in the MA cluster and both HA teachers did not mention building a good relationship with their students and among students as a way of motivating them. This could indicate that relatedness is taken for granted by these teachers. It could also be that relationships with their students are already quite good in these classrooms. Teachers may therefore focus more on issues they consider to be more urgent for their population.

### 3. What pressures from above do teachers experience and how do these appear to relate to teachers' personal beliefs and their self-reported teaching practices?

Teachers described how pressures from above, specifically performance standards and broader school educational philosophy, related to their beliefs and teaching practices.

#### PERCEIVED PRESSURES FROM ABOVE

Similar to previous literature (e.g., Reeve, 2009), all teachers in our study also referred to pressures from above such as performance standards or official regulations as the reason behind controlling teaching methods. In some instances, there was clear friction between such pressures and teachers' personal beliefs, especially for the HA teachers.

> *"I believe that authentic learning experiences are really important. So, I try to invest time and effort in that, but daily reality shows that it's not always possible, because you're restricted to certain teaching methods or certain standards set by the inspection."* (Sam, HA)

According to SDT, high stakes testing can undermine students' autonomous motivation and promotes a controlling instructional approach (Ryan & Weinstein, 2009). As such testing is often mandatory, and teachers held accountable for the outcomes, it can be one of the main reasons for teachers to rely on controlling teacher practices (Reeve, 2009). Across clusters, most teachers did not experience formal assessment pressuring. In fact, it was considered a helpful way to monitor student progress.

> *"I think it [testing] is important. You keep track of a student, how he or she is doing."* (Sam, HA)

> *"If you notice that most children score sufficiently, and two are really lagging behind, you are going to focus more of your attention on those two."* (Jane, MA)

> *"We use these tests to monitor their progress, see where there are gaps in their knowledge, where extra help is needed. And results are very clear for parents."* (Cathy, C)

In general, high stakes testing and rewarding students with grades are believed to undermine students' intrinsic motivation (Ryan & Weinstein, 2009), but their impact tends to depend on the way they are delivered (Deci & Ryan, 1985). Gemma perceived formal assessment to be a pressure from above, but used the tests in such a way that students could reflect own on their progress. Hence, using the external outcomes of formal testing, the grades in an autonomy-supportive way.

> *"We are obliged to do formal assessments three times a year. It gives an impression. Fine. I'll look at it. I'll have to look at it. But, if it were up to me, we'd be throwing out all of those tests. I know it already. . . . Children reflect on their own progress, why did I get a ten on that test and a four on the other one, it's because of this or because of that. . . . Children have to look at themselves and progress through that. My children know that pretty well, why am I struggling with language and succeeding at math?"* (Gemma, MA)

Ella also considered formal assessment to be a pressure from above, dealing with that by putting a greater emphasis on alternative ways of evaluating student progress.

> *"We have the children write us [the teachers] a letter, we respond to it. We mention a couple of topics that need to be addressed in the letter: 'How do you feel in the class, who do you like to spend time with, what are you good at, and what would you still like to learn?'. We have a sort of registration book, with a lot of things in it. Which books have you read, what presentations did you do, yes, it also contains their achievement outcomes. Their letters are also included in that."* (Ella, HA)

Overall, national standards and high stakes testing were considered pressuring by the HA and MA teachers, but these teachers also found ways to deal with these pressures in ways corresponding with their beliefs. National standards or high stakes testing were not considered pressures by the teachers in the C cluster.

### ALIGNMENT WITH THE SCHOOLS' EDUCATIONAL CONCEPT AND SCHOOL ADMINISTRATIONS

Across clusters, teachers mostly felt comfortable with the educational concept, policies, or textbook methods used at their schools. Teachers in the HA cluster were working at rather innovative schools, supporting autonomy-supportive teaching practices.

> *Well, group work is motivating for example. . . . That's what's really appealing about the 'BAS' project [reform trajectory the school is in]."* (Gemma, MA)

Similarly, teachers in the MA clusters also felt their schools supported their way of teaching.

> *"We are using textbook method M. That's with real examples. And with language, we use method P. It's not like a method, it's playful, a lot of doing,*

> *experiencing. So they learn, not just by books, but you can really connect to children."* (Ella, HA)

Cathy and Bert were working at schools supporting controlling ways of teaching as their school administrations also felt controlling ways were more suitable to their student population.

> *"We are doing 'modelling', it's part of a trajectory we have been doing for a while. It means that we show the best way to perform a task. Here is a text, what are you looking at? No, you don't just start reading it, you first check the title."* (Bert, C)

Rachel personally preferred an autonomy-supportive teaching style which she was supported in developing at her school. Her difficulties in actually realising more autonomy-supportive ways of teaching were mostly attributed to pressures from below.

### DEALING WITH PRESSURES FROM ABOVE

In general, when the HA and MA teachers experienced pressures from above towards controlling teaching practices, they mostly tried to find a balance between satisfying formal regulations and their own personal beliefs.

> *"I'm pretty much a slave to the teaching method. But within those rules, I try to think of as many ways of working it as I can."* (Sam, HA)

> *"Our teaching methods already connect to students' worlds pretty good. But other than that, you think of extra examples, or have it coming from the kids."* (Anne, MA)

Teachers in the C cluster did not report much friction between their beliefs and pressures from above. The MA and HA teachers experienced some pressures from above, but found ways to deal with them. When they

experienced conflict between their own beliefs and pressures from above, they still managed to teach predominantly according to their own beliefs. However, as shown in the previous paragraphs, many teachers considered pressures from below a much bigger challenge to overcome.

## DISCUSSION

The purpose of this study was to gain a more thorough understanding of how teachers negotiate their personal beliefs with contextual pressures and how this influences the extent to which they adopt more autonomy-supportive or controlling teaching practices. Although the majority of teachers in our study described a preference for teaching in autonomy-supportive ways, in practice they often relied on more controlling practices, such as extrinsically rewarding students. These outcomes correspond with previous literature indicating that controlling teaching practices are quite common among teachers (Reeve, 2009; Turner, 2010). In line with our conceptual model (figure 1), teachers negotiated their personal beliefs with the contextual pressures they experience. These contextual pressures – especially pressures from below – seemed to influence their decision making process. These outcomes contribute to our understanding of why teachers so often rely on controlling teaching practices. Below, a number of key issues that need further discussion will be addressed.

### THE CRUCIAL ROLE OF TEACHER PERCEPTIONS OF THEIR STUDENTS IN EXPLAINING TEACHING PRACTICES

While previous literature has emphasized how pressures from above may explain teachers' controlling teaching practices (e.g., Reeve, 2009; Niemic & Ryan, 2009; Ryan & Weinstein, 2009), the outcomes of the present study suggest that pressures from below weigh more heavily for teachers. In many countries, teachers are faced with diverse student populations, and some schools are mostly populated by at-risk students (Bakker, Denessen, Peters, &

Walraven, 2011). A concerning finding of this study is that especially when teachers considered their students to be at-risk (i.e., low-ability, unmotivated, difficult in behaviour, or from disadvantaged backgrounds), they relied much more often on controlling strategies. Even autonomy-supportive teachers described being more controlling with the at-risk students in their class. Previous literature indicated that autonomy-supportive practices can increase motivation (Jang et al., 2010; Vallerand, 1997), increase deep learning strategies and promote self-regulated learning (Deci et al., 1991; Vansteenkiste et al., 2004; Vansteenkiste et al., 2006). The controlling strategies used by these teachers could thus prevent at-risk students from actually becoming motivated and independent learners. This may actually cause already existing differences in motivation, learning and achievement to be exacerbated. This is especially concerning as previous research suggests that teacher perceptions of their students can be based on biased beliefs rather than actual information about students' ability levels (Van den Bergh et al., 2010).

All teachers indicated the importance of structure, especially for at-risk students. According to theory, structure can be delivered in either autonomy-supportive or controlling ways (Reeve, 2009), but in this study, teachers reported mostly controlling ways of providing structure for at-risk students. Within teacher expectancy literature, it has been suggested that teachers' perceptions of their students can explain a wide variety of teaching behaviours (e.g., Rosenthal, 1994). The outcomes of the present study clearly show that the extent to which teachers act autonomy-supportive or controlling toward their class or individual students indeed depends on their perceptions of students.

These results furthermore indicate that the definition of 'pressures from below' by Pelletier et al. (2002) referring only to low student motivation, may benefit from including other types of at-risk students, as not only teacher perceptions of students' motivation, but also perceptions of students' academic ability levels, background characteristics and behaviour appeared to be very influential.

Our results also suggest that the conceptual model presented in figure 1 may be cyclical in nature. Teachers' prior experiences appeared to inform their personal beliefs and preferences toward either controlling or autonomy-supportive teaching practices. Prior experiences of success or failure of their teaching practices with certain student populations seemed to confirm or dismiss previously held beliefs about the extent to which they felt autonomy-supportive teaching practices were suitable for their students. Teacher perceptions of their students as well as their prior experiences thus seem very important to take into consideration when examining teaching practices.

### ARE STUDENTS' NEEDS UNIVERSAL?

SDT suggests that students' needs for autonomy, competence and relatedness are cross-cultural universal needs that apply to all students (Reeve et al., 2004; Ryan & Deci, 1985). Contrarily, most teachers in this study expressed the view that students can differ in the strength of their needs. At-risk students were perceived to have less need for autonomy, but a greater need for relatedness in comparison to other students. Whereas SDT emphasizes the disadvantageous effects of a controlling approach on students' motivation, teachers using controlling practices were often well intentioned, believing that such practices suited their students' needs better. Teachers expressed the view that controlling strategies actually nurtured the specific needs of their at-risk students. To them, this was an adaptive approach, based on their assumption that not all students had similar needs for autonomy. It could be that in general at-risk students indeed prefer more controlling strategies, however, that does not necessarily mean that they also benefit most from that. Moreover, teachers in these classes were more concerned with the socio-emotional climate of the classroom as they experienced a greater need for relatedness from these students for whom a good relationship with the teacher may act as a buffer to protect them from negative motivational outcomes for which they are more at-risk (e.g., Hamre & Pianta, 2001).

Several studies, especially cross-cultural studies, have been addressing the issue of universality, suggesting that the strength of students' needs may depend on their backgrounds. In these studies, it is argued that autonomy is a value of Western, individualistic societies and that it may not be as beneficial to students who have a background from more collectivistic cultures (Kitayama, Snibbe, Markus, & Suzuki, 2004; Markus & Kitayama, 1991). Iyengar and Lepper (1999) for example showed higher levels of autonomy increased motivation of Anglo-American children, but Asian children were more motivated when trusted authority figures made choices for them. Sheldon, Elliot, Kim, and Kasser (2001) showed that members from collectivistic cultures find relatedness more fulfilling than members from other cultures. Moreover, Deci, Ryan, Gagné, Leone, Usunov, and Kornazheva (2001) found that people from Bulgaria were less negatively affected by a controlling climate.

In all, the outcomes of these studies do not claim people from some cultures lack the need for autonomy, competence, or relatedness, *but* they do suggest – in line with beliefs expressed by teachers in our study – that there may be cross-cultural differences in how strong needs are and that there may be different ways to meet those needs. Moreover, the views held by teachers also suggest that students' needs not only depend on their ethnicity or culture, but that students' needs, or ways to fulfil those needs, also depend on other characteristics, such as ability levels, SES, and motivational or behavioural characteristics.

### INTERACTION BETWEEN CONTROL AND RELATEDNESS

Another interesting issue emerged from our study. Particularly the controlling teachers thought it was important to create a warm classroom climate and to develop a good relationship with their students. Also other studies have shown a positive relation between control and relatedness (Nichols, 2006). As discussed, the controlling teachers experienced a greater need for relatedness from their students, but they also indicated they needed that bond to encourage students to engage in learning activities they may not autonomously want to

engage in. Abundant research has shown that students' affective relationship with their teacher (e.g., Cornelius-White, 2007; Roorda, Koomen, Spilt, & Oort, 2011) is crucial to their motivation. That may especially be so when teachers use controlling strategies. None of the teachers in the controlling cluster seemed to think their students felt controlled or pressured, particularly because of the strength of the teacher-student relationship. This indicates that when students experience an affectionate bond with their teacher, yet experience controlling practices, they may not perceive these as frustrating their needs. Control, when delivered in a highly affectionate way, may perhaps not necessarily undermine students' motivation. Although SDT has not specifically addressed the issue of potential interactions between relatedness and control, this has been described in interpersonal theory (Leary 1975 in Wubbels & Brekelmans, 2005). According to this theory, a teaching style which involves both control and affiliation is most beneficial for students' engagement.

## IMPLICATIONS FOR TEACHER EDUCATION

This study also has implications for teacher education. First, the study shows that teachers find it harder to teach at-risk students in autonomy-supportive ways. This highlights the need for (pre)service teachers to develop understandings about motivating students in classrooms with diverse student populations. Second, teacher education programs have the potential to provide experiences where (pre)service teachers can examine the factors that influence their beliefs about students (for example, SES, ability levels, ethnic background). Building awareness of how such beliefs are formed and influence teacher behaviour may provide a grounding with which future teachers may exercise some caution in their own practice.

## FUTURE DIRECTIONS

Before discussing implications for further research, a number of limitations of the present study need to be addressed. First, only teachers' self-reported practices were taken into account. Although leading to a deeper understanding

of teachers' experiences, self-reports may not fully reflect the actual practices they employ in their classrooms. Future research could address this by including classroom observations of teacher behaviours. Also, the specific characteristics of Dutch educational context and the small sample size – however representing a broad diversity of teaching practices and school populations – may limit the generalizability of our findings. Further research is needed to examine whether similar patterns can be observed across different educational contexts. Nevertheless, the outcomes of the present study point to a number of important implications for future research.

The outcomes show that theoretical notions and teacher views of what motivates students are clearly distinct. The beliefs held by teachers suggest that controlling teaching practices – for some students and under certain conditions – may not be as harmful as suggested in literature and may sometimes even be beneficial. As this study focused on teacher perceptions, more research is needed to unravel whether different student characteristics actually relate to the strength of students' needs and the ways teachers can meet students' needs. Moreover, future research is especially needed to uncover how socio-emotional aspects of the teacher-student relationship may interact with controlling teaching practices. It thus seems important to not only consider *what* teaching strategies teachers use, but also *how* these are enacted.

# CHAPTER 5

## STUDENT PERCEPTIONS OF INNOVATIVE LEARNING AND THEIR LEARNING PREFERENCES: THE ROLE OF GENDER, SOCIO-ECONOMIC BACKGROUND AND ETHNICITY [1]

**Abstract** The present study examined how students' perceptions of innovative learning (i.e., collaborative, self-directed, and authentic learning, and innovative assessment), their learning preferences, and the alignment between students' perceptions and learning preferences varied by gender, ethnicity, and socio-economic background. Forty-five grade six students and their teachers from nine different primary schools that varied in student population and instructional methods were interviewed. Student perceptions of the actual learning environment were mostly in line with teacher perceptions. No gender differences in students' perceived or preferred learning environment were found. Ethnic minority and low SES students, in comparison to ethnic majority, middle, and high SES students, perceived their learning environment as more traditional and were also more likely to express preferences for traditional education. For most students, perceptions of the actual learning environment aligned well with their learning preferences, and no group differences in alignment were found. These outcomes suggest that teachers adapt their instructional strategies to their student population to create an optimal person-environment fit for their students.

**Keywords**: *learning preferences, learning environment, student background, gender*

[1] Based on Hornstra, L., Van der Veen, I., Peetsma, T., & Volman, M. (submitted). Student perceptions of innovative learning and their learning preferences: The role of gender, socio-economic background and ethnicity

## INTRODUCTION

Learning preferences have been referred to as "inclinations toward the type of strategies and structures students believe would optimize their learning" (Ellison, Boykin, Tyler, & Dillihunt, 2005, p. 699). These can refer to preferences for individual or collaborative learning (Johnson & Engelhard, 1992), but as learning environments can also vary with respect to the extent of self-directed learning (i.e., Land & Hannafin, 2000), authentic learning (i.e. Wilson, 2011), or type of assessment (i.e., Birembaum & Dochy, 1996), the definition of learning preferences can also be extended to those aspects of the learning environment. Collaborative, self-directed, and authentic learning and innovative assessment are aspects of innovative learning environments. They can be contrasted with traditional learning environments (Simons, Van der Linden, & Duffy, 2000). The correspondence between students' learning preferences and their actual learning environment has been argued to have implications for students' progress (Fisher & Fraser, 1983; Johnson & Engelhard, 1992). When schools are able to provide students with a learning context that fits with their needs, skill levels, interests, and preferences, they provide an optimal environment to motivate and engage students in learning. This has been referred to as the 'person-environment fit' perspective (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, Eccles, & Sameroff, 2000).

Students from ethnic minority and economically disadvantaged backgrounds are persistently characterized by lower achievement outcomes (e.g., Park & Sandefur, 2010; Roeleveld et al., 2011) and according to some, in recent years also a gender gap has emerged to the disadvantage of boys (e.g., Driessen & Van Langen, 2011; Epstein, Elwood, Hey, & Maw, 1998; Steinmayr & Spinath, 2008; Tyre, 2006). Eccles and Roeser (1999) argued that understanding group differences with regard to gender, ethnic and socio-economic background as an extension of the 'person-environment fit' perspective will help to explain such differences in school achievement. In the present study, it will therefore be examined to what extent students' perceptions of their actual learning environment and their learning preferences vary by gender, ethnicity, and socio-

economic background. Moreover, it will be examined whether alignment between students' learning preferences and their learning environment differs by gender, ethnicity, and socio-economic background.

## INNOVATIVE LEARNING

Collaborative learning, self-directed learning, authentic learning, and innovative forms of assessment can be grouped under the umbrella term innovative learning. Innovative learning (IL) refers to a variety of instructional approaches –also been referred to as new learning, natural learning, powerful learning, or active learning – that allow for a more active role of students in their own learning process compared to more traditional approaches (Hickey, 1997; O'Donnell, 2012; Schuitema, Peetsma, & Van der Veen, 2011; Simons, Van der Linden, & Duffy, 2000; Wilson, 2011). In recent decades, IL environments have become increasingly popular (Wilson, 2011). The theoretical basis of IL lies within socio-constructivism, which describes a wide range of views that share the basic assumption that learning can be defined as an active and social process of constructing knowledge and meaning rather than merely a process of knowledge transmission (Duffy & Cunningham, 1996; Gijbels, Van de Watering, Dochy, & Van den Bossche, 2006; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011). In practice, most schools cannot be considered strictly innovative or strictly traditional. IL is a multifaceted concept which entails multiple aspects and schools can vary along a continuum on each of these aspects (Duffy & Cunningham, 1996; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011)

The principles of socio-constructivism suggest a different role for teachers in IL environments in comparison to traditional learning environments. Teachers in IL environments focus more on collaborative learning in order for students to construct knowledge in interaction with each other (De Corte, Verschaffel, & Masui, 2004; De Lisi & Golbeck, 1999; Gijbels et al., 2006). Moreover, in IL environments, students mostly direct their own learning in contrast to more traditional learning environments in which the teacher mostly directs the

learning process (Bolhuis, 2003; Fosnot, 1996; Gijbels et al., 2006; Land & Hannafin, 2000; Phillips, 1995; Simons et al., 2000; Wilson, 2011). Furthermore, teachers in IL environments provide students with authentic and meaningful learning experiences to elicit a more active learning process in their students (Gijbels et al., 2006; Loyens & Gijbels, 2008; Roelofs & Terwel, 1999). Finally, in order for assessment to connect to these innovative ways of teaching, assessment methods differ from traditional assessment methods. Teachers in IL environments assess student progress in formative rather than summative ways (Birenbaum & Dochy, 1996; De Kock et al., 2004).

### PERCEPTIONS OF THE ACTUAL LEARNING ENVIRONMENT, LEARNING PREFERENCES, AND STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

In line with the 'person-environment fit' perspective (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, et al., 2000), students will be more motivated and perform better when their learning environment suits them in terms of their interests, needs, developmental stage, skill levels, learning style. Fisher and Fraser (1983) for example found that students' achievement was higher when students' preferences on various dimensions, such as teacher control and innovation, corresponded better to students' perceived learning environment. More recently, Chang, Hsiao, and Chang, (2011) demonstrated that when learning environments in science teaching were congruent with students' preferences for student- or teacher-centered education, motivation and achievement were higher. Likewise, Könings, Brand-Gruwel, and Van Merriënboer (2011) showed that more alignment between students' perceptions of actual and preferred degree of powerful learning was associated with higher motivation.

Students' learning preferences are important because the effects of education on students are not unidirectional. Students shape their own experiences based on "what they bring to school" and through their subjective perceptions of the learning context (Eccles & Roeser, 1999). Learning environment research has increasing focused on students' perceptions of the environment (e.g., Dart,

Burnett, Purdie, Boulton-Lewis, Campbell, & Smith,, 1999; Fraser, 2012; Gijbels et al., 2006). In research that includes student perceptions of the learning environment, often these perceptions of the learning environment are aggregated (Frenzel, Pekrun, & Goetz, 2007). Although this can provide insight on shared views of the learning environment, students' perceptions of the same learning environment can also differ from each other, as they are formed by a combination between the actual learning context and individual student characteristics (Dochy, Segers, Van den Bossche, & Struyven, 2005). In order to examine whether the actual learning environment, as well as the fit with students' learning preferences, differs by gender, ethnicity, and socio-economic background, it is important to first establish the extent to which student perceptions of their learning environment represent a shared view. By comparing individuals' student perceptions of the actual learning environment within a class with each other and to the perceptions of their teachers, an attempt is made in the present study to get a better understanding of the extent to which the learning environment indeed varies between students and whether there is a relationship with students' background characteristics.

Understanding group differences with regard to gender, ethnic and socio-economic background in perceptions of the actual learning environment, learning preferences, and the alignment between those as an extension of the 'person-environment fit' perspective could thus help to explain differences in school achievement (Eccles & Roeser, 1999). Previous research has given some indications that the extent to which IL fits with students individual characteristics may indeed be related to students' gender, ethnicity, and socio-economic background. IL environments require active, self-directive, and collaborative types of participation and the academic language required for such learning activities is less typical for interactions in low SES and ethnic minority families (Leseman & De Jong, 2001; Leseman, Scheele, Mayo, & Messer, 2007). Particularly those students from lower socio-economic backgrounds or ethnic minority students with backgrounds from collectivist cultures are believed to be accustomed to more directive, stringent parenting styles (Frosh, 2004; Hermans, 1995; Shucksmith, Hendry, & Glendinning, 1995; Stewart & Bond, 2002).

Types of communication that are required in IL, such as asking why questions or expressing a different opinion, are less likely to be encouraged in their home environments (Heemskerk, Brink, Volman, & Ten Dam, 2005; Pels, Nijsten, Oosterwegel, & Vollebergh, 2006). Moreover, in some socio-economic and ethnic groups, students' and parents' learning preferences have been found to be quite incongruent with learning preferences of teachers (Tyler, Boykin, Miller, & Hurley, 2006). Due to such differences in language, communication style or cultural values, it has been argued that ethnic minority or low SES students may profit less from learning environments in which they have to self-direct their own learning (Kitayama, Snibbe, Markus, & Suzuki, 2004; Littlewood, 1999; Markus & Kitayama, 1991). Iyengar and Lepper (1999) for example showed that higher levels of student responsibility increased task motivation of Anglo American children, but Asian children were more motivated when trusted authority figures made choices for them. Likewise, a study by Chizhik (2001) showed that African-American students participated less and learned less from collaborative learning than European-American students due to differences in communication style.

Research on gender differences with respect to IL has mainly focused on students' learning preferences. Johnson and Engelhard (1992) for example found that girls tend to prefer collaborative learning more than boys. Philbin, Meier, Huffman, and Boverie (1995) studied learning environment preferences of adult learners, and found men to prefer more traditional learning environments. These results suggest that boys may prefer traditional education whereas girls may prefer IL. Demirbas and Demirkan (2007), on the other hand, did not find any differences in learning style preferences between male and female learners. In their review, Severiens and Ten Dam (1997) described that gender differences in learning styles are quite small on average, but there is much variation across studies.

## RESEARCH QUESTIONS

The present study is aimed at examining whether students' perceptions and learning preferences with regard to various aspects of IL (i.e. collaborative learning, self-directed learning, authentic learning, and innovative assessment versus traditional education), as well as the alignment between perceptions and preferences vary by gender, ethnicity, and socio-economic background. To first get an understanding of the extent to which students' perceptions of the learning environment represent a shared understanding, the following research question was addressed:

1. To what extent is there agreement with regard to their perceptions of the actual learning environment as traditional or innovative of students within the same class and agreement with their teachers' perception?

Next, the following research questions were examined:

2. To what extent do student perceptions of the actual learning environment as traditional or innovative relate to students' gender and socio-economic and ethnic background?
3. To what extent do students' preferences for traditional or innovative learning relate to students' gender and socio-economic and ethnic background?
4. Do discrepancies between students' perceptions of the learning environment as traditional or innovative and their preferences for traditional or innovative learning relate to students' gender and socio-economic and ethnic background?

To get a more thorough in-depth understanding of student (and teacher) perceptions of the actual and preferred learning environment, these were examined qualitatively through interviews.

# METHOD

## PARTICIPANTS

Nine grade six teachers and 45 students at nine different schools throughout the Netherlands participated in this study. In grade six, students are eleven to twelve years old. It is the last year of primary school. The sample was selected from a sample of 37 classes from 25 schools participating in a larger quantitative study about innovative teaching methods. Compared to other countries, schools in the Netherlands are rather autonomous with regard to their instructional approach, as long as they meet certain achievement standards (Scheerens, Luyten, & Ravens, 2011). Consequently, differences can arise in instructional approaches between schools and schools can vary from traditional to innovative. Selection for this study was based on self-report teacher questionnaires with the intention the sample would represent maximum variation from teachers that used mostly innovative to mostly traditional teaching methods.

Ethnicity was one of the main background characteristics in this study and there were relatively few ethnic minority students participating. Therefore, within each class, five students were selected through stratified sampling based on students' ethnicity. All ethnic minority students in classes with only few ethnic minority students were selected for interviewing and in classes with many ethnic minority students, they were randomly selected. Beforehand, schools had provided information on the ethnic origin of students' parents. In total, 14 ethnic minority students were selected. The ethnic majority students ($N$=31) were selected randomly from each class. Even though the group of ethnic minority students consists of students with backgrounds in a wide variety of countries, these students have in common that they are from immigrant backgrounds, usually speak Dutch as a second language, and on average these groups usually tend to lag behind in school compared to Dutch background students (Driessen, Mulder, Ledoux, Roeleveld, & Van der Veen, 2009). Because of these similarities, these students are often treated as one group in educational policies and they were treated as one group in the analyses

of this study as well. Twenty-four students were boys, twenty-one students were girls. Parental educational level was considered an indication of students' socio-economic status (SES). Three groups were distinguished based on the highest educational level attained by either of the parents, low SES ($N$=9), middle SES ($N$=14), and high SES ($N$=15). Of seven students SES information was missing. Six of these students were students with an ethnic minority background. For the other students, it was found that ethnicity was equally distributed over the SES groups ($\chi^2(2)=2.282$, $p=0.319$). Table 1 provides background information on the participating students separately for each class.

Table 1.
*Frequencies of background characteristics of participating students*

| | Gender | | Ethnic background | | Socio-economic status | | | |
|---|---|---|---|---|---|---|---|---|
| School | boy | girl | majority | minority | low | middle | high | unknown |
| A | 2 | 3 | 3 | 2 | 0 | 2 | 3 | 0 |
| B | 3 | 2 | 4 | 1 | 0 | 3 | 2 | 0 |
| C | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 5 |
| D | 2 | 3 | 4 | 1 | 1 | 3 | 1 | 0 |
| E | 4 | 1 | 4 | 1 | 3 | 1 | 1 | 0 |
| F | 2 | 3 | 4 | 1 | 2 | 0 | 3 | 0 |
| G | 3 | 2 | 3 | 2 | 1 | 2 | 0 | 2 |
| H | 2 | 3 | 4 | 1 | 1 | 1 | 3 | 0 |
| I | 3 | 2 | 5 | 0 | 1 | 2 | 2 | 0 |
| Total | 24 | 21 | 31 | 14 | 9 | 14 | 15 | 7 |

## INTERVIEWS

A single semi-structured in-depth interview was conducted with each student and each teacher. Halfway through the school year, they were interviewed at their own schools by either the main researcher or a trained research assistant.

The student interviews lasted 25 to 40 minutes and teacher interviews lasted 45 to 60 minutes. The advantage of using interviews for this study is that participants could describe in their own words how they perceived the learning environment and express how they would prefer their learning environment to be. Moreover, conducting interviews allowed for elaboration by the participants and allowed the interviewer to check whether questions were understood and ask for explanations or clarifications.

During the interviews, the students and teachers were presented with four similar vignettes (see appendix A) describing schools that varied from very traditional to very innovative on different aspects of innovativeness (i.e., collaborative learning, self-directed learning, authenticity of learning, and use of innovative assessment). The aim of the vignettes was to create a common understanding of these aspects of innovativeness. To gain insight in perceptions of the actual learning environment, the participating teachers and students were asked to indicate for each aspect to what extent their learning environment resembled the schools from the vignettes and they were encouraged to give explanations and examples. Moreover, after each vignette, students were asked whether they would prefer the more traditional or more innovative school on the vignettes, and why they would prefer that. Again, students were encouraged to give explanations and examples.

## CODING

All interviews were transcribed for analysis. All interviews were conducted in Dutch and analysed in Dutch. NVivo 9.2 was used to code and organise the data. NVivo allows for blind coding and cross-tabulation afterwards. Consequently, student and teacher responses could be coded blindly without regard for the background characteristics of the students, to prevent potential bias.

For each vignette, student and teacher perceptions of the learning environment were coded in three possible categories: 1) mostly traditional, 2) mixed (combination of traditional and innovative), and 3) mostly innovative. A coding

format with three categories was found to be the most suitable, because many responses, especially student responses, were not fine-grained enough to code into more categories. A detailed description of how responses on each aspect of IL were coded is provided in appendix B. Table 2 gives examples of perceptions on different aspects coded as traditional, mixed, and innovative.

Table 2.

*Examples of perceptions on different aspects of the learning environment coded as traditional, mixed, or innovative*

| Perception | Fragment of response |
|---|---|
| Traditional | *"We mostly have [tests] . . . . And we don't have such a thing like a portfolio. . . . We get a report card, with grades and sometimes letters."* (School G, boy, Dutch, low SES, response on innovative assessment) |
| Mixed | *"We have a calendar with weekly assignments so to say. And we get instruction for math and language. Beforehand we have to finish that, but we can decide ourselves what we want to do first . . . . But when we're doing math and language, everything else has to give way."* (School H, student 2, boy, Dutch, high SES, response on self-directed learning) |
| Innovative | *We do [collaborate] a lot . . Shorter and longer assignments. . . . We always pick a leader, and a [note taker] and together we have to work on the task. . . . . We did that for example with math, with an assignment on ice skating."* (School E, boy, ethnic minority student, low SES, response on collaboration) |

Moreover, after each vignette, students were asked about their preferred learning environment. They were asked which type of instruction they would prefer and why. In line with the coding of the perceptions of the actual learning environment, the preferences were also coded as 11) mostly traditional, 2) mixed (combination of traditional and innovative), and 3) mostly innovative. Appendix B also provides a detailed description of the coding of the preferences. Table 3 gives examples of students' learning preferences coded as traditional, mixed, and innovative.

The first author and the trained research assistant both coded 10% of the interview data independently. Full agreement was reached on 68% of individual codes. The statements where full agreement was not reached were discussed. After examining and discussing disagreements again and refining the coding scheme further, another 11% of interview data was then independently recoded and final inter-coder agreement was 85%. Subsequently, all data was coded by the first author according to the refined coding scheme.

Table 3.

*Examples of learning preferences with regard to different aspects of the learning environment coded as traditional, mixed, or innovative*

| Preferences | Fragment of response |
|---|---|
| Traditional | *"Yes, we have to make quite a lot of tests. . . . I think it's handy. . . And it's not like I'm going to cry if I make a mistake. When I have a test, I put in more effort and I'll think really hard. And I'll get high grades, which I'll than be proud of."* (School C, girl, ethnic minority student, SES unknown, response on innovative assessment) |
| Mixed | *"Sometimes I prefer to work alone, than I can concentrate better, but I also like to work together . . . I don't really like making an assignment or preparing a presentation together, cause you have to adjust to how the other one wants to do it. When you work alone, you can do it as you like. . . . But you can learn very much from working together. When one person knows a lot, you can learn from that person ."* (School H, girl, ethnic minority student, high SES, response on collaborative learning) |
| Innovative | Question: *"What if your school would look more like school A and you get to decide when you want to work on a subject? How would you feel about that?"*<br>Student: *"We used to do that, but I like this much better. Like I said before, it's nicer when you can plan it yourself. For example, when you are writing together with the whole class, and you don't feel like it, you'll probably won't do your best. And now you can just plan it yourself, when you want to do it, and that is much nicer."* (School D, girl, Dutch, medium SES, response on self-directed learning) |

## ANALYSES

After coding, first the correspondence between students within the same class in their perceptions of the actual learning environment was examined. For each separate aspect of innovativeness, Spearman's rank correlation for all pairs of students within the same class was calculated and averaged. The correspondence between students and their teachers was examined through calculating Spearman's rank correlation for each aspect of innovativeness. Through qualitatively examining the content of the interviews by comparing responses in classes with varying degrees of agreement, an attempt was made to explain differences between teachers and students, or students within the same class.

Next, it was examined how student perceptions of the actual learning environment and their preferences for innovative versus traditional learning related to student gender, ethnicity, and socio-economic background. Because the number of responses was too small to examine group differences for each aspect of innovativeness separately, it was examined whether the frequency of responses on all four aspects related to background characteristics. For both student perceptions and their preferences, each student had a maximum of four responses coded (as traditional, mixed, or innovative). These responses were cross-tabulated with student gender, ethnicity, and socio-economic background. Chi-square tests indicated whether students' perceptions and preferences significantly related to their background characteristics.

Finally, discrepancies between students' perceptions and their learning preferences were indirectly derived from the coding of their perceptions and learning and were compared for each aspect of innovativeness. Because the number of responses was too small to examine group differences in discrepancies for each aspect of innovativeness separately, for each student, the average discrepancy was calculated. These scores can thus be considered continuous as they are formed by averaging multiple indicators. Again, the content of the interviews was examined for a more in-depth understanding, by comparing responses with varying degrees of discrepancies. To compare the

size of the average discrepancy score across groups, t-tests were conducted for comparing ethnic minority and majority students and boys and girls. To compare the three SES groups, a one way ANOVA test was conducted.

## RESULTS

Table 4 shows the descriptive statistics of each aspect of innovativeness for students and teachers separately. The results demonstrate that for collaborative, self-directed, and authentic learning, student and teacher perceptions ranged from traditional to innovative. With regard to innovative assessment, variation was smaller, as none of the students or teachers described the assessment practices to be innovative. All teachers regularly administered formal tests and felt required to do so because of official regulations, like teacher E indicated *"We are obliged to do formal assessments three times a year."*.

Table 4.

*Percentages and frequencies of perceptions of Collaborative Learning (CL), Self-directed learning (SD), Authentic Learning (AU), and Innovative Assessment (IA), displayed separately for students (N=45) and teachers (N=9)*

| | Students' perceptions | | | Teachers' perceptions | | |
|---|---|---|---|---|---|---|
| | Traditional % (*N*) | Mixed % (*N*) | Innovative % (*N*) | Traditional % (*N*) | Mixed % (*N*) | Innovative % (*N*) |
| CL | 11.1% (5) | 33.3% (15) | 55.6% (25) | 33.3% (3) | 11.1% (1) | 55.6% (5) |
| SD | 31.1% (14) | 31.1% (14) | 37.8% (17) | 33.3% (3) | 11.1% (1) | 55.6% (5) |
| AU | 17.8% (8) | 62.2% (28) | 20.0% (9) | 11.1% (1) | 66.7% (6) | 22.2% (2) |
| IA | 55.6% (25) | 42.2% (19) | 0.00% (0) | 66.7% (6) | 33.3% (3) | 0.00% (0) |

Table 5 provides an overview of correlations between different aspects of innovativeness. Student perceptions on collaborative, self-directed, and authentic learning correlated positively to each other. Student responses on innovative assessment did not correlate significantly with the other aspects of innovativeness, which may relate to the small range in scores. With regard to teacher responses, different aspects of innovativeness correlated significantly with each other, suggesting that different aspects of innovativeness were rather consistent with each other.

Table 5.
*Spearman rank correlations between the different aspects of IL for students (above the diagonal) and teachers (below the diagonal).*

| | CL | SD | AU | IA |
|---|---|---|---|---|
| CL | - | 0.60* | 0.31* | 0.24 |
| SD | 0.92* | - | 0.43* | 0.23 |
| AU | 0.59$^{+}$ | 0.59$^{+}$ | - | 0.08 |
| IA | 0.61$^{+}$ | 0.61$^{+}$ | 0.27 | - |

** $p < 0.01$*, $p < 0.05$, $^{+}$ $p < 0.10$.

## AGREEMENT BETWEEN TEACHER AND STUDENT PERCEPTIONS OF ACTUAL LEARNING ENVIRONMENT

It was examined to what extent perceptions of the learning environment of students within the same class corresponded to each other and to their teachers' perception. Table 6 shows Spearman rank correlations for agreement between students within the same class and the agreement between teachers and students for each aspect of innovativeness.

Table 6.

*Spearman rank correlations for agreement between students within the same class and between teachers and their students.*

| | Agreement students [2] | Agreement teacher and students |
|---|---|---|
| CL | 0.39 | 0.44* |
| SD | 0.80 | 0.80** |
| AU | 0.19 | 0.24 |
| IA | 0.53 | 0.59** |

** $p < 0.01$*, $p < 0.05$, $^{+}$ $p < 0.10$.

For collaborative learning, Spearman's rank correlation was 0.44 ($p$=.002) for agreement between teachers and their students and 0.39 for agreement between students within the same class, indicating that there was moderate agreement on the level of collaborative learning. As indicated by the frequencies, teachers were a bit more likely to describe the learning environment as high in collaboration than students. Only at one school, school G, there was low agreement between the teacher and her students. The students indicated a medium to high level of collaboration (scored as mixed or innovative) whereas this teacher indicated a low level of collaboration. From the responses it seemed like this teacher and her students had a different frame of reference. In this particular instance, the students felt they worked together relatively often, mostly because they were working together on a bigger group assignment at the time of our visit. However, such group assignments were very exceptional at this school, according to the teacher. It furthermore appeared that this teacher was used to a much higher level of collaboration at her previous school, as illustrated below.

> *"I come from a school like school B, this is not common here, we're working on that. . . . Collaboration is at a minimum here."* (Teacher G)

[2] Significance of the agreement between students could not be indicated, as they are formed by averaging the Spearman correlations between students within classes.

With regard to self-directed learning, Spearman's rank correlation was 0.80 ($p$<.001) for agreement between teachers and their students and also 0.80 for agreement between students, indicating that there was high agreement on the level of self-directed learning. Furthermore, also for self-directed learning, teachers seemed a bit more likely than students to rate the learning environment as innovative.

The agreement on authentic learning between teachers and their students was not significant ($r_s$=0.24; $p$=.108). The agreement between students within the same class was also quite low ($r_s$=0.19). These results indicate that students differed in their perceptions of authentic learning. Some students felt that what they learned connected to their daily lives and to real world situations, whereas other students within the same class did not share that feeling, suggesting that the level of authenticity is something that can differ for individuals or can be differently perceived, rather than an objective classroom characteristic. This is illustrated by the statements below by two students from the same class who were both asked whether the lessons or assignments were ever about things that happened to them in real life.

> Student 1: *"No, actually never"* (School B, student 1, boy, Dutch, high SES )
>
> Student 2: *"Yes, because … sometimes people come into the classroom and tell us about food, or the police tells us about traffic."* (School B, student 2, girl, Dutch, medium SES )

Finally, there was moderate agreement between teachers and their students ($r_s$=0.59, $p$<.001) and between students within the same class ($r_s$=0.53) on innovative assessment. In conclusion, the degree of agreement between teachers and students varied by aspect of innovativeness, but with the exception of authentic learning, teachers and students showed moderate to high agreement on different aspect of innovativeness.

## STUDENTS' PERCEPTIONS OF THE ACTUAL LEARNING ENVIRONMENT AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

Because the number of responses was too small to examine group differences for each aspect of innovativeness separately, it was examined whether the frequency of responses on all four aspects related to background characteristics. Each student had four responses coded, one for each vignette, only for one student one of the four responses could not be coded, making the total number of responses 179. Most responses of students on their perceptions of the actual learning environment were coded as mixed, i.e., in between innovative and traditional ($N$=76), while responses coded as traditional ($N$=52) or innovative ($N$=51) were both coded a little less frequently.

First, a comparison was made between boys and girls. Figure 1a shows the proportion of responses indicating traditional, mixed, or innovative perceptions of the learning environment. Although boys were twice as likely as girls to perceive their learning environment as traditional on the various aspects (32% of responses coded as traditional versus 16%), results showed that the differences between boys and girls were not significant ($\chi^2(2)=5.73$, $p=0.057$), suggesting that boys and girls seemed to perceive features of the learning environment in a rather similar matter.

Next, it was examined whether perceptions of the learning environment related to students' ethnicity. Figure 1b shows the proportions of responses coded as traditional, mixed, or innovative for both groups separately. Results demonstrated that ethnic minority students were more likely to perceive aspects of their learning environment as traditional and less likely to perceive their learning environment as innovative, compared to majority students ($\chi^2(2)=13{,}26$, $p=0.001$). A similar pattern was found for socio-economic status ($\chi^2(4)=10.16$, $p=0.038$). As shown figure 1c, low SES students were more likely to perceive the actual learning environment as traditional and less likely to perceive it as innovative compared to middle and high SES.

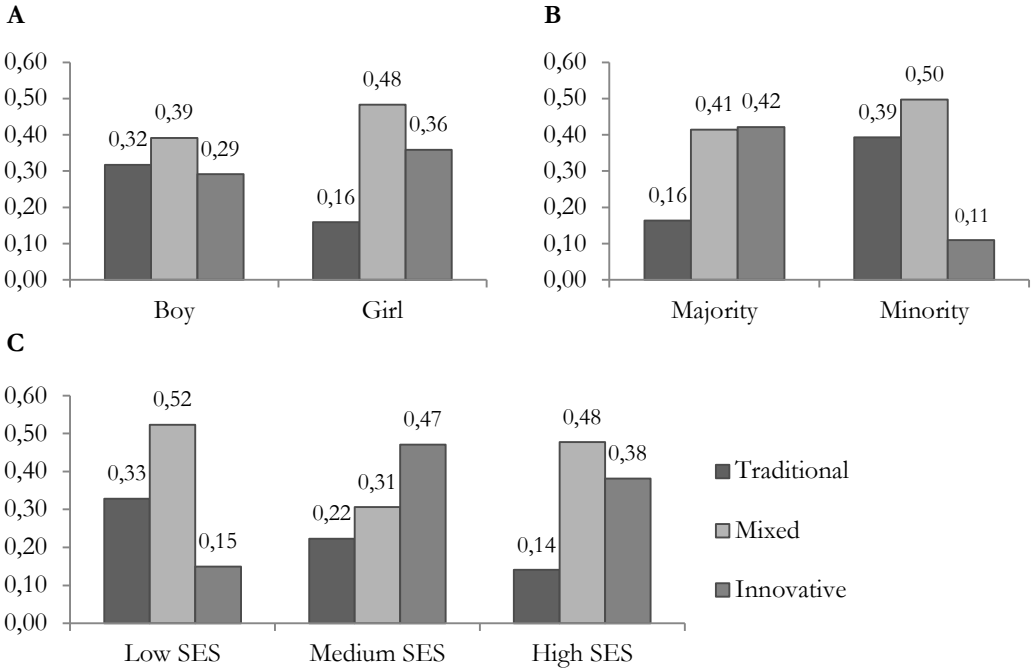



Figure 1. *Student perceptions of the actual learning environment by gender (a), ethnic background (b), and socio-economic status (c).*

## STUDENTS' LEARNING PREFERENCES AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

After being presented with the vignettes and indicating their perceptions of their learning environment, students were also asked about the type of learning environment they would prefer. In total 153 responses were coded. Several students found it difficult to express a preference and therefore 27 responses could not be coded. In general, students' responses did not demonstrate a clear preference for traditional (*N*=45), mixed (*N*=56) or innovative learning (*N*=52). Further examination of the interview responses revealed that especially those students that were familiar with different approaches were able to express what they preferred most. One student for example had transferred from a more

traditional to a more innovative school. She preferred the innovative learning environment at her new school, although she found it harder to keep up.

> *"I came here in grade four. Before, we went along with the teacher, got a lot of instruction and videos. Here, that's less, you have to work more independently."*
>
> Question: *"What do you prefer?"*
>
> *"I prefer this, I can more easily focus my attention. When I have to listen to someone for a period of time, it becomes boring. . . . But I find it hard to work really fast, it's difficult to finish everything in time."* (School A, girl, Dutch, high SES )

At another school, school C, teaching methods were more innovative in the previous year, especially with regard to self-directed learning, but that school had changed to a more traditional approach. Some students in the class preferred that they were allowed to plan their work themselves, while others saw more merit in the traditional approach.

> *"Last year, we got our own planner. There were a couple of different subjects you had to do, and they had to be finished at the end of the week. But now, all of us work together on one subject. . . . And some students just said they were done. Even when they were not finished, they got a mark."*
>
> Question: *"Do you think that's the reason you're not doing that anymore?"*
>
> *"I don't know, but what we do now, is for example, you get a language or math task. And you can see, how you are doing, whether your level is good. When you've got an hour, and you just finished one calculation, than you know you're not doing too well. . . . I like what we are doing now better, because last year, we had so much time with everything, the whole day, than some tasks were just finished quickly. . . . Now I just know how much time I have and how much I have to do, and when I'm done really late, I know I find it hard. . . . Last year, then we were working on all different subjects, history and everything. And when I was fast in mathematics, I went to work on something else directly. But not now, now when I finish with math, I can browse to the next chapter in the book or read through the book some more."* (School C, girl, ethnic minority student, SES unknown )

Also for student preferences, it was not possible to examine group differences for each aspect of innovativeness separately. First, gender differences in learning preferences were examined. Figure 2a displays the proportion of responses coded as traditional, mixed, or innovative, separately for boys and girls. Both boys and girls expressed preferences ranging from traditional to innovative. Boys more often expressed a preference for traditional learning than girls, whereas girls more often expressed for innovative learning, but these differences were not found to be significant ($\chi^2(2)=3.25$, $p=0.197$). However, the direction of these small differences correspond with previous research on learning styles (i.e., Johnson & Engelhard, 1992; Philbin, et al., 1995).

In line with their perceptions of the actual learning environment, ethnic minority students were more likely to prefer traditional learning and less likely to prefer innovative learning in comparison to majority students ($\chi^2(2)=10.59$, $p=0.005$). This is displayed in figure 2b. Again, a similar pattern was found for socio-economic status (see figure 2c). Low SES students preferred more traditional education, while middle and high SES students were more likely to express preferences for innovative education ($\chi^2(2)=10.59$, $p=0.032$).

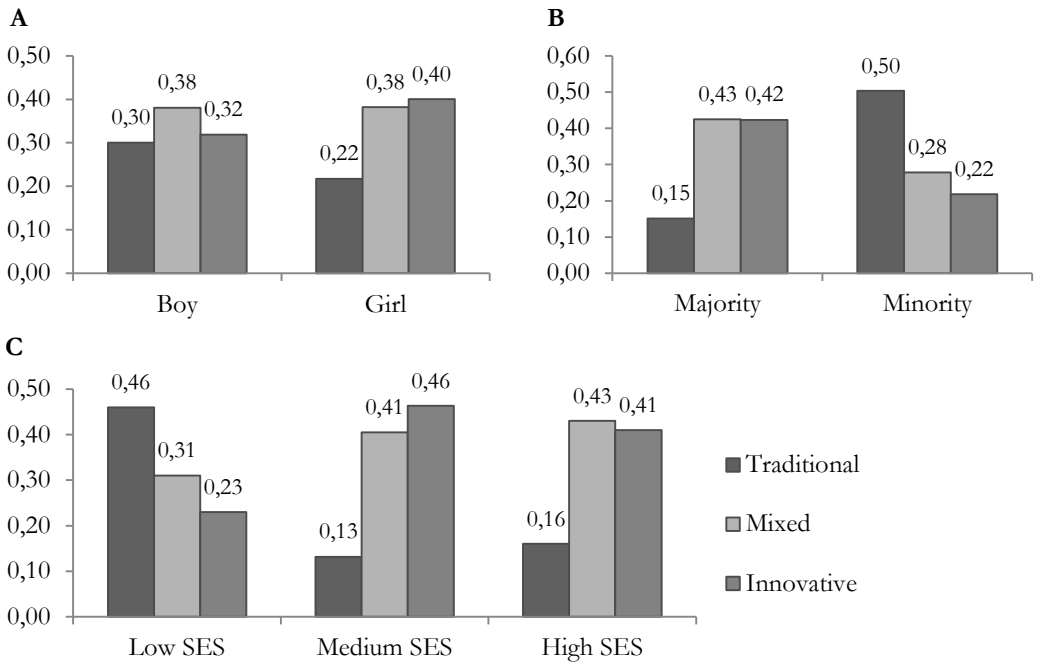



Figure 2. *Students' learning preferences by gender (a), ethnic background (b), and socio-economic status (c).*

## DISCREPANCIES BETWEEN STUDENTS' LEARNING PREFERENCES AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

Based on the perceptions and preferences that students had expressed, discrepancy scores were derived. In the following part, it was explored whether the size of the discrepancies differed by aspect of innovativeness, and it was examined to what extent discrepancies related to gender, ethnicity, and socio-economic background.

Three categories of discrepancies were derived: 1) Discrepancies were considered large when students preferred traditional education but perceived their learning environment as innovative or vice versa; 2) Discrepancies were considered small when students preferred traditional or innovative education

but perceived their learning environment as mixed or vice versa; and 3) No discrepancy was when the preferred learning environment corresponded with the perceived learning environment. Figure 3 displays the proportions of large, small and no discrepancies, separately for each aspect of IL.

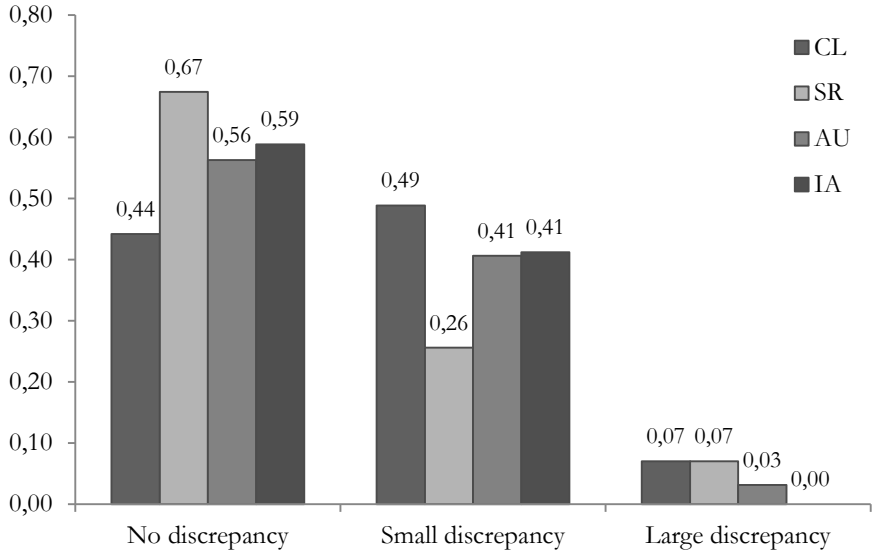



Figure 3. *Proportions of large, small and no discrepancies, separately for each aspect of IL*

As shown in figure 3, for collaborative learning, small discrepancies were most frequently found, these especially included students who would prefer less collaborative than they perceived in their learning environment. For the other aspects of IL, it was most frequently found that students' perceptions corresponded with their preferences. When discrepancies were found, they were mostly small, and found in both possible directions. Large discrepancies, indicating that students perceived their learning environment as innovative and preferred traditional learning or vice versa, were very rare for all four aspects. Thus on average, there were no large discrepancies between students' perceived

and preferred learning environment, this could suggest that students prefer how they are being taught already. The learning environment students are accustomed to – being traditional or innovative – feels comfortable to them and it may be hard to imagine anything different.

> Question: *"Why [wouldn't you like to have more responsibility]?"*
>
> *"I don't know, it is just as it is . . . don't really know."* (School G, boy, Dutch, low SES )

The lack of large discrepancies between students' perceived and preferred learning environment could also indicate that teachers adapt their practices to students' preferences. As students' preferences were found to differ by background characteristics, this would imply that teachers' instructional strategies differ for different student populations.

Finally, to examine whether the learning environment aligns better with their learning preferences for some groups of students, it was also examined whether the size of the average discrepancy for each student related to their gender, ethnicity, socio-economic background. The size of the discrepancies was not related to students' gender ($t(43)=-1.035$, $p=.307$), ethnicity ($t(43)=0.188$, $p=.852$), or socio-economic background ($F(2,35)=.114$, $p=.839$). Hence, the alignment between students' learning preferences and their perceived learning environment was comparable across groups. For different groups of students, the learning environment as they perceived it, seemed to be congruent with their learning preferences.

## DISCUSSION

The aim of the present study was to examine whether students' perceptions of their actual learning environment, their learning preferences, and the alignment between their perceptions and preferences with regard to IL varied by students' gender, ethnicity, and socio-economic background. Low SES and ethnic

minority students, were more likely to perceive aspects of their learning environment as traditional and less likely to perceive those as innovative in comparison to middle and higher SES students and ethnic majority students. This was in line with their learning preferences. Low SES and ethnic minority students also expressed higher preferences for more traditional learning, whereas middle and higher SES students and ethnic majority students expressed higher preferences for more innovative education. No gender differences were found in either perceptions or preferences. Consequently, regardless of student background characteristics, discrepancies between students' perceived and preferred learning environment were mostly absent or small, indicating that for most students, their learning environment aligned well with their learning preferences.

The differences between students from different socio-economic and ethnic background with regard to their perceptions of the learning environment suggest that either students with different background characteristics perceive the learning environment differently, or low SES and ethnic minority students are actually taught in more traditional ways. The first explanation does not seem likely given the rather substantial levels of agreement between students within the same class and with their teachers, and given the fact that the level of agreement between students in the same class did not appear to be lower in classes with a more diverse student population. Our qualitative measurement thus seemed to capture more than just individual perceptions. Moreover, according to previous literature, students from low SES and ethnic minority students are on average more accustomed to more stringent, directive ways of parenting (Hermans, 1995). In comparison to their home environment, they would more likely perceive their learning environment as innovative rather than traditional instead of the other way around.

The more traditional approach that teachers seem to use with their ethnic minority and low SES students aligns with the preferences students reported. This could suggest that these preferences are the result of how students are taught. Students may feel most comfortable in a learning environment that is familiar to them. It may be difficult to imagine a different type of learning

environment. Therefore, students may consider what they are used to – whether it is more traditional or innovative – most attractive. While this may feel comfortable, this does not necessarily represent what is most beneficial for them. However, in line with the 'person environment fit' perspective (Hunt, 1975; Roeser et al., 2002), previous research demonstrated that alignment between students' preferences and their perceived learning environment is associated with higher motivation and achievement outcomes (Chang et al., 2011; Fisher & Fraser, 1983; Könings et al., 2011). A second explanation for the alignment between students' perceptions of their learning environment and their learning preferences would thus be that teachers adapt their instructional strategies to their students' preferences. As students' learning preferences were found to vary by ethnicity and socio-economic background, this is in line with previous research indicating that teachers adjust their instructional methods to their perceptions of their student population (Archambault et al., 2012; Hornstra, Mansfield, Van der Veen, Peetsma, & Volman, 2012; Rubie-Davies, et al. 2012). The outcomes of the present study seem to correspond to previous research (Hornstra et al., 2012) suggesting that teachers instruct classes with more ethnic minority and low SES students in more directive and traditional ways, whereas classes with more majority and higher SES students are taught more in more innovative ways. As such teachers may try to create an optimal person-environment fit for their students. It seems that teachers are succeeding in creating alignment between students' preferences and the learning environment they offer them for students from different backgrounds.

Previous research with older participants demonstrated gender differences in learning preferences with boys being more attracted to traditional forms of learning and girls to more innovative learning (i.e., Johnson & Engelhard, 1992; Philbin, et al., 1995). Although not statistically significant, the differences between boys and girls in the presents study, were in a similar direction and suggested that boys were more likely to prefer traditional learning over innovative learning. It may be that these gender-specific differences do occur, but are not as pronounced in younger children. Gender differences in learning preferences may develop over time.

In the present study also student and teacher perceptions of the learning environment were compared. Only few studies have actually examined agreement between student and teacher perceptions of the learning environment and those studies have found the level of agreement to range from low to moderate agreement (e.g. Ben-Chaim, & Zoller, 2001; Den Brok, Bergen, & Brekelmans, 2006; Kunter & Baumert, 2006). Other studies found that in general the level of agreement between teachers and students tends to be rather high, although teachers tend to rate the learning environment a bit higher on constructivist instruction than their students (Fraser, 1982; 2012). The results of the present study indicated that agreement between students within the same class and with their teacher varied for different aspects of innovativeness, suggesting that not all aspects of the learning environment are equally suitable to assess through either teacher or student perceptions. Nonetheless, even though agreement varied by aspect, in general, there was substantial agreement on these aspects, indicating that teachers and students have a shared understanding of the learning context.

A few limitations of the present study need to be acknowledged. SES information of almost half of the ethnic minority students was missing. In the present study, no conclusions could therefore be drawn with regard to the interplay between SES and ethnicity. Moreover, the number of participating students and teachers was relatively small and the outcomes of the present study may be specific to the Dutch educational context. Furthermore, although outcomes suggest that traditional or innovative learning may be differentially effective for student with different ethnic or socio-economic backgrounds, because of the differences in learning preferences, larger scale studies are needed to examine whether effectiveness of innovative learning indeed depends on students background characteristics.

Given these limitations, the outcomes of the present study need to be interpreted with caution. Even though considerable differences were found between students from different ethnic and socio-economic backgrounds, there were also substantial individual differences within these groups. Student background is thus an important factor to take into account, but adapting to

students' needs and preferences always needs to be based on careful analysis of individual students' needs. Only then teachers will be able to create a good 'person-environment fit' for all students and create a learning environment in which all students, regardless of their background, can prosper.

# CHAPTER 6

## INNOVATIVE LEARNING AND DEVELOPMENTS IN MOTIVATION AND ACHIEVEMENT IN UPPER PRIMARY SCHOOL [1]

**Abstract** Although previous research has shown the potential of innovative learning for enhancing motivation and learning outcomes, further understanding is needed on which aspects of IL are most effective and whether these are equally motivating for different types of students. The present study investigated how developments in students' motivation and achievement related to different aspects of innovative learning (i.e., authentic learning, collaborative learning, and focusing on self-regulation), and whether these relations varied by students' background characteristics. A sample of 722 grade five students from the Netherlands (average age eleven years old) and their teachers completed questionnaires during four measurements from grade five to grade six. Autoregression analyses were performed. Results showed both positive and negative relations between IL and developments in students' motivation and achievement, indicating that IL is not a unidimensional construct. Furthermore, the effectiveness of different aspects of IL depended on students' gender and social and ethnic background characteristics.

**Keywords**: *innovative learning, motivation, achievement, gender, socio-economic and ethnic background*

[1] Based on Hornstra, L., Van der Veen, I., Peetsma, T., & Volman, M. (resubmitted). Innovative Learning and Developments in Motivation and Achievement in Upper Primary School.

## INTRODUCTION

Research on motivation has been concerned with the interaction between the learning environment and motivation for many years to find out which types of learning environments are best suited to foster students' motivational needs (Weiner, 1990). As students get older, their motivation for school tends to decline. Many studies have shown such a decline for students in secondary school (Gottfried, Fleming, & Gottfried, 2001; Gottfried, Marcoulides, Gottfried, & Oliver, 2009; Martin, 2009; Van der Veen & Peetsma, 2009; Wilson, 2011) and there are indications that at least some aspects of motivation already start to decline during primary school (Gottfried et al., 2001; Hornstra, Van der Veen, Peetsma, & Volman, 2012; Jacobs, et al., 2002). This may be due, partly, to factors associated with the learning context (Pintrich, 2000; Urdan & Schoenfelder, 2006), including teachers' instructional approach (Volet & Järvelä, 2001; Wigfield, Eccles, Schiefele, & Roeser, 2008). Innovative learning (IL) environments were created, aimed at enhancing students' motivation and thereby learning (Volet & Järvelä, 2001; Wilson, 2011). Research on the relation between IL and developments in motivation is however scarce and especially longitudinal research in this area is lacking. Moreover, not much is known on how successful IL is for students with varying backgrounds. As students enter the school with different background characteristics, they can differ from each other in their learning needs. What constitutes an optimal learning environment may therefore relate to students' backgrounds. The present study examined how developments in motivation and achievement during the last two years of primary school differ between schools that vary in several aspects of innovativeness and whether these associations are related to students' gender, ethnic, and socio-economic background.

### INNOVATIVE LEARNING

Innovative approaches to learning refer to a wide variety of instructional approaches – which have also been referred to as 'new learning', natural

learning, powerful learning, or active learning – that allow for a more active role of students in their own learning process compared to more traditional approaches (Blok, Oostdam, & Peetsma, 2006; Bolhuis & Voeten, 2001; De Kock, Sleegers, & Voeten, 2004; Hickey, 1997; Schuitema, Peetsma, & Van der Veen, 2011; Simons, Van der Linden, & Duffy, 2000). The theoretical basis of IL lies within socio-constructivism, which is a term that describes a wide range of views. These views share the basic assumption that learning can be defined as an active and social process of constructing knowledge and meaning rather than merely a process of knowledge transmission (Duffy & Cunningham, 1996; Gijbels, Van de Watering, Dochy, & Van den Bossche, 2006; Loyens & Gijbels, 2008; Phillips, 1995). In constructivist learning environments, responsibility of the learning process is transferred to students, in contrast to more traditional learning environments in which the teacher mostly directs the learning process (Bolhuis, 2003; Fosnot, 1996; Phillips, 1995; Simons et al., 2000; Wilson, 2011).

In practice, most schools cannot be considered strictly constructivist or strictly traditional. The term constructivism is a multifaceted concept, it entails multiple aspects and for each of these aspects, schools can vary along a continuum (Duffy & Cunningham, 1996; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011). Below three main characteristics of IL environments – collaborative learning, authenticity of learning, and a focus on self-regulation of the learning process – will be described further. These principles of socio-constructivism suggest a different role for teachers. To create active, social learning, teachers in IL environments therefore focus on developing students' *self-regulated learning* skills for students to be able to direct their own learning (Boekaerts, 1996; Bolhuis, 2003; De Corte, Verschaffel, & Masui, 2004; De Kock et al., 2004; Gijbels et al., 2006; Schuitema et al., 2011; Wilson, 2011), they focus on *collaborative learning* in order for students to construct knowledge in interaction with each other (De Corte et al., 2004; De Lisi & Golbeck, 1999; Gijbels et al., 2006), and they provide students with meaningful *authentic learning* experiences to activate an active process of learning (Gijbels et al., 2006; Loyens & Gijbels, 2008; Roelofs & Terwel, 1999).

*Focus on self-regulated learning.* IL can be distinguished from more traditional approaches is the extent to which there is a focus on the process of learning rather than solely on the learning outcomes (Boekaerts, 1997; Bolhuis, 2003). IL tends to emphasize the process by which students learn in order to enhance learning and self-regulatory skills (Boekaerts, 1997; Loyens & Gijbels, 2008). Pintrich (2004) defined self-regulated learning as a complex process of four phases: orientation, monitoring, control, and reflection and during each of these four phases, students regulate their cognitions, motivation, and behaviours, while also regulating context conditions. Several meta-analyses (see for example, Dignath, Buettner, & Langfeldt, 2008; Hattie, Biggs, & Purdie, 1996) showed that teaching students self-regulatory skills effectively enhances learning processes and outcomes.

*Collaborative learning.* According to socio-constructivist views, the process of knowledge construction is not an individual process (De Corte et al., 2004; De Lisi & Golbeck, 1999; Gijbels et al., 2006; Wilson, 2011). Vygotsky (1978) argued that learning is a process of negotiating meaning, which implies that learning is a social process which takes place in interaction. Learners construct their knowledge in interaction with the teacher, learning materials, and with each other. Therefore, in IL environments, students often learn collaboratively. The effectiveness of collaboration between students, mostly referred to as collaborative or cooperative learning has been studied extensively (Johnson & Johnson, 2009; Johnson, Johnson, & Stanne, 2000; Simons et al., 2000). Results indicate that collaborative learning enhances classroom relations (Tolmie et al., 2010) as well as learning outcomes (e.g., Johnson & Johnson, 2009; Johnson et al., 2000; Slavin, 1980) , but only when certain conditions are met. Just working together in groups is not enough for collaborative learning to be successful. Students also need to share common goals, have individual accountability and learning tasks must be suitable for collaboration and even more, evoke true collaboration between students (Johnson & Johnson, 2002; Johnson & Johnson, 2009; Johnson et al., 2000; Slavin, 1980; Tomcho & Foels, 2012).

*Authentic learning.* Furthermore, IL environments can also be characterized by authentic learning (O'Donnell, 2012; Roelofs & Terwel, 1999; Wilson, 2011).

From this perspective, learning is considered a situated activity as it is bound to the specific social and cultural context in which learning occurs (Anderson, Reder, & Simon, 1996). As a result, it is assumed that learning contexts need to be authentic for transfer of knowledge from the classroom to the outside world to occur. In authentic learning contexts, learning is connected to students' real worlds outside of school and the learning content matches the interests and needs of students (Cronin, 1993; O'Donnell, 2012). Research has shown that embedding content into an authentic context is very important for successful learning (Hattie et al., 1996; O'Donnell, 2012).

Over the last decades, various forms of IL have become very common in educational practice (Blok et al., 2006; Duffy & Cunningham, 1996; Hickey, 1997; Phillips, 1995; Simons et al., 2000; Volet & Järvelä, 2001). In the Netherlands, in 1998-1999, IL has been implemented nationwide in secondary education, and also many primary schools have adopted IL approaches (Blok et al., 2006). It is believed that IL offers students a more motivating learning environment (Blok et al., 2006; Boekaerts & Niemivirta, 2000; O'Donnell, 2012). However, not much research has actually examined whether IL actually promotes long-term developments in students' motivation and achievement and which specific aspects of IL are most effective in this respect.

## INNOVATIVE LEARNING AND MOTIVATION

IL is believed to enhance students' motivation for learning. It has been argued that innovative learning environments invite students to experiment and explore, to learn with and from each other, and to be responsible for their own learning and therefore have great potential for enhancing students' motivation for school (Blumenfeld, 1992; Boekaerts & Niemivirta, 2000; Hickey, 1997; Newmann, Marks, & Gamoran, 1996). Although most learning environment research has focused on achievement outcomes (see for example, Creemers & Kyriakides, 2007; Newmann et al., 1996), several studies have examined the relationship between IL and students' motivational beliefs and motivated behaviour. Motivational beliefs entail many different aspects that refer to

students' values. These include task-orientation, referring to the extent to which students are oriented towards mastering and understanding school-related tasks (Pintrich, 2000). Task-orientation has been consistently associated with adaptive learning behaviors and outcomes, such as higher engagement in learning and more use of deep learning strategies (see for example Anderman, Austin, & Johnson, 2002, Maehr & Zusho, 2009 for reviews), as well as higher achievement outcomes (see the meta-analysis by Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). Motivational beliefs also refer to students' feelings of competence and especially self-efficacy is a much studied competence related construct(Wigfield & Eccles, 2000). It refers to judgments about one's capabilities to carry out actions that are needed to complete academic tasks successfully (Bandura, 1977). Self-efficacy 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).

Studies on IL and motivational beliefs have mostly found positive relations. Thoonen, Sleegers, Oort, Peetsma, and Geijsel (2010) for example found authentic learning to relate positively to task-orientation of upper primary school students, aged nine to twelve. Likewise, Salinas and Garr (2009) found upper primary school students to be more task-oriented and self-efficacious in learner-centered primary schools when compared to traditional schools. Moreover, Nie and Lau (2010) examined how innovative and traditional learning in English class related to students' task-orientation and self-efficacy among a sample of secondary school students in Singapore. Their results indicated that an emphasis on authentic learning positively predicted both students' task-orientation and self-efficacy. Likewise, Lau (2012) showed instructional practices that included authentic learning and a focus on self-regulation to enhance motivational beliefs of high school students. In a study with nine to eleven year old students that specifically focused on reading instruction in third, fourth, and fifth grade, it was found that concept oriented reading instruction, which included collaboration and authentic learning, increased students interest in reading in comparison to traditional instruction

(Guthrie, Wigfield, & VonSecker, 2000; Wigfield & Guthrie, 2010). Furthermore, in a study by Hänze and Berger (2007), cooperative learning was compared to traditional direct instruction in twelfth grade science classrooms and found students to feel more competent and to be more intrinsically motivated in cooperative learning environments than in traditional learning settings. Moreover, in their meta-analysis Dignath et al. (2008) showed that interventions that included process-oriented and collaborative learning considerably enhanced several aspects of motivational values and self-efficacy.

Furthermore, Hickey, Moore, and Pellegrino (2001) examined how an intervention based on principles of constructivism as well as broader educational constructivist reforms related to developments in motivation of grade five students. In schools that had changed their methods to align with constructivist principles, students' interest in school remained stable over time, while students in schools that were less reformed showed a decrease in interest. Results from the intervention showed a different picture, however. Students in the authentic learning condition reported more negative competence beliefs and found the learning tasks less relevant than students in the traditional learning environment. Other studies also found some negative relations between IL and motivational beliefs. In the aforementioned study by Thoonen et al. (2010), process-oriented instruction related negatively to students' overall feelings of well-being.

Besides motivational beliefs, students' motivated behaviour is an important aspect of motivation. A few studies focused specifically on the relation between the learning environment and students' motivated behaviour. An important aspect of motivated behaviour is students' investment of effort. Investment can vary in terms of the intensity, persistence, and onset of school related behaviours (Maehr & Braskamp, 1986; Pintrich, 2004; Schunk, Pintrich, & Meece, 2008). Schuitema et al. (2011) examined how IL was related to developments in students' school investment in the first year of secondary school. No differences were found between schools that were classified as either innovative or traditional. However, when students themselves perceived the learning environment as more authentic, they showed more growth in

school investment. Furthermore, a number of studies showed that IL leads to increased use of self-regulated strategies (Lau, 2012) and deeper approaches to learning, meaning cognitive processes that lead to a deeper understanding of information (Baeten, Kyndt, Struyven, Dochy, 2010; Nie & Lau, 2010; Marton, & Säljö, 2011; Rozendaal, Minnaert, & Boekaerts, 2005), while traditional teaching was associated with higher level of surface approaches to learning, referring to strategies such as selective memorization (e.g., Baeten et al., 2010; Gow & Kember, 1993; Nie & Lau, 2010; Trigwell, Prosser, & Waterhouse, 1999). Moreover, in their meta-analysis Dignath et al. (2008) also showed that interventions aimed at collaborative and process-oriented learning increased students' use of metacognitive strategies.

Most of the studies described above are either cross-sectional or based on intervention studies. Although results appear to be somewhat mixed, most outcomes seem to show that IL indeed has the potential of enhancing motivational beliefs and increasing motivated behaviours. In addition, longitudinal research in real-life classroom settings can contribute to our understanding of how IL relates to long-term developments in motivation and achievement. In longitudinal studies, it can be examined whether *developments* in students' motivation and achievement are associated with the level of innovativeness of a school after taking into account students' initial level of motivation or achievement. This can further our understanding on how the learning context contributes to the observed decline in motivation (e.g., Jacobs et al., 2002) Furthermore, more research is needed to examine which specific aspects of IL are most effective and whether these aspects of IL are equally motivating for different types of students.

### INNOVATIVE LEARNING AND STUDENTS' SOCIAL AND ETHNIC BACKGROUND

Whether or not IL is beneficial for students may relate to their socio-economic or ethnic backgrounds. Hornstra, Van der Veen, Peetsma, and Volman (2013) examined developments in students' motivation in the last years of primary school and found that school investment developed less positively for ethnic

minority students and students with less educated parents than for other groups. A mismatch between these students' home environments and their learning environment may account for these findings as students' success in school is related to having a good person-environment fit (Roeser, Eccles, & Sameroff, 2000). IL environments require active, self-directive, and collaborative types of participation and the academic language required for such learning activities is less typical for interactions in low SES and ethnic minority families (Leseman & De Jong, 2001; Leseman, Scheele, Mayo, & Messer, 2007). Research has indicated that students from more socio-economically disadvantaged backgrounds on average show less self-regulated learning behaviours (Cleary & Chen, 2009; Pappas, Ginsburg, & Jiang, 2003; Rowe, 2006). This could either suggest these students they would benefit less from IL environments as they lack the necessary skills. On the other hand however, this can also imply that for these students it is especially important to focus on developing self-regulatory strategies.

Furthermore, particularly those students from lower socio-economic backgrounds or ethnic minority students with backgrounds from collectivist cultures are believed to be accustomed to more directive, stringent parenting styles (Frosh, 2004; Hermans, 1995; Shucksmith, Hendry, & Glendinning, 1995; Stewart & Bond, 2002). Types of communication that are required in IL, such as asking why questions or expressing a different opinion, are less likely to be encouraged in their home environments (Heemskerk, Brink, Volman, & Ten Dam, 2005; Pels, Nijsten, Oosterwegel, & Vollebergh, 2006). Due to such cultural differences, traditional teacher-centered learning environments have been argued to suit students from ethnic minority backgrounds better than learning environments in which students self-direct their own learning (Kitayama, Snibbe, Markus, & Suzuki, 2004; Littlewood, 1999; Markus & Kitayama, 1991). Iyengar and Lepper (1999) for example showed that higher levels of student responsibility increased motivation of Anglo American children, but Asian children were more motivated when to perform a task when trusted authority figures made choices for them.

Results on differential effects of IL are not conclusive. Some have found that students from lower socio-economic backgrounds would benefit mostly from a highly structured, teacher-centered learning environment with much direct instruction, but that is also authentic to them (Guthrie, 1989; Hopkins & Reynolds, 2001). Other studies only found small or no differences between different ethnic or socio-economic groups with regard to their motivational beliefs and behaviours (e.g., Salinas & Garr, 2009; Opdenakker & Minnaert, 2011). It was also found that students at schools with a more disadvantaged student population achieved slightly higher in more traditional learning environments (Overmaat & Ledoux, 2002). The few studies that have examined differential effects of IL for students with different social or ethnic backgrounds were mostly cross-sectional and focused mainly on achievement outcomes. Not much is known about the effectiveness of IL for different groups with regard to long-term developments in both achievement and motivation. To understand whether IL contributes to existing achievement and motivational gaps between students with varying backgrounds and gender, , it is important to identify whether these background characteristics relate to the effectiveness of different learning environments.

### INNOVATIVE LEARNING AND STUDENTS' GENDER

More recently, boys have increasingly attracted attention in research and practice, as there are indications that their educational careers throughout the years may be less successful than that of girls (Driessen & Van Langen, 2011; Epstein, Elwood, Hey, & Maw, 1998; Tyre, 2006; Van Houtte, 2004;). Furthermore, Hornstra et al. (2013) showed that toward the end of primary school boys investment in school declined, while girls' investment increased. It has been argued that learning styles differ by gender (Severiens & Ten Dam, 1997) and that there are gender-specific processes involved in the development of motivation for school (Van Houtte, 2004), due to which some learning environments may not be equally motivating or effective in enhancing achievement outcomes for boys and girls. Johnson and Engelhard (1992) for

example found girls tend to prefer collaborative learning more than boys. Philbin, Meier, Huffman, and Boverie (1995) studied learning environment preferences of adult learners, and found men to prefer traditional learning environments. Demirbas and Demirkan (2007) on the other hand, did not find any differences in learning style preferences between male and female learners. Few studies have actually examined whether the effectiveness of learning environments differs by gender. One exception is an intervention study by Timmermans, Van Lieshout, and Verhoeven (2007) that found girls' motivation and achievement in mathematics increased in an IL environment, whereas boys' achievement slightly increased in a traditional learning environment. These outcomes could suggest that IL environments are more effective for girls and less able to suit the educational needs of boys. However, more empirical research is needed to examine whether IL environments are differentially effective for boys and girls.

## RESEARCH QUESTIONS

The present study aimed at examining how IL relates to developments in motivation as well as achievement, and how this may differ across groups. The following research questions were addressed:

1. Does the extent of innovativeness of the learning environment (i.e., authenticity of the learning environment, collaborative learning, and focusing on self-regulation) positively relate to developments in students' motivation and achievement during the last two years of primary school?
2. To what extent do relations between innovativeness of the learning environment and developments in students' motivation and achievement during the last two years of primary school vary by gender, social and ethnic background?

# METHOD

## DESIGN

From grade five to six, four waves of data were collected. Students filled out self-report questionnaires on their motivational beliefs twice a year: at the beginning of both years and halfway through both years. During each of these measurements, the participating teachers rated the motivated behaviour of each of their students. Furthermore, at the beginning of both school years, teachers reported on the extent to which the learning environment could be described as innovative. Table 1 shows a schematic overview of the data collection.

Table 1.
*Schematic overview of waves of data collection*

| Wave | Measure | Grade | Months |
|---|---|---|---|
| 1 | Teacher reports of the learning environment<br>Student questionnaire on motivational beliefs<br>Teacher ratings of students' motivated behavior | Beginning grade 5 | September-October, 2009 |
| 2 | Student questionnaire on motivational beliefs<br>Teacher ratings of students' motivated behavior | Half way grade 5 | January - March, 2010 |
| 3 | Teacher reports of the learning environment<br>Student questionnaire on motivational beliefs<br>Teacher ratings of students' motivated behavior | Beginning grade 6 | September-October, 2010 |
| 4 | Student questionnaire on motivational beliefs<br>Teacher ratings of students' motivated behavior | Half way grade 6 | January -March, 2011 |

## PARTICIPANTS

*Students.* A sample of 722 primary school students from 37 classes of 25 schools across the Netherlands participated in this study. At the first measurement, all students were in grade five and their average age was eleven years. Three-hundred-and-sixty-one students (50.0%) were boys and 361 students (50.0%)

were girls. Schools furthermore provided information on the ethnic origin of the parents. A dichotomy was made between ethnic majority and ethnic minority students, based on the country of origin of the mother. When the student was from a single-parent family, ethnicity was determined based on the ethnicity of this parent (see table 2). Even though the group of ethnic minority students consists of students with backgrounds in a wide variety of countries, these students have in common that they are from immigrant backgrounds, usually speak Dutch as a second language, and on average these groups usually tend to lag behind in school compared to Dutch background students (Driessen, Mulder, Ledoux, Roeleveld, & Van der Veen, 2009). Because of these similarities, these students are often treated as one group in educational policies and they were treated as one group in the analyses of this study as well. Likewise, students with parents from another European or western country were included in the group of ethnic majority students. To ascertain that the subgroups within the ethnic majority and minority were indeed similar, additional analyses of variance (MANOVA's) were performed and results demonstrated that the different ethnicities within the groups of ethnic minority and majority students did not differ in terms of their task-orientation, self-efficacy, school investment at each measurement, and only showed slight differences (small effect sizes) in math or reading comprehension achievement at a few of the measurements.

Information on parental educational level was also provided by the schools. Although socio-economic status also depends on family income and occupation (Duncan, Featherman, & Duncan, 1972), parental educational level is considered a suitable proxy of SES, as it is one of the most stable aspects of SES and moreover it is also an indicator of family income (Sirin, 2005). Three groups were distinguished based on the highest educational level attained by either of the parents (see table 2). From 121 students, SES information was missing.

Analyses showed a small but significant relation between the ethnicity and SES of the students in this sample (*Spearman's Rho*=.112, $p<.05$). In comparison to ethnic majority students, ethnic minority students are significantly more likely

to be in the low SES group ($\chi^2(2) = 8.706$, $p<.05$). There appears to be some, but not full overlap between SES and ethnicity. Therefore we decided to examine the role of SES and ethnicity separately with regard to the relation between the learning context and motivation and achievement, while controlling for the other background variables.

Table 2.
*Ethnic background and socio-economic status of participants in the study*

| Ethnic background | N | % | SES (parental education) | N | % |
|---|---|---|---|---|---|
| Ethnic majority (Dutch, other Western and European countries) | 644 | 89.2% | Low: maximum lower vocational education | 96 | 16.0% |
| Ethnic minority (Morocco, Turkey, Dutch-Antilles, Surinam, Iraq and other non-western countries) | 78 | 10.8% | Middle: maximum intermediate vocational education | 301 | 50.1% |
| | | | High: higher education | 204 | 33.9% |

*Teachers.* Thirty-seven grade five and 31 grade six teachers participated. There was a higher number of grade five teachers than grade six teachers, because three classes continued with the same teacher in grade six, one school combined two grade five groups in the following year to one grade six group and two grade six teachers did not fill out the questionnaire. The grade five teachers were on average 37 years old, 68% women and 32% men. The grade six teachers were on average 41 years old, 63% women and 37% men. All teachers were of Dutch origin.

## INSTRUMENTS

During each data collection wave, questionnaires were administered to the students and their teachers during regular class time. All items were on a 5-

point Likert scale ranging from totally not applicable to me (1) to totally applicable to me (5) The following measures were included in the study.

*Motivation.* Motivational beliefs were measured through self-reports. Although self-report measures have some limitations, as they are susceptible to self-presentation bias and require students to be fully aware of their underlying motivational beliefs (Jobe, 2000), the internal nature of motivational beliefs makes students' own ratings a suitable measure of motivation. Motivation related behaviour, however, is a visible part of motivation and was therefore assessed through teacher ratings of students' school investment. Table 3 shows the instruments that were included.

Table 3.
*Example items, number of items, and reliabilities of the scales used in the study*

| Scale | Example items | *N* of items | Reliability m1 – m5 |
|---|---|---|---|
| *Task-orientation* from Goal Orientation Questionnaire (Seegers, Van Putten, & De Brabander, 2002) | *"I like when I learn something new in school."* | 5 | .65 - .82 |
| *Academic self-efficacy* from 'Patterns of Adaptive Learning Survey' (PALS) (Midgley et al., 2000) | *"I can do even the hardest work in school if I try."* | 6 | .70 - .84 |
| *School investment* from COOL student profiles (Jungbluth, Peetsma, & Roeleveld, 1996) | *"This student quickly gives up when he/she does not succeed."* *"This child works accurately"* | 3 | .82 - .85 |

*Math achievement.* Students' mathematics achievement scores on national tests from the Dutch National Institute for Educational Measurement (CITO) were obtained from the school records. These tests are administered to students in the Netherlands twice a year to monitor student progress. For each student, four scores on these tests were available: from the end of 4th grade until the middle of 6th grade. Two different versions of this test were used by the schools

because the test was updated by the CITO in 2007. Some schools (*N*=6) in the sample used the older version, while other schools (*N*=18) administered the updated version to their students. The scores on both versions were not comparable; therefore scores of the older version were transformed so that the mean and standard deviation of the scores on the older version of the test were the same as those of the newer version. One school did not administer CITO tests to their students (*N*=30). The CITO math tests are found to have good reliability ($a > 0.80$) (Evers, 2002; Feenstra, Kamphuis, Kleintjes, & Krom, 2010).

*Reading comprehension achievement.* Students' reading comprehension scores on the national tests (CITO) were also obtained from the school records. The reading comprehension tests are administered once a year to monitor student progress. For each student, three scores on these tests were available: from the middle of fourth grade until the middle of sixth grade. The reading comprehension tests were updated by the CITO in 2008. Sixteen schools in the sample used the older version, while eight schools administered the updated version to their students. Both versions of the test use the same scale and indeed analyses showed scores on both versions to be comparable (Feenstra et al., 2010). Both versions had good reliability ($a > 0.80$) (Evers, 2002; Feenstra et al., 2010).

*Innovative learning.* To gain insight into the extent students' learning environments could be considered innovative, teacher perceptions of the learning environments were measured through a questionnaire. At the beginning of the school year, the teachers in both grade five and six reported the extent to which the learning environment was innovative. The questionnaire on IL consisted of three scales, collaborative learning, authentic learning, and focus on self-regulated learning (see table 4), which are three key aspects of IL (e.g., Blok et al., 2006; Boekaerts, 1997; Bolhuis, 2003; Roelofs, Visser, & Terwel, 2003; Simons et al., 2000). Collaborative learning was measured by a scale by Thoonen et al. (2010). The items represent the extent to which teachers let students collaborate according to the conditions that make

Table 4.

*Example items, number of items, and internal consistency (α) at measurement 1 and 3 of the IL scales*

| Scale | Items | *N* of items | α (m1; m3) |
|---|---|---|---|
| Collaborative learning | During group work, I ask students to come to a joint result.<br>I let students present their assignments to each other.<br>After group work, I discuss in class how their collaboration in groups went.<br>Assessment of group work is the result of joint deliberation between me and the students.<br>I invest effort in good group assignments. | 5 | 0.63; 0.77 |
| Authentic learning | I give students opportunities to share information or their own experiences in class.<br>I adapt the content of my lessons as much as possible to the students' perceptions of their environments.<br>When choosing topics, I use students' ideas.<br>I choose examples that relate to students. | 4 | 0.76; 0.74 |
| Focus on self-regulation | I explain to students that the approach of discovering the right answer is at least as important as the answer itself<br>I ask students how they came to a solution.<br>I encourage students to discover the solution to a problem themselves.<br>When a student asks a question, I don't give them the answer, but I give them directions.<br>I try to teach in such a way that students think about the way to approach a learning task.<br>I focus on how to study for a test.<br>Students are allowed to decide how they want to work on tasks.<br>I let students decide the pace in which they want to work.<br>I give students freedom to plan their own work. | 9 | 0.75; 0.71 |

collaborative learning effective, i.e. sharing common goals, individual accountability and learning tasks must evoke collaboration (Johnson & Johnson, 2002; Slavin, 1980). Authentic learning was also measured by a scale by Thoonen et al. (2010). The items represent the extent to which learning is related to students' lives, their interests and needs of students (Cronin, 1993). The third scale, focus on self-regulation, consisted of a combination of five items by Thoonen et al (2010) and four items from the Questionnaire on Instructional Behaviour (Lamberigts & Bergen, 2000). The items represent the extent to which teachers emphasize the process by which students learn in order to enhance learning and self-regulatory skills (Boekaerts, 1997; Loyens & Gijbels, 2008). All scales were answered on a 5-point Likert scale and demonstrated satisfactory to good reliability. Factor analyses with the data from both the grade five and grade six teachers supported the underlying factor structure of this questionnaire in these three scales. All items had factor loadings over 0.40 on the scale they represented. The use of teacher perceptions of the learning environment has been critiqued because it would be biased by teacher ideals or self-serving strategies (Wubbels, Brekelmans, & Hooymayers, 1992). However, Kunter and Baumer (2006) have investigated whether ideals or self-serving strategies indeed affected teacher perception measures and could find no evidence for that claim. They demonstrated that teacher perceptions showed considerable overlap with student measures of the learning environment in predicting student outcomes, but both types of measures also had their own unique contribution. In general, teachers tend to rate the learning environment a bit more favourable than their students, but in all, the level of agreement between teachers and students tends to be rather high (Fraser, 1982).

To furthermore validate the use of teacher questionnaires, we observed lessons at three schools and interviewed grade five teachers at nine schools that differed in the extent the teachers rated the learning environment as more innovative. A clear relation was found between the teacher reports of the learning environment and their responses in the interviews, and the actual teaching behaviours that they showed in their lessons (Koomen, Hornstra,

Peetsma, & Van der Veen, 2011). Furthermore, a year later nine grade six teachers and 45 students were interviewed. The interview responses of both the teachers and their students were coded on the level of innovativeness and these responses were significantly positively related to each other ($r$=.24 for authentic learning and $r$=.44 to $r$=.80 for other aspects of IL). Moreover, the interview responses of both teachers and their students correlated positively with responses of the teachers on the questionnaire scales. Teachers' questionnaire responses on collaborative learning correlated positively with their own interview responses as well as students' interview responses on collaborative learning ($r$=.52 and $r$=.59, respectively). The questionnaire scale on authentic learning also correlated positively with teachers' and students' interview responses on authentic learning ($r$=.26 and $r$=.43, respectively). In these interviews we also asked whether responsibility of the learning process was transferred to students, and both students' and teachers' interview responses correlated highly with all three questionnaire scales ($r$=.63 to $r$=.85) and we asked whether their assessment methods were innovative which also correlated positively with the questionnaire scales ($r$=.17 to $r$=.38).

## DATA-ANALYSES

Autoregression analyses were performed. With these analyses, it is possible to examine how a predictor relates to growth in a dependent variable from one specific time point to another, by controlling for a previous measurement of that dependent variable (Bast & Reitsma, 1997). Other types of longitudinal data analyses (for example, Latent Growth Modelling) estimate a one variable to represent overall growth from the first to the last measurement. As we examined the relations between two sets of predictors at different time points, relating those two sets to one estimate for growth was not suitable. With autoregression analyses, it was possible to examine how aspects of IL in grade five related to the initial level and growth of motivation or achievement in grade five, and how aspects of IL in grade six related to further growth after grade five.

The autoregression models were estimated using structural equation modelling with the program Mplus (Muthén & Muthén, 1998). Participants with missing values were not removed from the analyses. Instead, missing values were estimated by full-information maximum likelihood estimation (FIML). The FIML estimation is based on the assumption that missing values are missing at random (MAR). MAR assumes that missing values can be predicted from the available data. Removing all cases with missing values (listwise deletion) is based on the more strict assumption that the missing values are completely at random (MCAR).

As the number of participants did not allow for full inclusion of the measurement (i.e., factor) model of every variable, the factor scores of each variable were included as observed variables. To support this decision, the factor structure of each variable was explored and all factor models showed good fit to the data (CFI and TLI were above .95). Furthermore, before the autoregression analyses were performed, we checked for measurement invariance of the scales across measurement occasions and groups. For measurement invariance across groups (boys vs. girls, Dutch vs. ethnic minority students, and low vs. middle vs. high SES), a model was estimated for each variable in which measurement parameters were held equal across groups. Likewise, to check for measurement invariance across measurement occasions, multi-group factor analyses were performed with groups being the measurement occasions. All models fitted the data well (CFI and TLI were above .95) and fit was not significantly better in less restrictive models.

Separate autoregression models were estimated for each motivational construct and for both achievement measures. To examine how IL related to developments in motivation or achievement, autoregressive paths were estimated for each of the motivation and achievement variables, all of which were measured four times (with the exception of reading comprehension achievement, which was measured three times). Moreover, paths between IL environments and motivation or achievement were included in the model to examine whether IL contributed to motivation or achievement beyond what was predicted by a previous measurement of that variable. The level of

significance was set at 5%. See figure 1 for an example of the autoregression model for task-orientation. Comparable models were estimated for self-efficacy and school investment. Because achievement in math and reading comprehension were measured at different time points than motivation, those models looked a bit different. Figure 2 and 3 show the models that were estimated to examine the relations between IL environments and achievement in math and reading comprehension respectively.

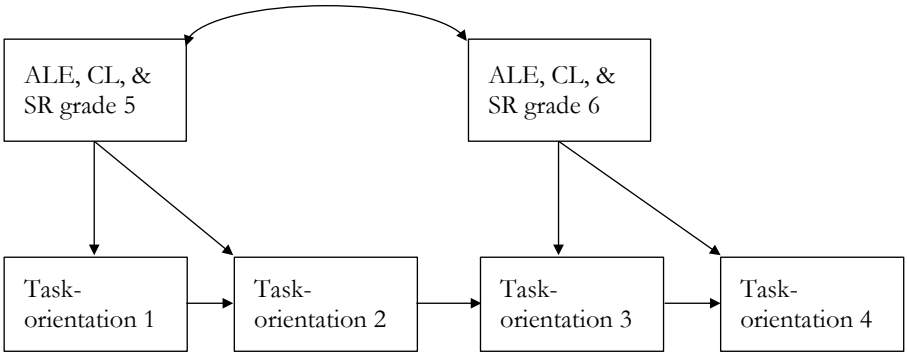



Figure 1. *Autoregression model for the relation between IL and task-orientation.*

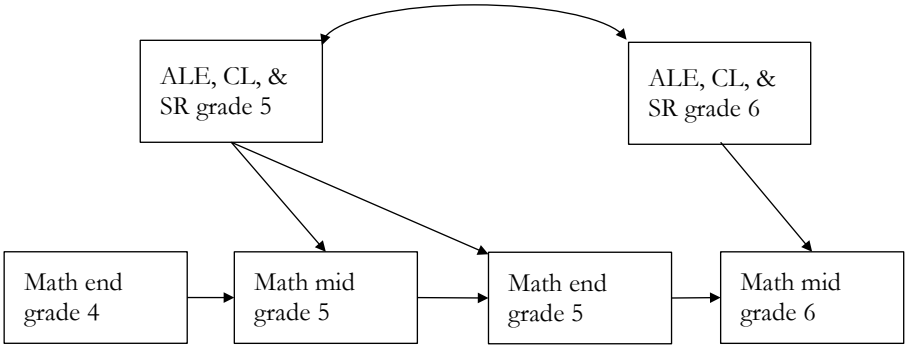



Figure 2. *Autoregression model for the relation between IL and math achievement.*

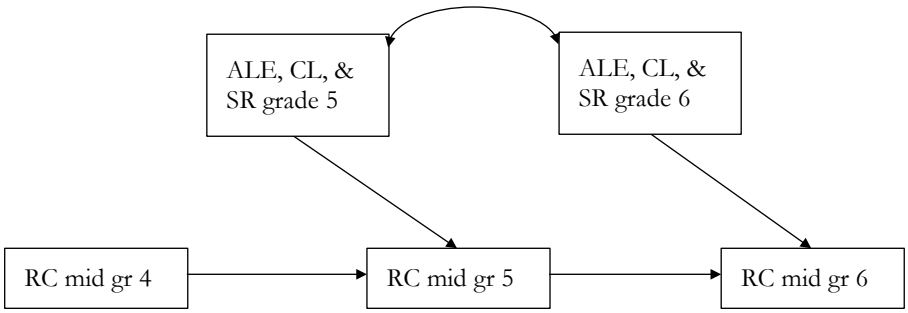



Figure 3. *Autoregression model for the relation between IL and reading comprehension achievement.*

All models were first estimated for the total group of students (research question 1) while controlling for gender, ethnicity, and SES. As the data have a nested structure (students within classes), we corrected for the multilevel structure of the data. Non-significant paths were omitted from the model to find the most parsimonious model. Model fit was determined by Chi-square difference tests, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). A significant Chi-square difference indicates whether or not model fit significantly worsened by omitting an estimate. A CFI above .90 indicates good fit of a model, and an RMSEA below .05 indicates good fit and scores between .05 and .08 indicate reasonable fit (Hu & Bentler, 1999).

Next, to answer research question 2 regarding whether relations between the learning environment and developments in motivation and achievement differed across groups, multigroup comparisons were made with groups being boys vs. girls, ethnic minority vs. majority students, and low SES students vs. middle and high SES students, while controlling for the remaining control variables. For these multigroup analyses, first a model with no equality constraints was defined. One by one, equality constraints were added to the model. Fit indices indicated whether or not model fit significantly declined by

adding the equality constraint, indicating that a parameter differed across the groups. If the model fit did not significantly worsen by adding the equality constraint, the parameter was considered equal.

To evaluate the size of the relations between learning context and developments in motivation or achievement, standardized coefficients (i.e., correlations) of the relations were calculated and the size of the effect was indicated by means of Cohen's *d*. A standardized correlation of 0.1 is indicative of a small, 0.3 a medium, and 0.5 a large correlation (Cohen, 1988).

## RESULTS

### DESCRIPTIVE STATISTICS

Table 5 provides an overview of the descriptive statistics of the total group of students and separately for boys and girls, ethnic minority and majority students, and for low, middle and high SES students. It also reports intraclass correlations (ICC) of each variable. The ICC shows the proportion of the total variance that occurs at the classroom level. It is a measure of the extent to which the values of individuals in the same group resemble each other as compared to those from different groups. The remaining variance is variance at the individual (student) level.

Table 6 displays the descriptive statistics of and correlations between the teacher variables authentic learning environment, focus on self-regulation, and collaborative learning in grade five and grade six. The correlations between aspects of IL in grade five and grade six represent the degree of correspondence between the grade five and six teacher on aspects of IL. Table 6 shows that the level of correspondence is rather low.

Table 5.

*Descriptive statistics of task-orientation (TO), self-efficacy (SE), school investment (SI), mathematics, and reading comprehension (RC) for the total group of students and by gender, ethnicity and parental educational level.*

| | | | | Gender | | | | Ethnicity | | | | Parental Education | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total group | | | Boys | | Girls | | Majority | | Minority | | Low | | Middle | | High | |
| Variable | *M* | *sd* | *ICC* | *M* | *sd* | *M* | *sd* | *M* | *sd* | *M* | *sd* | *M* | *sd* | *M* | *sd* | *M* | *sd* |
| TO start gr 5 | 4,05 | 0,54 | 0,07 | 4,04 | 0,55 | 4,06 | 0,54 | 4,03 | 0,53 | 4,24 | 0,58 | 4,19 | 0,51 | 4,08 | 0,53 | 4,01 | 0,56 |
| TO mid gr 5 | 3,93 | 0,60 | 0,04 | 3,90 | 0,63 | 3,95 | 0,56 | 3,90 | 0,59 | 4,20 | 0,59 | 4,06 | 0,54 | 3,98 | 0,60 | 3,92 | 0,63 |
| TO start gr 6 | 3,92 | 0,59 | 0,08 | 3,87 | 0,61 | 3,98 | 0,57 | 3,89 | 0,57 | 4,25 | 0,66 | 4,12 | 0,66 | 3,91 | 0,56 | 3,94 | 0,60 |
| TO mid gr 6 | 3,85 | 0,61 | 0,08 | 3,84 | 0,64 | 3,86 | 0,59 | 3,81 | 0,59 | 4,23 | 0,65 | 4,02 | 0,65 | 3,90 | 0,64 | 3,85 | 0,60 |
| SE start gr 5 | 3,62 | 0,51 | 0,04 | 3,68 | 0,50 | 3,57 | 0,51 | 3,60 | 0,49 | 3,82 | 0,57 | 3,72 | 0,55 | 3,58 | 0,49 | 3,62 | 0,50 |
| SE mid gr 5 | 3,66 | 0,57 | 0,03 | 3,73 | 0,55 | 3,58 | 0,58 | 3,63 | 0,56 | 3,95 | 0,65 | 3,82 | 0,62 | 3,56 | 0,57 | 3,69 | 0,52 |
| SE start gr 6 | 3,73 | 0,57 | 0,08 | 3,77 | 0,56 | 3,68 | 0,59 | 3,69 | 0,57 | 4,02 | 0,55 | 3,85 | 0,58 | 3,63 | 0,55 | 3,78 | 0,55 |
| SE mid gr 6 | 3,76 | 0,61 | 0,07 | 3,81 | 0,62 | 3,72 | 0,60 | 3,73 | 0,59 | 4,04 | 0,67 | 3,87 | 0,64 | 3,67 | 0,55 | 3,83 | 0,61 |
| SI start gr 5 | 3,44 | 0,93 | 0,05 | 3,19 | 0,94 | 3,68 | 0,86 | 3,46 | 0,91 | 3,21 | 1,04 | 3,42 | 1,04 | 3,25 | 0,93 | 3,60 | 0,90 |
| SI mid gr 5 | 3,44 | 0,98 | 0,11 | 3,19 | 0,98 | 3,70 | 0,90 | 3,48 | 0,94 | 3,08 | 1,23 | 3,32 | 1,21 | 3,08 | 1,00 | 3,66 | 0,87 |
| SI start gr 6 | 3,43 | 0,88 | 0,11 | 3,15 | 0,88 | 3,70 | 0,78 | 3,47 | 0,86 | 3,16 | 0,94 | 3,32 | 0,92 | 3,22 | 0,80 | 3,59 | 0,88 |
| SI mid gr 6 | 3,53 | 0,87 | 0,05 | 3,26 | 0,89 | 3,79 | 0,78 | 3,57 | 0,84 | 3,23 | 1,05 | 3,33 | 1,01 | 3,34 | 0,78 | 3,70 | 0,82 |
| Math end gr 4 | 85,78 | 15,22 | 0,26 | 88,38 | 14,73 | 82,82 | 15,25 | 86,49 | 15,20 | 79,66 | 14,06 | 83,38 | 12,65 | 87,30 | 14,03 | 91,03 | 13,80 |
| Math mid gr 5 | 95,68 | 15,56 | 0,24 | 98,07 | 15,57 | 92,95 | 15,12 | 96,26 | 15,56 | 91,08 | 14,86 | 94,70 | 9,98 | 95,94 | 15,42 | 98,91 | 15,40 |
| Math end gr 5 | 103,22 | 12,46 | 0,14 | 105,76 | 12,38 | 100,28 | 11,93 | 104,71 | 11,08 | 94,64 | 16,15 | 99,18 | 9,70 | 103,96 | 11,94 | 107,63 | 10,13 |
| Math mid gr 6 | 107,71 | 15,13 | 0,17 | 109,98 | 15,98 | 104,98 | 13,60 | 107,80 | 14,99 | 106,94 | 16,38 | 102,73 | 13,24 | 107,96 | 14,01 | 108,11 | 18,86 |
| RC mid gr 4 | 34,58 | 13,80 | 0,24 | 33,72 | 14,29 | 35,45 | 13,26 | 35,64 | 13,67 | 26,37 | 12,07 | 30,35 | 12,16 | 31,36 | 13,86 | 37,63 | 13,49 |
| RC mid gr 5 | 44,02 | 14,50 | 0,12 | 42,97 | 14,48 | 45,09 | 14,46 | 44,89 | 14,54 | 36,30 | 11,67 | 40,20 | 13,22 | 38,12 | 14,45 | 49,94 | 15,10 |
| RC mid gr 6 | 57,93 | 16,58 | 0,06 | 58,05 | 17,24 | 57,83 | 15,96 | 59,06 | 16,57 | 48,38 | 13,40 | 54,52 | 17,96 | 51,92 | 13,08 | 64,95 | 17,36 |

Table 6.
*Descriptive statistics and intercorrelations of teacher variables authentic learning environment (ALE), focus on self-regulation (SR), and collaborative learning (CL) in grade five and grade six.*

| | Descriptive statistics | | | | Correlations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *Min* | *Max* | 1 | 2 | 3 | 4 | 5 | 6 |
| Grade 5 | | | | | | | | | | |
| 1. ALE | 3.74 | 0.38 | 2.75 | 4.50 | 1.00 | | | | | |
| 2. CL | 3.68 | 0.51 | 2.80 | 5.00 | .17* | 1.00 | | | | |
| 3. SR | 3.94 | 0.34 | 3.22 | 4.56 | .12* | .51** | 1.00 | | | |
| Grade 6 | | | | | | | | | | |
| 1. ALE | 3.84 | 0.48 | 3.00 | 5.00 | .16* | .37* | .21* | 1.00 | | |
| 2. CL | 3.78 | 0.62 | 2.50 | 5.00 | -.19* | .24* | -.01 | .63** | 1.00 | |
| 3. SR | 4.00 | 0.38 | 3.44 | 4.89 | .07 | .17* | .21* | .67** | .62** | 1.00 |

*Note.* **p<.001, *p<.05.

## IL AND DEVELOPMENTS IN STUDENTS' MOTIVATION AND ACHIEVEMENT

For each aspect of motivation and achievement, a model was estimated for the total group of students and separate models for the multigroup comparisons. After omitting non-significant paths and adding equality constraints in the multigroup models, all final models showed good fit to the data (see table 7). Even though data were analysed separately for each motivational and achievement variable (as was shown in figure 1, 2, and 3), the results are presented according to the different aspects of the learning context for the sake of presenting the data in an orderly way. The relations of authenticity of the learning environment, collaborative learning, and focusing on self-regulation with motivation and achievement are displayed in figures 4, 5, and 6, respectively. In these figures, arrows represent significant relations. With regard to the multigroup comparisons, only when there were significant differences between groups, the specific results for each group are displayed. When specific groups are not explicitly mentioned, results for these groups were similar to the results of the total group. All motivational and achievement variables are included in these figures with the exception of reading comprehension, as there

were no significant relations between innovative learning and reading comprehension at any time point or for any of the groups. After the figures are displayed, the outcomes are discussed in more detail.

Table 7.
*Fit statistics of the autoregression models.*

| | Total group | Multigroup comparisons | | |
|---|---|---|---|---|
| | | Gender | Ethnicity | SES |
| Task-orientation | | | | |
| $X^2$ (df) | 13.203 (13) | 28.793 (25) | 24.652 (17) | 37.047 (31) |
| CFI | .999 | .978 | .937 | .955 |
| RMSEA | .005 | .022 | .037 | .032 |
| Self-efficacy | | | | |
| $X^2$ (df) | 11.151 (12) | 24.118 (22) | 21.271 (16) | 36.289(31) |
| CFI | 1.000 | .989 | .949 | .964 |
| RMSEA | .000 | .017 | .032 | .030 |
| School investment | | | | |
| $X^2$ (df) | 12.423 (12) | 22.702 (22) | 19.695 (17) | 28.701 (28) |
| CFI | .995 | .993 | .973 | .992 |
| RMSEA | .007 | .009 | .021 | .011 |
| Reading comprehension | | | | |
| $X^2$ (df) | 15.631 (12) | 30.868 (23) | 24.297 (18) | 39.216 (28) |
| CFI | .980 | .971 | .965 | .948 |
| RMSEA | .020 | .031 | .031 | .045 |
| Mathematics | | | | |
| $X^2$ (df) | 10.209 (12) | 19.883 (24) | 19.916 (18) | 34.143(31) |
| CFI | 1.000 | 1.000 | .990 | .972 |
| RMSEA | .000 | .000 | .017 | .023 |

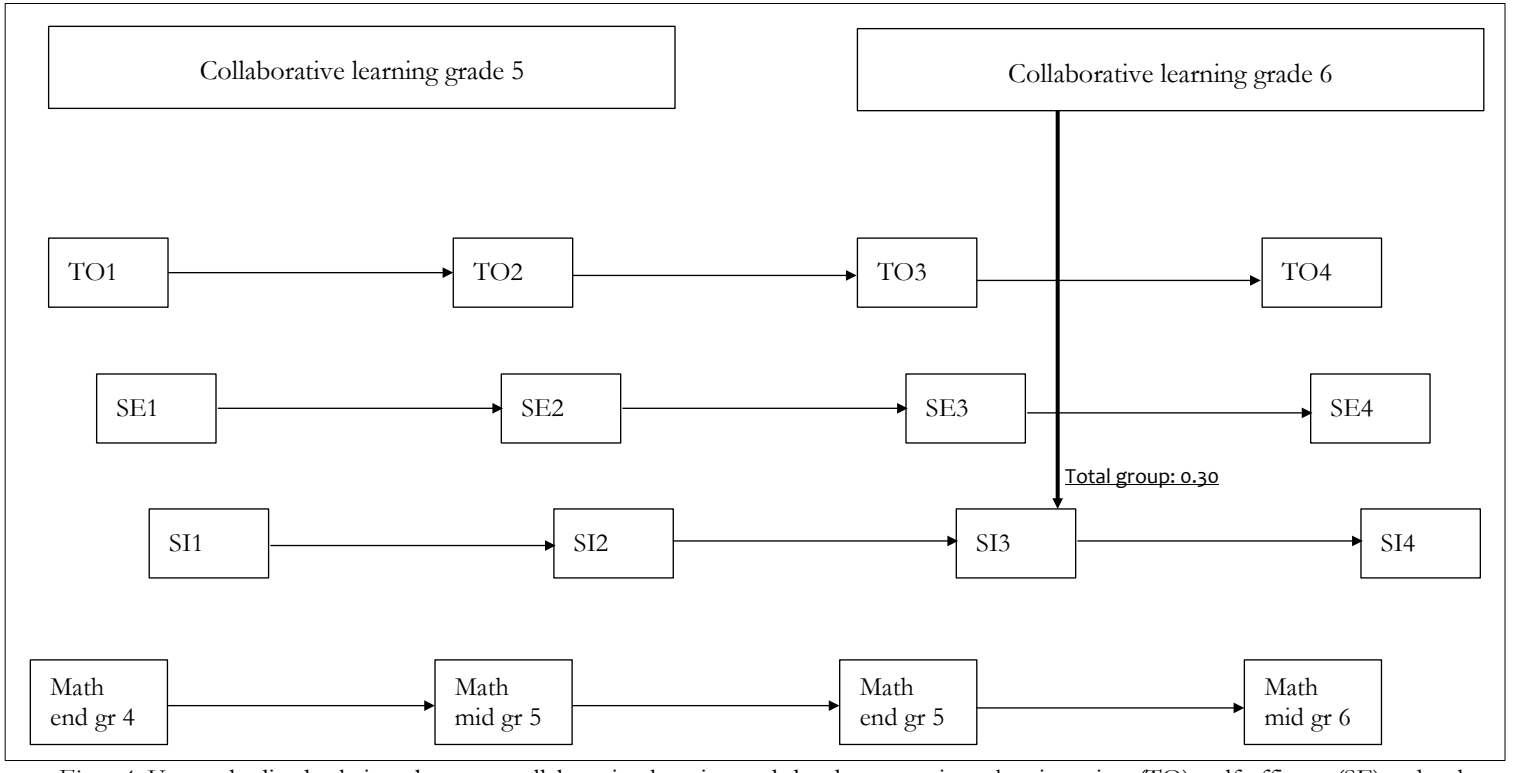
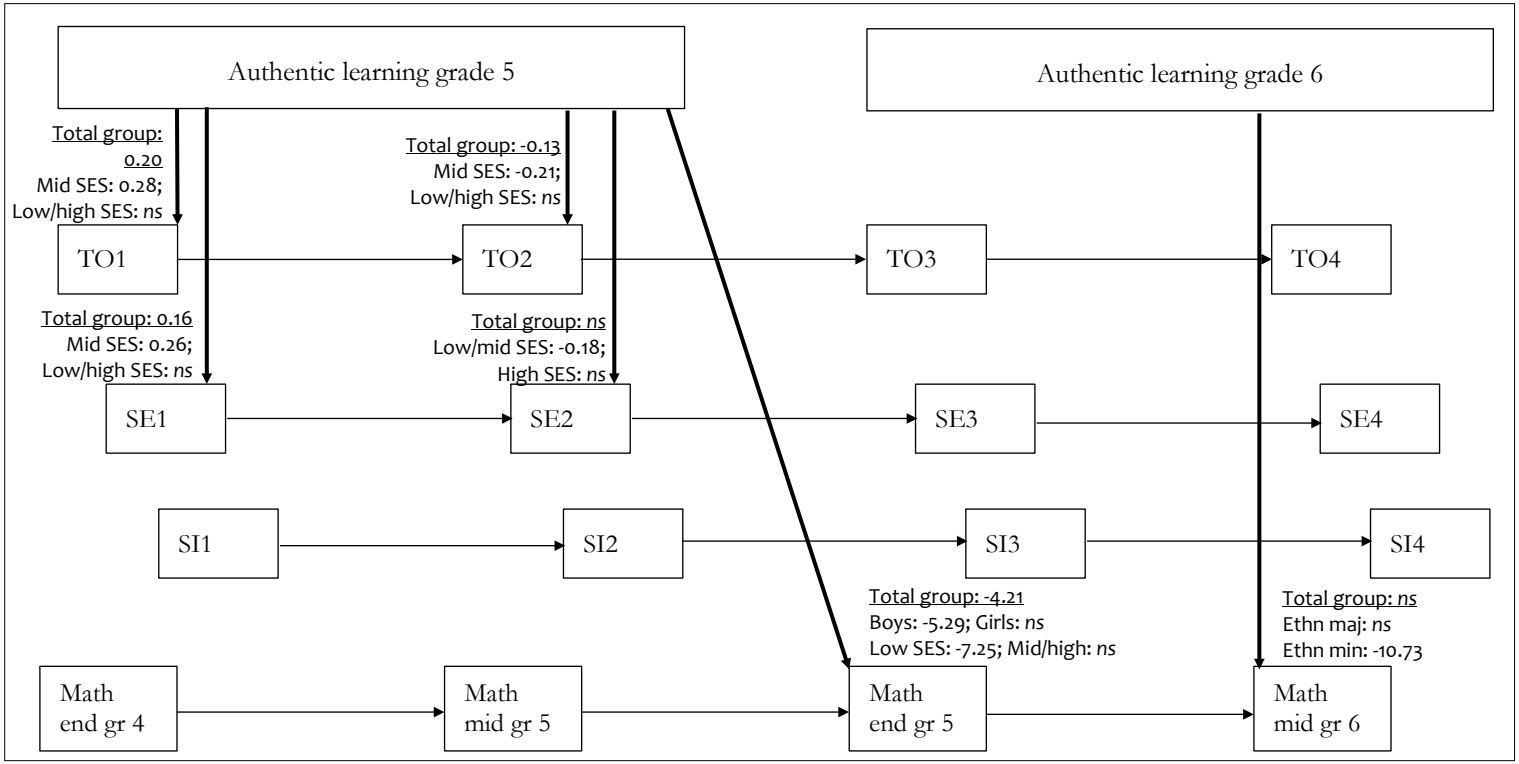



*Figure 4*. Unstandardized relations between collaborative learning and developments in task-orientation (TO), self-efficacy (SE), school investment (SI), and math achievement.




F*igure 5*. Unstandardized relations between authentic learning and developments in task-orientation (TO), self-efficacy (SE), school investment (SI), and math achievement.

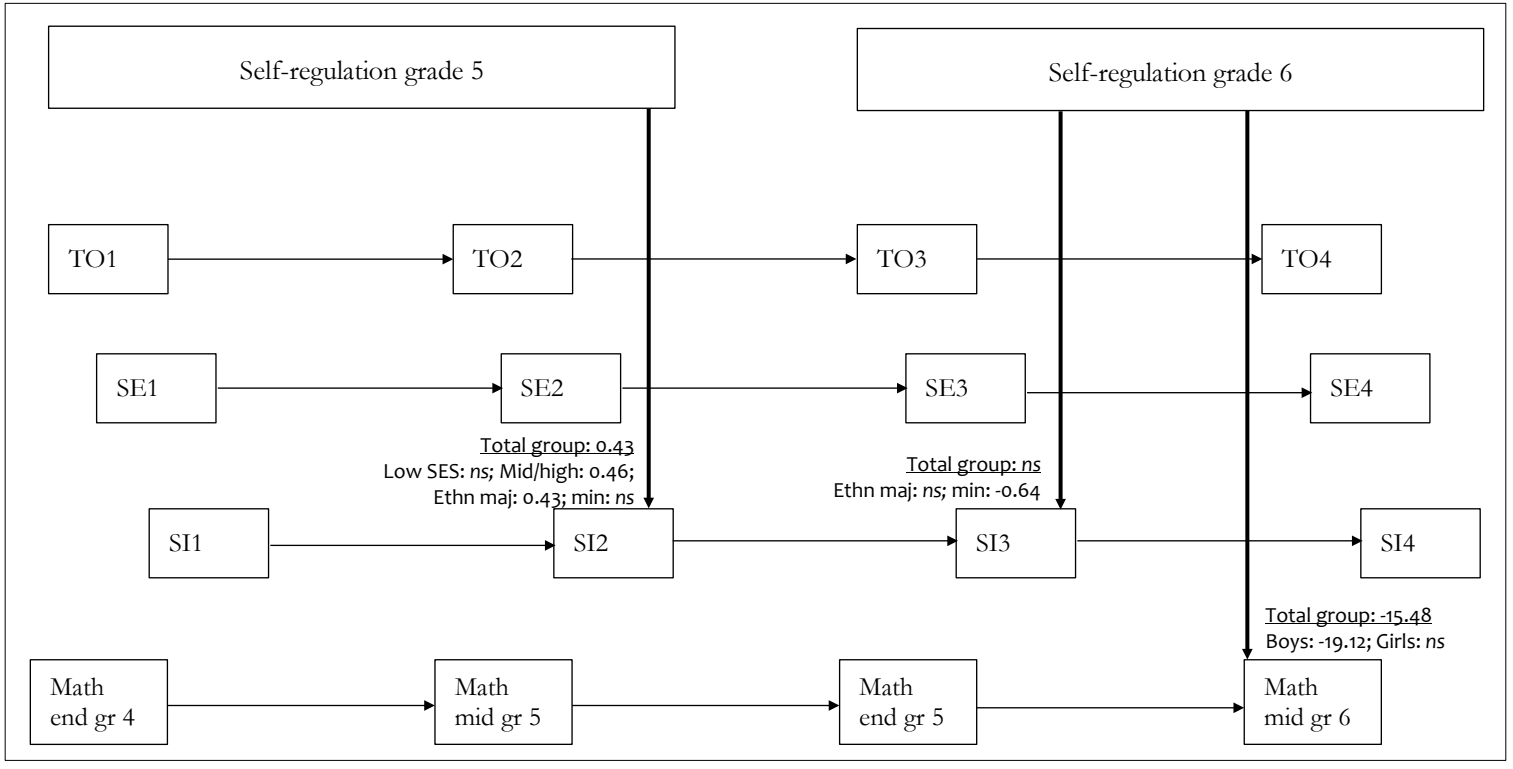



*Figure 6*. Unstandardized relations between focus on self-regulation and developments in task-orientation (TO), self-efficacy (SE), school investment (SI), and math achievement.

### COLLABORATIVE LEARNING AND DEVELOPMENTS IN MOTIVATION AND ACHIEVEMENT

Figure 4 shows the relations between collaborative learning and developments in motivation and achievement. No significant relations were found between collaborative learning and developments in task-orientation and self-efficacy. A positive relation ($r$=0.30) between collaborative learning, as reported by the grade six teacher, and school investment at the first measurement in grade six was found to be significant. When teachers rated the learning environment one standard deviation (0.62 points) higher on collaborative learning, the growth in school investment from fifth grade to the middle of sixth grade was on average 0.19 (0.62*0.30) points higher. This was found across all groups.

### AUTHENTIC LEARNING AND DEVELOPMENTS IN MOTIVATION AND ACHIEVEMENT.

Figure 5 shows the relations between authenticity of the learning environment and developments in motivation and achievement. First, the results show a positive relation between authenticity with *task-orientation* at the first measurement, and a negative relation with task-orientation at the second measurement in grade five. That is, after autoregression of the second measurement on the first measurement, there is a negative relation between authenticity and growth in task-orientation. This suggests that in classes where teachers reported higher levels of authenticity, students are initially more task oriented but they also show a more negative development in task-orientation over time. Such a pattern was found for all groups, only the three SES groups showed significant differences in the relation between authenticity and task-orientation. The positive relation between authenticity of the learning environment with task-orientation at the first measurement and the negative relation with task-orientation at the second measurement were only found for middle SES students, and were somewhat stronger than what was found for the total group. For both low and high SES students, the degree of authenticity did not significantly relate to task-orientation at any of the measurements. More specifically, in classes where teachers rated themselves 1 *sd* (0.38) higher on authenticity, scores on task-orientation would on average be 0.11 (0.38*0.28)

points higher. Moreover, 1 *sd* higher in authenticity would be furthermore associated with a decrease in task-orientation from the first to the second measurement of 0.08 (0.38*0.21) points. Task-orientation is already found to decrease from the first to the second measurement (as can be deducted from table 5). For middle SES students, a more authentic learning environment would thus be associated with an even stronger decrease.

Furthermore, the results also showed a positive relation of authenticity of the learning environment with *self-efficacy* at the first measurement. This was found across all groups, except high SES students. For high SES students, no relation between authenticity and self-efficacy was found. Moreover, multigroup analyses showed a negative relation between growth in self-efficacy from the first to the second measurement and authenticity for low and middle SES students, suggesting that for both low and middle SES students, a teacher rating of one *sd* higher in authenticity was associated with 0.10 (0.38*0.26) points higher self-efficacy at first measurement, but also a decrease in self-efficacy of 0.07 (0.38* 0.18) points from the first to the second measurement.

No relations for any of the groups were found between authenticity of the learning environment and developments in *school investment*.

Authentic learning in grade five furthermore related negatively to growth in *mathematics achievement*. Multigroup comparisons between boys and girls showed that this negative relation between authenticity and growth in mathematics achievement was only found for boys. While on average boys' math achievement increased 7.69 points from the middle of grade five until the end of the year, boys showed 2.27 (0.38*5.97) points less growth in math when the learning context in grade five was rated one *sd* higher on authenticity. For girls, authenticity was not related to growth in mathematics achievement. Likewise, a negative relation was only found for low SES students, while no significant relation was found for middle and high SES students. For low SES students, one *sd* higher in authenticity, on average related to 2.76 (0.38*7.25) points less of an increase in math. Multigroup analyses furthermore revealed a significant negative relation between authenticity reported by the grade six teacher and growth in mathematics achievement of ethnic minority students. On average,

ethnic minority students increased 12.30 points in math from the end of fifth grade until the middle of sixth grade. However, one *sd* (=0.48) higher in authenticity was associated with 5.15 (0.48*10.73) points less growth in math for ethnic minority students, while authenticity did not relate to growth in math achievement of majority students.

### FOCUS ON SELF-REGULATION AND DEVELOPMENTS IN MOTIVATION AND ACHIEVEMENT

Figure 6 shows the relations between focusing on self-regulation and developments in students' motivation and achievement. No relations were found between focusing on self-regulation and developments in *task-orientation* and *self-efficacy*.

With regard to *school investment*, the results showed that when teachers reported a stronger focus on self-regulation, students' school investment increased in grade five. One *sd* (=0.34 points) extra in self-regulation in grade five was associated with an increase of 0.15 (0.34*0.43) points in school investment from the first to the second measurement. Multigroup analyses showed this positive relation held for all groups except for low SES and ethnic minority students. For these two groups, no relation between focusing on self-regulation and growth in school investment was found. Furthermore, in grade six, a significant negative relation between self-regulation and school investment was found for ethnic minority students. More specifically, in classes where grade six teachers reported a greater focus on self-regulation of 1 *sd* (=0.38), ethnic minority students showed 0.24 (0.38*0.64) points less growth in school investment from the last measurement in grade five to the first measurement in grade six. For majority students, a focus on self-regulation did not relate to their school investment.

The results furthermore showed that a greater focus on self-regulation of the learning process in grade six related negatively to *math achievement*. When the sixth grade teachers rated the extent to which they focused on self-regulation 1 *sd* higher, students' increase in math achievement in grade six was 5.88

(0.38*15.48) points less. Multigroup comparison showed that this negative relation was similar for ethnic majority and minority students and for the varying SES groups, but not for boys and girls. Only for boys, a greater focus on self-regulation of the learning process in grade six relates negatively to math achievement, while for girls no significant relation was found.

### SUMMARY OF RESULTS AND EFFECT SIZES

To present the outcomes in an efficient and comprehensive way, table 8 summarizes relations that were found to be significant and indicates its effect sizes. Small effect sizes are indicated with a + for positive relations and a – for negative relations, small to medium effect sizes were indicated with either +/++ or –/– – , and medium effect sizes were indicated by either ++ or – – . Large effect sizes were not found. Note that only significant relations are depicted in table 6 and many relations were not significant[10].

Overall, the largest effect sizes (medium) were found for the relations between the learning environment and math achievement. Table 6 shows that for the total group, the effect size of the negative relation between authenticity of the learning environment and growth in math achievement was small, but in some of the groups, namely boys, ethnic minority students and low SES, medium size negative relations between authenticity and growth in math achievement were found. The size of the negative relation between focusing on self-regulation and growth in mathematics was medium for the total group and for all separate groups, with the exception of girls. For girls, focusing on self-regulation did not relate to growth in mathematics. This was especially the case for low and middle SES students, where effect sizes ranged from

[10] To ensure that the significant relations we found were not just attributable to chance, we examined this by reanalyzing our models and correcting for the measurement errors of the variables. Similar, but stronger relations between IL and the outcome variables were obtained. We also explored alternative longitudinal techniques and again obtained similar results.

Table 8.

*Summary of significant relations and effect sizes.*

| Aspect of IL | Dependent variable | Total group | Gender | | Ethnicity | | Parental education | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Boys | Girls | Majority | Minority | Low | Middle | High |
| | Task-orientation | | | | | | | | |
| ALE gr 5 → | TO start gr 5 | + | + | + | + | + | | + / ++ | |
| | TO middle gr 5 | – | – | – | – | – | | – – | |
| | Self-efficacy | | | | | | | | |
| ALE gr 5 → | SE start gr 5 | + | + | + | + | + | + | + | |
| | SE middle gr 5 | | | | | | – | – | |
| | School investment | | | | | | | | |
| SR gr 5 → | SI middle grade 5 | + | + | + | + | | | + / ++ | |
| SR gr 6 → | SI start grade 6 | | | | | – – | | | |
| CL gr 6 → | SI start grade 6 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | Mathematics | | | | | | | | |
| ALE gr 5 → | Math end gr 5 | – | –/– – | | | | – – | | |
| ALE gr 6 → | Math middle gr 6 | | | | | – – | | | |
| SR gr 6 → | Math middle gr 6 | – – | – – | | – – | – – | – – | – – | – – |

small/medium to medium. Finally, collaborative learning related positively to developments in school investment. For each group, the effect size of this relation was medium.

## DISCUSSION

The aim of the present study was to examine (1) whether the extent of innovativeness of the learning environment (i.e., authenticity of the learning environment, collaborative learning, and focusing on self-regulation) positively related to developments in students' motivation and achievement during the last two years of primary school, and to examine (2) to what extent relations between innovativeness of the learning environment and developments in students' motivation and achievement varied by gender, social and ethnic background? In all, the results for the first research question show that IL related both positively and negatively to developments in students' motivation and achievement, indicating that aspects of IL can either contribute to or diminish the reported decline in students' motivation. Collaborative learning showed to be more effective than authentic learning and focusing on self-regulation in enhancing student motivation. As different aspects of IL yielded different results, these outcomes furthermore demonstrate that IL is not an unidimensional construct. Moreover, with regard to the second research question, results indicated that the effectiveness of different aspects of IL depends on individual student characteristics, such as gender and socio-ethnic background. Below the outcomes of the present study are discussed in more detail.

First, most noticeable are the relations that were found between different aspects of IL and mathematics achievement. When the learning environment was rated as more authentic and with a greater focus on self-regulation, students showed less growth in math achievement. This was especially the case for boys, low SES, and ethnic minority students, whereas for girls, middle and high SES, and majority students, these aspects of IL did not relate to their math achievement. Several explanations may account for these findings. It could

simply be that authentic learning and focusing on self-regulation are not very effective approaches for mathematics achievement, especially when it comes to boys, low SES, and ethnic minority students. It could be that especially these groups need more structure and would therefore benefit more from a more traditional teacher-centered learning environment, as has previously been suggested by others (Guthrie, 1989; Hermans, 1995; Hopkins & Reynolds, 2001). However, especially with regard to focusing on self-regulatory strategies, but also for authentic learning, there is a great quantity of studies that shows positive effects of focusing on self-regulation for students of different ability levels (see for example the following meta-analyses, Dignath et al., 2008; Hattie et al., 1996).

Another explanation for the negative relation between IL and developments in math for especially boys, ethnic minority and low SES backgrounds could be that these students would actually benefit from an IL context, that connects to their everyday lives and is meaningful to them (see for example, Guthrie, 1989; Hopkins & Reynolds, 2001), but teachers may find it harder to relate to the lives of students that have a different background or are of different gender than themselves. All teachers were of Dutch origin, most of them were female, and all had finished higher education as this is a requirement to become a teacher. An incongruence between teachers' and students' backgrounds may cause attempts of teachers to teach in an authentic manner to have adverse effects.

Furthermore, as we used teacher self-reports to assess the innovativeness of the learning context, we do not have insight in how teachers' focused on self-regulation or how they attempted to create a context for authentic and meaningful learning. The quality by which teachers implemented these approaches could be another explanation for our findings. Many teachers may be more accustomed to more traditional ways of teaching. IL requires teachers to gradually transfer control of the learning process to the students. Totally unguided learning, however, may have adverse effects (Jang, Reeve, & Deci, 2010). Although teachers in our study reported rather high levels of IL, they may find it difficult to find a balance between a learner-centered approach in

which students learn to regulate their own learning process, while still providing appropriate guidance. Teachers may find it difficult to diagnose students' learning needs and teach in a contingent way through scaffolding (Van De Pol, Volman, & Beishuizen, 2010). Especially for ethnic minority students, low SES students and boys, it may be important that teachers provide appropriate guidance. Previous research has for example shown that boys less frequently use self-regulatory strategies during math (e.g., Cleary & Chen, 2009), which may indicate that boys may be less able to effectively make use of the strategies that are offered to them.

With regard to relations between the learning environment and developments in students' motivation, the picture becomes more complex. Positive relations were found between aspects of authentic learning environment and motivational beliefs at the first measurement, which could suggest that teachers are more likely to engage in IL approaches when their students are more motivated and confident, but this then seemed to result in less growth in motivational beliefs. Most relations between IL and developments in students' task-orientation and self-efficacy, were however either not significant or small. Especially for motivational beliefs, the variances at the classroom level were quite small, indicating that motivation is much more strongly affected by individual student factors than classroom factors. Still, even if it is only a small proportion of students' motivation that can be affected by effective educational practices, it is important to find out how these practices can take shape. Other reasons can also account for the small effect sizes. IL was measured through teachers' self-reports and only provides information on the extent to which teachers employ innovative methods. As mentioned , it does not provide information on the quality of the instructional methods. Observations could have provided further insight into how teachers employed the innovative methods. Moreover, the differences between teachers were not very large. All teachers reported that they employed innovative methods at least to some extent. As such, relations with student outcomes are not likely to be very strong.

In contrast to the mixed findings on motivational beliefs, students' investment in school seemed to be promoted by aspects of IL, especially collaborative learning, but also self-regulation. That is in line with research that suggests that IL environments invite students' to become more engaged and to take on a more active role in their own learning process (e.g., Boekaerts & Niemivirta, 2000; Boekaerts, de Koning, & Vedder, 2006). However, one group, namely ethnic minority students, showed less investment in school when the learning context relied more on self-regulation of their learning process. Most ethnic minority students in our sample had an Islamic background, and previous research has shown the parenting style of Islamic parents to be more directive than that of western parents (Frosh, 2004; Stewart & Bond, 2002). Students that are accustomed to a directive parenting style may feel more comfortable when teachers provide more guidance than when they have to regulate their own learning process. That does not necessarily imply that focusing on self-regulating cannot be effective for ethnic minority students. Instead, it may imply that for these students, it may be harder for teachers to find a suitable balance between transferring responsibility to the student, while still providing the optimal level of guidance.

Furthermore, only for mathematics, a relation between the learning environment and student achievement was found, while no relation was found for achievement in reading comprehension. Students' reading comprehension may be less susceptible for effects of the learning environment to occur than their achievement in mathematics, as reading comprehension is more strongly affected by intelligence, language abilities and social background characteristics that students bring to the school (Stevenson & Newman, 1986), indicating that reading comprehension may be less susceptible to classroom effects. However contrarily to our results, other studies have found IL environments to promote student achievement in reading comprehension, even though effects are usually greater in mathematics (e.g., Dignath et al., 2008; Wigfield & Guthrie, 2010). Again, the fact that we did not have insight in the quality of the instructional practices that teachers reported may account for these findings.

Many of the relations that were found between IL and developments in motivation and achievement were not consistent across grades, and most relations were found only in grade five. This inconsistency across grades could perhaps be attributed to the fact that in the Netherlands, all students are administered a final test in their last year of primary school. This test is administered in early February and referral of students to secondary education depends to a great extent on the outcomes of this test. Furthermore, results on this test are often considered an important indication of the quality of a school. It has been reported that in the months or weeks prior to the test, teachers tend to use more traditional teaching strategies and focus mostly on the main cognitive subject domains. After the test, they focus more on other aspects of the learning process (Roeleveld, Mulder, & Paas, 2011). The fourth measurement of our study took place in the same period that the final test was administered. It could be that the IL scores of teachers at the beginning of grade six, may not be a good reflection of their actual teaching practices between measurement three and four.

Our results furthermore showed that for the grade five teachers, correlations between instructional approaches were low, which furthermore demonstrates that IL is not an unidimensional construct. Also, the correlations between the scores of the grade five and six teachers were rather small, indicating that students' learning environment may greatly vary from year to year. This can indicate that teachers are rather autonomous in deciding on the way they want to teach. However, for innovative approaches to effectively enhance students' achievement outcomes over time, consistency across grades is a necessary condition (Thoonen et al., 2010). These results could be an indication that many schools do not succeed in offering their students such consistency.

Some limitations of the study need to be acknowledged. First, the groups of ethnic minority students and low SES students were both relatively small. Therefore, the results have to be interpreted with caution. Still, the study shows different patterns to emerge for different groups of students, indicating that it is important to take students' background characteristics into account when examining or evaluating the effectiveness of educational approaches. Finally, in

the present study, we related developments in task-orientation, self-efficacy, and school investment to different aspects of the learning context, but not to each other, as the sample size did not allow for more complex models that include such interactions. Further research could help unravel the relations between these different aspects of motivation and the learning environment over time.

In conclusion, the results suggest that IL may have certain drawbacks. The results of the study show that not all aspects of IL that were implemented in the schools we studied are equally effective. It is therefore important that in research and practice, the multifaceted nature of IL is taken into account and IL is not considered to be a singular educational concept. In practice, caution is warranted when implementing educational innovations. Firstly, a thorough analysis of how different aspects of any educational reform may work for a specific school population always needs to precede or at least accompany those reforms. Secondly, a high level of pedagogical skills is required to teach innovatively and teachers who are expected to implement educational reforms should be well-prepared. Thirdly, continuity from one school year to another, hence, consensus and consistency between teachers in a school, could be a crucial factor for making aspects of IL methods successful. Finally, the results indicate that education is not a "one size fits all matter". The effectiveness of innovative approaches to learning appears to be related to students' background characteristics. That underlines that teachers need to be able to diagnose the learning needs of individual students and be able to adapt to differences in learning needs. Only then it is possible to create learning environments, innovative or traditional, that are beneficial to all students.

# CHAPTER 7

## SUMMARY AND DISCUSSION

Motivation for school is important for students' educational careers. This dissertation aimed to contribute to our understanding of developments in students' motivation for school during upper primary school and the relations between these developments and achievement growth. It furthermore aimed to investigate factors of the learning context associated with developments in motivation and achievement. More specifically, it examined how classroom composition and innovative learning (IL) are related to developments in motivation and achievement, taking into account students' socio-economic and ethnic background, and gender.

To fulfil the aforementioned aims, the study presented in chapter 2 was aimed at describing how different aspects of motivation develop during upper primary school and relate to achievement growth, taking into account group-specific differences. In chapter 3, it was examined how the ethnic and socio-economic classroom composition relate to developments in students' motivation and achievement. Thereafter, chapter 4 examined teacher beliefs and practices and explored whether the teaching practices that teachers prefer and use in their classroom are related to their student population. Chapter 5 focused on student perspectives and explored whether students with varying background characteristics differ in the extent to which they prefer and experience IL in their actual learning environment. Finally, chapter 6 was aimed at examining how IL related to developments in motivation and achievement for different groups of students.

In this general discussion, first the main findings are presented and contributions of this dissertation are discussed. Limitations as well as implications for educational practice are considered.

## SUMMARY OF MAIN FINDINGS

First, in **chapter 2**, a descriptive study on developments in motivation during primary school was presented. Previous research indicated that in secondary school, motivation declines with age (De Fraine, Damme, & Onghena, 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Furrer, Marchand, & Kindermann, 2008; Van der Veen & Peetsma, 2009). The few studies available on motivational developments in primary school (e.g., Nurmi & Aunola, 2005; Skinner et al., 2008; Spinath & Spinath, 2005; Stoel, Peetsma, & Roeleveld, 2001) suggested that such a negative trend could also be apparent in primary school. However, longitudinal research on developments in motivation during primary school is scarce. Therefore, in this study, developments in motivation from grade three to grade six were examined among 722 primary school students.

The overall findings of this study demonstrated that developments in motivation during upper primary school varied by aspect of motivation. Whereas task-orientation was found to decline from third to sixth grade, self-efficacy developed according to a curvilinear trend and first declined, but then improved, and finally, school investment increased with age. Moreover, interesting differences between boys and girls, and students with different socio-economic and ethnic backgrounds emerged. Most notable were the differences in school investment. In grade three, most groups were more or less comparable with regard to school investment, but over the years, toward the end of primary school, differences emerged or became more pronounced to the disadvantage of boys, low SES, and ethnic minority students. The negative developments in school investment of these groups can be considered problematic, especially since the results of this study also showed that for all groups, regardless of background characteristics, developments in motivation were substantially related to achievement growth.

In the following study, described in **chapter 3**, it was examined to what extent developments in motivation and achievement could be attributed to the ethnic and socio-economic composition of the classroom. In general, segregation is

believed to lead to adverse outcomes for those students in classrooms with many low SES and/or ethnic minority students. The common held fear is that a large proportion of low SES or ethnic minority students (i.e. students with "disadvantaged" backgrounds) will bring down other students in the classroom and that these students themselves will not be able to benefit from the potential of more privileged classrooms (Bakker, Denessen, Peters, & Walraven, 2011).

In this study, this assumption was examined longitudinally among the same sample of 722 students in upper primary school. The findings demonstrated that during each measurement, the performance of low SES students on reading comprehension was lower in classes with more low SES students, after taking into account other individual background characteristics including cognitive ability and ethnicity. Contrarily, both ethnic majority and minority students performed better on reading comprehension in classes with more ethnic minority students, taking into account individual background characteristics. In practice, these effects of ethnic and socio-economic classroom composition on reading comprehension may often partial each other out. However, math achievement of ethnic minority students was lower in in classes with more ethnic minority students. The outcomes furthermore demonstrated that regardless of students' individual background characteristics, their motivational beliefs developed more positively in classes with more disadvantaged students. In other words, students – regardless of whether they had ethnic minority, majority, low, middle or high SES backgrounds – showed more growth in motivational beliefs when they had a higher number of classmates with low SES or ethnic minority backgrounds. Especially ethnic minority students seemed to benefit from being taught in classes with other ethnic minority students in terms of motivational outcomes. This is in line with the specialization hypothesis (Driessen, Doesborgh, Ledoux, Van der Veen, & Vergeer, 2003), suggesting that in segregated classes, teachers are better able to meet the specific needs of their student population.

The specialization hypothesis usually refers to the content or pace of instructional practices (for example allocating more time to language education), but as argued in the introduction, specialization could also refer adapting the

instructional style to the needs of the specific student population. Teacher expectancy research demonstrated that teacher perceptions of individual students' ability or background can affect a variety of teacher behaviours (e.g., Rosenthal 1994; Rubie-Davies, 2010). However, research on how teachers adapt their *classroom* practices based on their perceptions of their student population is scarce. Teaching practices can vary in the extent to which they are traditional or innovative (Hickey, 1997; O'Donnell, 2012; Simons, Van der Linden, & Duffy, 2000; Wilson, 2011). Whereas in traditional education, teachers deliver instruction and take control of their students' learning process, their role in innovative education shifts to providing a learning context that invites students to actively and autonomously construct their own knowledge and to provide guidance during learning. Likewise, the role of students shifts from rather passive receivers of instruction to autonomous participants who are actively involved and responsible for their own learning process (Furtak & Kunter, 2012). **Chapter 4** focused on perspectives of teachers and explored whether the teaching practices that teacher prefer and use was related to their student population. In this study, it was explored to what extent teachers held personal beliefs favouring controlling versus autonomy-supportive teaching practices and to what extent their self-reported teaching practices were affected by their perceptions of their classroom population. Other contextual pressures, such as formal regulations or school policies, were also included.

In this study, nine grade six teachers, selected from the larger sample of schools that participated in the previous studies of this dissertation, were interviewed. Although almost all teachers favoured autonomy-supportive practices, controlling practices were reported often. Especially in disadvantaged schools, teachers reported frequent use of controlling teaching practices. Teachers at other schools reported more autonomy-supportive teaching practices. However, most of them also reported frequent use of controlling practices with the 'at-risk' students within their class, mostly referring to low achieving, low SES, or ethnic minority students. In all, teacher perceptions of their individual students and their student population appeared to be their main reason for controlling teaching practices, beyond other pressures such as formal regulations. In line

with the specialization hypothesis, most teachers believed that controlling teaching practices were more suitable and beneficial for 'at-risk' students and by offering a more traditional, controlling style they felt they were adapting to the needs and preferences of their student population.

In the following study, presented in **chapter 5**, the perspectives of students were focused upon. This study explored differences in the instructional style that students with varying background characteristics themselves find preferable and perceived in their actual learning environment. In line with the 'person-environment fit' perspective (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, Eccles, & Sameroff, 2000), the correspondence between students' learning preferences and their actual learning environment has been found to positively affect students' progress (Fisher & Fraser, 1983; Johnson & Engelhard, 1992). In the study described in chapter 5, it was examined how students' perceptions of IL and their learning preferences varied by gender, ethnicity, and socio-economic background. Moreover, the alignment between perceptions of IL and learning preferences were compared for these different groups. Forty-five grade six students and their teachers (the same teachers as in chapter 4) were interviewed. Student perceptions of the actual learning environment were mostly in line with teacher perceptions. In comparison to ethnic majority, middle, and high SES students, ethnic minority and low SES students, perceived their learning environment as more traditional and were also more likely to express preferences for traditional education. No gender differences in students' perceived or preferred learning environment were found. For most students, perceptions of the actual learning environment aligned well with their learning preferences, and consequently, no group differences in alignment were found.

The outcomes of both chapter 4 and 5 suggested that teachers adapt their instructional style to their student population to create an optimal person-environment fit for their students. In line with their learning preferences, students in more disadvantaged schools were found to be taught in more controlling, traditional ways, compared to students in more privileged schools who were taught in more autonomy-supportive innovative ways. Yet, these

studies did not address the question how the degree of innovative learning according to their teacher relates to developments in motivation and achievement growth for students with different background characteristics. **Chapter 6** was therefore aimed at examining whether IL was indeed more beneficial for students from ethnic majority and higher SES backgrounds and for girls in comparison to students from ethnic minority and low SES backgrounds and for boys. Three main aspects of IL were focused upon, namely collaborative learning, authentic learning, and focusing on self-regulation.

Taking group differences into account, the relations between IL, as reported by teachers, and developments in motivation and achievement of 722 students during the last two years of primary school were investigated. The outcomes of this study indicated that most relations between aspects of IL and developments in students' motivation and achievement were either not significant or quite small. Those relations that were significant were found in both positive and negative directions, depending on the aspect of IL that was taken into account. A higher degree of collaborative learning related more positively to developments in students' motivation than the degree of authentic learning or focusing on self-regulation in enhancing student motivation. Hence, aspects of IL can either contribute to or diminish the reported decline in students' motivation. Moreover, results showed that the relations between aspects of IL and developments in motivation and achievement differed by students' gender and socio-economic and ethnic background. Furthermore, the results suggests that a higher degree of IL related more negatively to developments in motivation and growth in math achievement for boys, low SES, and ethnic minority students than for girls, middle and high SES, and majority students. In general, the outcomes of the two qualitative studies (chapter 4 and 5) and the study described in chapter six suggest that teachers are less successful in creating IL environments that benefit boys, low SES, and ethnic minority students.

## DISCUSSION

Above, the main findings of the five studies that constitute this dissertation are summarized. In this section, the contributions and conclusions of this dissertation are discussed.

### DEVELOPMENTS IN MOTIVATION IN UPPER PRIMARY SCHOOL

The results of this dissertation add to existing motivational literature by examining the nature of motivational developments during upper primary school and the longitudinal relations with achievement growth. It furthermore adds to motivational research by investigating factors of the learning context associated with motivational developments, and by taking into account group differences. Whereas previous research demonstrated an overall decline in students' motivation after their transition from primary to secondary school (De Fraine, Damme, & Onghena, 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Furrer, Marchand, & Kindermann, 2008; Van der Veen & Peetsma, 2009), this dissertation showed that before this transition takes place, students' motivation for school develops according to a more differentiated pattern. Whether or not students' motivation already starts to decline in primary school was shown to vary by aspect of motivation and to depend on a variety of individual background and contextual factors, as well as the complex interplay between those factors. Interestingly, school investment increased toward the end of primary school. The secondary education system in the Netherlands has different tracks where students can continue their education after primary school (Scheerens, Luyten, & Ravens, 2011). In the last year of primary school, the grade six teacher will recommend which track they find most suitable for each student. The final 'CITO' test that students take in grade six usually can weigh in the final decision of which track a student will be referred to. As such, grade six is a very important year for students' future educational careers. The increase in school investment suggests that toward the end of primary school students work harder and are aware of the importance of this last year for their future possibilities. This increase in school investment was dissimilar to

developments motivational beliefs. The reasons why students increase their effort toward the end of primary school may thus be attributable to external sources. Especially during this last year, teachers and parents may encourage students to work hard and student may work harder to reach a higher track instead of being internally motivated.

Additionally, the outcomes of this dissertation showed that in comparison to other groups, low SES students, ethnic minority students and boys were particularly vulnerable for less advantageous developments in their school investment. These differences could not be explained by developments in motivational beliefs, as these groups mostly demonstrated similar or more positive developments in their motivational beliefs compared to other groups. The outcomes suggest that toward the end of primary school – a period that is of crucial importance for their future educational career – low SES students, ethnic minority students and boys have more difficulties engaging in motivated behaviours and investing effort in school. Teachers may prefer behaviors that are more specific to girls, ethnic majority and higher SES students, and a bias favouring these groups may account for these findings on school investment. On the one hand, it could be that bias was limited as group differences were absent or smaller during the grade three measurement and emerged or became more prominent toward the end of primary school. The differences in school investment may thus reflect actual differences, indicating that school investment of low SES students, ethnic minority students and boys develops less favourably. On the other hand, teacher bias toward certain groups could become more salient in higher grades when students are approaching adolescence. The exact causes of these differences in school investment are difficult to identify, but these findings can be considered worrisome.

When taking into account the considerable strength of the relation between school investment and achievement growth that was found in this dissertation, the less advantageous developments in school investment of these groups suggest that this may be a major factor related to existing achievement gaps. Given the reciprocal nature of the relationship between motivation and achievement shown in previous studies (Harackiewicz, Durik, Barron,

Linnenbrink-Garcia, & Tauer, 2008; Schunk, Pintrich, & Meece, 2008, Steinmayr, & Spinath, 2009; Marsh, & Martin, 2011; Martin & Liem, 2010), the increasing group differences in school investment are presumably both the result of existing achievement gaps as well as contributing to it.

### THE LEARNING ENVIRONMENT

By taking into account longitudinal associations between aspects of the learning context and developments in motivation and achievement, this dissertation adds to existing learning environment research which has traditionally mainly investigated classroom effects in cross-sectional studies (Reynolds, Sammons, De Fraine, Townsend, & Van Damme, 2011). Longitudinal techniques such as growth curve and autoregression modelling were combined with multilevel techniques, to investigate how classroom composition and instructional style contribute to developments in students' motivation and achievement growth. In addition, these techniques were complemented with qualitative studies to provide a more in-depth understanding of teacher and student perceptions of the learning environment.

In this dissertation, it was shown that classroom composition is associated with developments in students' motivation and to achievement growth. Differential effects for students with different backgrounds were found that were in line with the specialization hypothesis (Driessen et al, 2003), which states that teachers in segregated classrooms are better able to adapt to specific needs of the classroom population. As an extension of the specialization hypothesis, which usually refers to adapting the content or pace of instruction, this dissertation has provided further insights into ways that teachers in segregated schools adapt their instructional style to their student population.

This dissertation furthermore showed that relations between IL and developments in motivation and achievement were mostly absent or small. This indicates that we cannot draw any general conclusions on the extent to which a higher degree of IL contributes to students' motivation. Given the complex nature of students' motivation and its situation-specificity, this is not an unusual

finding (e.g., Van Nuland, 2011). The degree to which teachers use aspects of IL or traditional learning in their teaching practices is probably of minor importance compared to the quality of their teaching practices. The outcomes furthermore suggest that relations between IL and students' motivation depend on the aspects of IL that are focused upon. A higher degree of collaborative learning for example related positively to developments in student motivation, whereas the degree of authentic learning mostly related negatively to developments in motivation, and focusing on self-regulation related both positively and negatively to developments in motivation. As different aspects of IL yielded different results, these outcomes highlight that IL is a multifaceted construct, and that it is important to distinguish between different aspects of IL. There are studies pertaining to IL that indeed focus specifically on certain aspects and aim to meticulously examine what aspects are effective and under which conditions, for example the body of research on collaborative learning (e.g., Johnson & Johnson, 2009; Slavin, 1980). However in research on educational reforms, IL, as well as related educational concepts based on social-constructivism, are often considered unidimensional concepts that are either successful or unsuccessful. The outcomes of this dissertation seem to argue for a more precise and differentiated examination of which components of educational reforms are effective.

### ONE SIZE DOES NOT FIT ALL?

This dissertation focused particularly on differential relations between the learning environment students' motivation and achievement for students with different socio-economic or ethnic backgrounds, and for boys and girls. As such, it was able to show that *one size does not fit all*. The type of instruction that may work very well in one classroom, does not necessarily work as well in other classrooms. More specifically, it was found that innovative forms of learning were preferred less by students from low SES or ethnic minority backgrounds, and were also found to benefit these students less in terms of motivation and achievement. Moreover, teachers of disadvantaged classrooms found IL less

suitable for their student population and therefore those teachers were less likely to use aspects of IL in their classrooms and rather taught in more controlling, traditional ways. IL environments require active, self-directive, and collaborative types of participation which may be more difficult for low SES and ethnic minority students due to the language and types of communication that are encouraged at home.

The issue of school segregation is also an issue of equity and equal opportunities. One of the main aims of educational policies is to narrow achievement gaps and compensate for initial differences between students with varying backgrounds (Cohen, 2005). The outcomes of this dissertation seem to suggest that IL may rather widen achievement gaps rather than diminish those, but this conclusion could be too premature. While teachers in disadvantaged schools may succeed better in enhancing motivation and achievement outcomes through more traditional methods, these students may thereby also be withheld chances and opportunities to develop themselves as autonomous, self-directed learners. In educational practice, IL and traditional education are however not "either/or" choices. The challenge for teachers is to find this optimal balance where students get the amount of structure and guidance they need, and are offered opportunities for autonomous, self-directed learning.

Although this dissertation has provided some support for differences in the extent to which students with different backgrounds profit from IL, is does not answer the question of whether IL – when meeting certain conditions – could also be successful for more disadvantaged student populations. In disadvantaged schools, it may take far more effort over the years to develop those skills necessary for students to self-direct their learning process. In order to create equal opportunities for all students to develop themselves as successful independent learners, it may be worthwhile to further examine how teachers in disadvantaged schools can successfully find a balance between transferring responsibility to students, while still providing the optimal level of guidance.

A main point of focus were differences between groups of students with different socio-economic and ethnic background, and between boys and girls. This dissertation has shown that differences between these groups occur with regard to the extent they benefit from aspects of IL. However, the outcomes of this dissertation refer to aggregated results over groups of students with similar backgrounds characteristics. Individual differences between students within these groups are likely to outweigh group differences. Studying group differences provides valuable insights with regard to successful classroom practices, but individual differences need not to be overlooked. In their classroom practices, many teachers tend to adapt to characteristics of their classroom population. However, teachers also need to be able to diagnose the learning needs of individual students in order to create a learning environment that is beneficial to all students.

The outcomes of this dissertation suggest that IL may be less suitable for students with low SES and ethnic minority backgrounds and for boys. Another explanation could also account for this finding. Teachers in disadvantaged schools were more likely to teach in more traditional ways because they *believed* that their student population did not have the abilities necessary for IL. Although these teachers were well intentioned and tried to adapt to the needs of their student population, these beliefs are not necessarily always fully correct as teachers' expectations of students' abilities can be based on prejudiced attitudes toward certain groups (Van den Bergh, Denessen, Hornstra, Voeten & Holland, 2010). However, consequently many low SES and ethnic minority students may be more accustomed to traditional ways of teaching. When faced with IL later on, it may not be beneficial for them anymore, because they did not have the opportunity to master the skills necessary for IL. As such, the initial belief of teachers in disadvantaged schools that their students are not capable of IL could have become a self-fulfilling prophecy. Although this issue requires further examination, at the very least, these outcomes tell us that creating *successful* IL environments is experienced as a more difficult challenge for teachers at disadvantaged schools, than it is at schools with more privileged student populations. The outcomes of this dissertation show that school

segregation thus not only affects the type of classmates that students go to school with or the pace or content of instruction, it also affects the roles that teachers and students take on in the learning process.

## LIMITATIONS AND FUTURE RESEARCH

There are a number of limitations of this dissertation to take into account. This dissertation focused on the degree to which aspects of IL were applied in teachers' daily practices. Teachers reported rather high levels of IL, but the quality by which teachers implemented these approaches was not taken into account. Many teachers may be more accustomed to more traditional ways of teaching. IL requires teachers to gradually transfer control of the learning process to the students, which some teachers may find difficult. Future research on how teachers can successfully implement aspects of IL with varying student populations could further our understanding of successful classroom practices.

Furthermore, task-orientation was included in this study as a main aspect of motivation. According to achievement goal theory also other types of achievement goals are important for students' motivation. Especially performance-approach and avoidance goals are relevant in this respect. By only focusing on task-orientation, we limited the outcomes to relations of the learning context with those goals beneficial for learning. In future research, it would also be interesting to examine how different aspects of the learning context relate to less beneficial goals or to students' goal profiles, as suggested in the multiple goal perspective (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

A number of methodological limitations also need to be noted. The three larger scale studies in this dissertation (chapters 2, 3, and 6) were based on questionnaire data. Task-orientation and self-efficacy were both assessed through student self-reports. Self-report measures have a number of limitations, as they are susceptible to self-presentation bias and require students to be fully aware of their underlying motivational beliefs (Jobe, 2000). However, the

internal nature of motivational beliefs makes students' self-reports one of the suitable measures available. Motivated behaviour, however, is a visible part of motivation and school investment was therefore assessed through teacher ratings. Yet, teacher ratings of students carry the risk of being biased by prejudice toward certain groups (Van den Bergh et al., 2010) which can affect our conclusions on group-specific differences. The degree to which teacher bias has affected teacher ratings of school investment in different grades is unknown and needs further examination.

The degree of IL was also measured with self-reports. In the studies of chapter 4 and 5, teachers self-reported on the degree of IL through interviews and in chapter 6 by means of self-report questionnaires. The use of teacher perceptions of the learning environment has been critiqued, because it would be biased by teacher ideals or self-serving strategies (Wubbels, Brekelmans, & Hooymayers, 1992). However, other studies disputed that claim (Fraser, 1982; Kunter & Baumer, 2006). As the effects of aspect of IL on student outcomes were mostly small or absent, the question arises whether this could be attributed to the validity of the measure. Several steps were undertaken to assure the validity of this measure, including comparing the interview and questionnaire data to each other, comparing it to student perceptions of the learning environment, and to classroom observations conducted in three classrooms, all demonstrating significant agreement and therefore limiting the possibility that the outcomes are attributable to validity concerns. In future research, observational studies could however provide further insight into *how* aspects of IL are enacted in classrooms with different student populations.

In terms of social integration, school segregation may not be considered desirable. However, countering school segregation is a difficult task, as it caused by a variety of factors, including residential segregation and parental choice (Karsten, Felix, Ledoux, Meijnen, Roeleveld, & Van Schooten, 2006), that are difficult to change. As such, school segregation will continue to be an issue in education. For future research, it is therefore important to focus on how effects of teaching practices may differ at schools with varying student populations and to focus on identifying the teaching practices that will make schools with

varying populations successful in terms of motivating their students and enhancing their achievement.

## IMPLICATIONS

The outcomes of this dissertation point to a number of important implications for educational practice. First, although there was no evidence for a general decline in students' motivation for school during upper primary school, the results indicated that some groups of students are more vulnerable for such a decline. In particular, school investment of ethnic minority students, low SES students, and boys was found to develop less advantageous in upper primary school in comparison to other groups. These years before students transition to secondary school are crucial in determining the educational track in which students will pursuit their further education career. Finding more efficient ways to engage these students in school, especially in this particular phase of their lives, should therefore be an important point of focus for teachers and policy makers.

Furthermore, as discussed above, the outcomes of this dissertation indicate that there are differences in what works best at schools with varying student populations. Policies should allow schools the freedom to work according to the methods most suitable for their student populations, while at the same time offering schools support in finding the most successful ways of teaching their students. Especially teachers in more disadvantaged schools seem to experience more difficulties in teaching innovatively and in finding the optimal balance between IL and traditional education for their students. Offering these teachers additional support aimed at finding the right balance for their students, could help them in their teaching practices and could benefit students in these schools. Moreover, it is therefore of crucial importance that teacher education is aimed at providing teachers with a broad repertoire of instructional methods varying from traditional to innovative and with the skills to determine how and when to use which aspect out of their repertoire.

These outcomes suggest that IL may have certain drawbacks. Not all aspects of IL that were implemented in the schools we studied are equally beneficial to students' motivation and achievement, and they are not equally beneficial for different student populations. Caution is therefore warranted when implementing aspects of IL. A high level of pedagogical skills is required to teach innovatively and teachers who are expected to implement educational reforms should be well-prepared. Moreover, these outcomes argue for caution with regard to educational reforms. A thorough analysis of how different aspects of any educational reform may work for a specific school population always needs to precede or at least accompany those reforms.

# APPENDIX A

| | Traditional learning | Innovative learning |
|---|---|---|
| Collaborative learning | Teacher A mostly lets the children work individually. Whenever they work in together, it is usually to work on a short assignment. Everybody in the group receives the same grade for a group assignment. | Teacher B lets the children work in groups en collaboration is emphasized: every student participates and is responsible for the final group product. Teacher B also discusses how to collaborate: how to interact with each other and how to solve problems if those arise? Whenever an assignment is finished every students is held responsible for their own part. |
| Responsibility of the learning process | Teacher B tells the students what to do and when to work on which subject. So, all students work together on the same subject at the same time. Teacher B usually starts the lessons in front of the class and decides when students have to finish something. | In teacher A's class, students can plan for themselves when they want to work on which subject and on which assignment. So, not everybody works on the same subject at the same time. Students themselves are responsible for finishing their assignments in time. Students work with their own week schedule or planner. They often work independently and are allowed to make a lot of choices for themselves. Assignment allow students to work on them for a prolonged period of time and to explore for themselves. The teachers helps when necessary. |
| Authentic learning | In teacher A's class, the lessons such as calculations or spelling principles are often repeated so students can remember it well. Often, teachers learn principles or rules by heart. | Teacher B uses a lot examples of situations that students are faced with outside of school and thus especially relevant to them. Sometimes, lessons take place outside of the school or people from outside the school come into the classroom to tell something. At teacher B's school a biology class is for example taught outside, or students are allowed to write papers about topics they want to learn more about. |
| Innovative assessment methods | In teacher A's class, students often make standardized tests to determine their progress. The teacher keeps very well track of how students are performing in comparison to the national average, in order to identify students that are performing below average at an early stage. Students' get a report card with grades. This shows whether they are doing well in school. | In addition to tests, teacher B lets students save their work in a portfolio to determine whether the learning has progressed. Teacher B discusses with students, for example based on their portfolio, where they are and what they can continue to work on. |

# APPENDIX B

| | Teacher and student perception of innovativeness | Students' preferences toward innovativeness |
|---|---|---|
| Collaborative learning | Traditional: Students do not often work together, i.e., maximum only once or twice a week, and when they work together, it is mostly to do smaller tasks. | Traditional: Student prefers to work individually, either because he or she like it better or because he or she feels they learn more from working individually. |
| | Mixed: Response in between the low and high category, for example when the student works together often, but only on smaller tasks. | Mixed: Response in between the low and high category, for example when the student expresses that he/she would prefer a combination of both individual and collaborative learning. |
| | Innovative: Students work together multiple times a week, including working on larger projects or assignments of which the structure included aspects of individual accountability and shared responsibility. Or when students are usually allowed to choose whether they want to work together or alone. | Innovative: Student prefers working together, either because he/she likes it better or because he/she feels they would learn more from working collaboratively. |
| Self-directed learning | Traditional: The teacher is mostly in charge of the learning process and students do not have to plan their work themselves. After instruction by the teachers, all students work on the same subjects. | Traditional: Student prefers the teacher to be mostly in charge of the learning process, telling them what and how to do it, and they do not have to plan their work themselves. |
| | Mixed: Response in between the low and high category. | Mixed: Response in between the low and high category. |
| | Innovative: For a substantial part of the day, students plan for themselves when they want to work on which subject and on which assignment and students themselves are responsible for finishing their assignments in time. | Innovative: Student prefers to plan when they want to work on which subject and on which assignment and are responsible for finishing their assignments in time. |

| | Teacher and student perception of innovativeness | Students' preferences toward innovativeness |
|---|---|---|
| Authentic learning | Traditional: Students learn mostly from books with learning is mostly aimed at memorization. | Traditional: student prefers learning from books and learning aimed at memorization, either because he/she likes that better or because he/she feels they would learn more from working that way. |
| | Mixed: Responses includes elements of both low and high degrees of authentic learning. | Mixed: the preferred learning environment includes elements of both low and high degrees of authentic learning. |
| | Innovative: Learning connects to students' daily lives and real world situations, for example by having students choosing their own topics for assignments, field trips, or inviting guest speakers. | Innovative: Student prefers ways of learning that connects to their daily lives and real world situations, either because he/she likes that better or because he/she feels they would learn more from working that way. |
| Innovative assessment | Traditional: Assessment is mostly summative by means of (formal) tests. Students get grades and report cards. | Traditional: Student considers summative testing beneficial to their learning. |
| | Mixed: Response in between the low and high category, for example when a teacher uses formal tests both as a way to see how students scored compare to the average class score and as a way for students to reflect on their own progress. | Mixed: the preferred assessment method includes a combination of formative and summative assessment. |
| | Innovative: Assessment is mostly formative and focused on progress of individual students, i.e., by means of a portfolio or for example conversations between the teacher and student. | Innovative: Student considers formative testing beneficial to their learning. |

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# SAMENVATTING

## INLEIDING

Motivatie voor school is belangrijk voor de onderwijsloopbaan van leerlingen. Het heeft effect op de leerprestaties van leerlingen bovenop effecten van intelligentie, achtergrond- en persoonlijkheidskenmerken van leerlingen (Gottfried, 1985; Gottfried, Marcoulides, Gottfried, Oliver, & Guerin, 2007; Spinath, Spinath, Harlaar, & Plomin, 2006; Steinmayr, 2009, Steinmayr & Spinath, 2009; Wigfield & Cambria, 2010). Uit eerder onderzoek is regelmatig gebleken dat de motivatie van leerlingen voor school en leren afneemt nadat zij de overgang naar het voortgezet onderwijs gemaakt hebben (De Fraine, Damme, & Onghena, 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Furrer, Marchand, & Kindermann, 2008; Van der Veen & Peetsma, 2009). Hoewel er weinig onderzoek verricht is naar ontwikkelingen in motivatie gedurende de basisschoolperiode, zijn er aanwijzingen dat deze afname in motivatie al begint voor de overgang naar het voortgezet onderwijs (e.g., Nurmi & Aunola, 2005; Skinner et al., 2008; Spinath & Spinath, 2005; Stoel, Peetsma, & Roeleveld, 2001). Vanwege de sterke relatie tussen motivatie en leerprestaties kan dit als zorgwekkend gezien worden. Bovendien kunnen kenmerken als interesse in leren, zelfvertrouwen en bereidheid om inzet te tonen op zichzelf al als wenselijk beschouwd worden. Doelstelling van dit proefschrift was daarom meer inzicht te verkrijgen in de ontwikkeling van motivatie van leerlingen gedurende de tweede helft van de basisschool en in de relatie tussen ontwikkelingen in motivatie en groei in leerprestaties. Daarbij werd rekening gehouden met verschillen tussen leerlingen op basis van geslacht, sociaal-economische status (SES) en etnische achtergrond.

Ontwikkelingen in motivatie kunnen niet begrepen worden zonder rekening te houden met de leercontext. De leercontext wordt in toenemende mate gezien als een belangrijke factor in het verklaren van motivatie voor school en

leerprestaties (Pintrich, 2004). Daarom had dit proefschrift eveneens als doelstelling te onderzoeken hoe verschillende aspecten van de leercontext, in het bijzonder de samenstelling van de klas en wijze van lesgeven, samenhangen met ontwikkelingen in de motivatie van leerlingen gedurende de tweede helft van het basisonderwijs. Vergeleken met meer traditionele vormen van onderwijs, krijgen leerlingen bij innovatieve vormen van onderwijs een actievere rol in hun eigen leerproces. Er wordt vaak verondersteld dat dit een positief effect zal hebben op hun motivatie (Volet & Järvelä, 2001; Boekaerts & Niemivirta, 2000). In dit proefschrift is onderzocht of innovatieve vormen van onderwijs inderdaad samenhangen met positieve ontwikkelingen in motivatie. In eerder onderzoek werd weinig aandacht besteed aan de vraag of of innovatieve vormen van onderwijs even gunstig zijn voor verschillende leerlingpopulaties. In Nederland zitten veel achterstandsleerlingen – met name leerlingen met een niet westerse allochtone achtergrond of met een lage SES – in een klas zitten met relatief veel klasgenoten met een vergelijkbare achtergrond (Peters & Walraven, 2011). De mate waarin leerkrachten les geven volgens principes van innovatief onderwijs hangt mogelijk samen met hun perceptie van de leerbehoeften van hun leerlingen; die kan variëren afhankelijk van de samenstelling van de klas. Om na te gaan in hoeverre deze aspecten van de leercontext (samenstelling van de klas en wijze van lesgeven) bijdragen aan verschillen in prestaties tussen verschillende groepen leerlingen en aan een mogelijke afname van motivatie, werden de relaties onderzocht tussen enerzijds de samenstelling van de klas en aspecten van innovatief onderwijs en anderzijds ontwikkelingen in motivatie en prestaties, waarbij rekening werd gehouden met verschillen in geslacht, SES en etnische achtergrond van leerlingen.

**Hoofdstuk 1** beschrijft allereerst de theoretische achtergrond en geeft een overzicht van de verschillende studies in het proefschrift. In **hoofdstuk 2** wordt beschreven hoe verschillende aspecten van motivatie zich ontwikkelen gedurende de tweede helft van het basisonderwijs en in hoeverre deze ontwikkelingen gerelateerd zijn aan groei in prestaties. Ook wordt beschreven in hoeverre deze ontwikkelingen in motivaties en relaties met prestaties verschillen tussen leerlingen met verschillende achtergrondkenmerken. In

**hoofdstuk 3** wordt beschreven hoe de sociaal-economische en etnische samenstelling van de klas samenhangt met ontwikkelingen in motivatie en prestaties. Daarna wordt in **hoofdstuk 4** beschreven hoe opvattingen van leerkrachten ten aanzien van de wijze van lesgeven verband houden met hun leerlingpopulatie. In **hoofdstuk 5** wordt nagegaan of leerlingpercepties en voorkeuren ten aanzien van innovatief en traditioneel onderwijs samenhangen met achtergrondkenmerken van leerlingen. In **hoofdstuk 6** wordt tenslotte nagegaan hoe aspecten van innovatief onderwijs samenhangen met ontwikkelingen in motivatie en leerprestaties voor leerlingen met verschillende achtergrondkenmerken. Alvorens de belangrijkste bevindingen per deelstudie en de algemene discussie besproken worden, zal eerst de opzet van het onderzoek nader worden toegelicht.

## OPZET VAN HET ONDERZOEK

*Participanten.* Aan het onderzoek namen 722 leerlingen en hun leerkrachten uit 37 klassen van 25 scholen verspreid over Nederland deel. Deze leerlingen vormen een *subsample* van het groep vijf cohort van het driejaarlijkse COOL$^{5\text{-}18}$ onderzoek (Cohort Onderzoek Onderwijs Loopbanen), een grootschalig Nederlands cohortonderzoek naar de onderwijsloopbanen van leerlingen (Driessen, Mulder, Ledoux, Roeleveld, & van der Veen, 2009). De leerlingen uit de *subsample* bleken vergelijkbaar met de leerlingen uit het grotere COOL onderzoek. Vanuit de groep vijf meting van het COOL onderzoek en de groep acht meting drie jaar later, was informatie beschikbaar over de achtergrond van leerlingen, hun motivatie en hun leerprestaties. Voor dit proefschrift, werden tussen deze twee metingen drie aanvullende metingen verricht bij de *subsample*. Tijdens elke meting vulden de leerlingen en hun leerkrachten vragenlijsten in. Tabel 1 geeft een overzicht van de dataverzameling. Tevens werden twee kwalitatieve interviewstudies verricht (beschreven in hoofdstuk 4 en 5) waaraan negen leerkrachten en 45 leerlingen deelnamen die geselecteerd waren uit de grotere steekproef van de overige deelstudies.

Tabel 1.
*Schematisch overzicht van de dataverzameling.*

| Meting | Leerjaar | Maanden |
|---|---|---|
| 1 (COOL-1) | Halverwege groep 5 | Januari/februari, 2008 |
| 2 | Begin groep 7 | September/oktober, 2009 |
| 3 | Halverwege groep 7 | Januari/februari/maart, 2010 |
| 4 | Begin groep 8 | September/oktober, 2010 |
| 5 (COOL-2) | Halverwege groep 8 | Januari/februari/maart, 2011 |

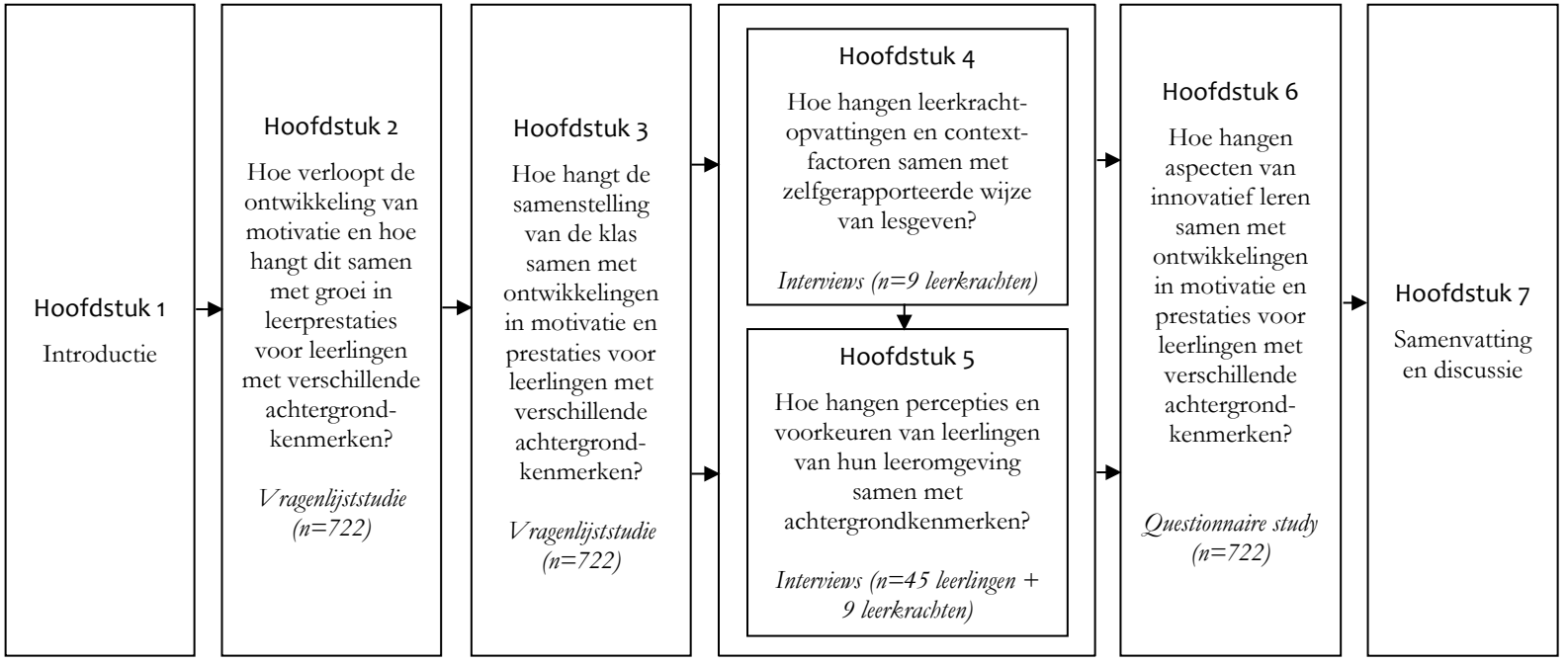
*Instrumenten.* De ontwikkeling van drie aspecten van motivatie werd in dit proefschrift onderzocht. Taakoriëntatie betreft de mate waarin leerlingen gericht zijn op hun schooltaken en het verbeteren van hun competentie. Cognitief zelfvertrouwen verwijst naar het begrip *academic self-efficacy* en betreft verwachtingen van leerlingen of hun geloof in eigen kunnen wat betreft hun schooltaken. Zowel taakoriëntatie als cognitief zelfvertrouwen zijn vormen van persoonlijke motivationele opvattingen van leerlingen. Een ander aspect van motivatie is het gemotiveerde gedrag van leerlingen. In dit proefschrift werd in dat verband de werkhouding van leerlingen onderzocht. Onder schooltijd vulden de leerlingen en hun leerkrachten vragenlijsten in over motivatie. Deze omvatten zelfrapportages voor de leerlingen over taakoriëntatie en cognitief zelfvertrouwen, evenals leerkrachtrapportages van de werkhouding van leerlingen. Hoewel zelfrapportages hun beperkingen hebben (Jobe, 2000), maakt de interne aard van persoonlijke motivationele opvattingen zelfrapportages een van de meest geschikte instrumenten die voorhanden zijn om motivatie te meten. Gemotiveerd gedrag daarentegen is een meer zichtbaar onderdeel van motivatie. De werkhouding werd daarom onderzocht aan de hand van leerkrachtrapportages. Deze schaal bevatte items over twee sleutelaspecten van gemotiveerd gedrag, namelijk intensiteit en doorzettingsvermogen. De taakoriëntatie- en werkhouding schalen waren in het Nederlands opgesteld, de schaal over cognitief zelfvertrouwen was voor het COOL onderzoek vanuit het Engels naar het Nederlands vertaald. Alle schalen

waren reeds gevalideerd ten behoeve van het COOL onderzoek (Driessen et al., 2009; Jungbluth, Roede, & Roeleveld, 2001). Om na te gaan of de schalen bij verschillende metingen en groepen hetzelfde construct meten is met behulp van multigroep factoranalyses de meetinvariantie van de schalen onderzocht en dit bleek voldoende het geval te zijn. Informatie over leerprestaties, gemeten met behulp van toetsen van het leerlingvolgsysteem van het CITO, werd verstrekt door de scholen. Voor de twee kwalitatieve studies werden interviews verricht om inzicht te krijgen in de opvattingen van leerkrachten, hun zelf-gerapporteerde wijze van lesgeven en leerlingpercepties en -voorkeuren met betrekking tot innovatief en traditioneel onderwijs.

*Analyses.* De longitudinale data werd geanalyseerd met behulp van *latent growth curve modeling* en autoregressietechnieken, waarbij rekening gehouden werd met de *multilevel* structuur van de data. Multigroep analyses zijn gebruikt om verschillen tussen groepen leerlingen te onderzoeken. De genoemde technieken werden met elkaar gecombineerd in dit proefschrift en aangevuld met twee kwalitatieve studies om eveneens meer inzicht te verkrijgen in leerkracht- en leerlingpercepties van de leeromgeving.

## SCHEMATISCH OVERZICHT

In figuur 1 wordt een schematisch overzicht weergegeven van de verschillende hoofdstukken van het proefschrift.




*Figuur 1.* Schematisch overzicht van dit proefschrift

## SAMENVATTING VAN DE BELANGRIJKSTE BEVINDINGEN

**Hoofdstuk 2** beschrijft een studie naar de ontwikkeling van motivatie van leerlingen in de laatste jaren van het basisonderwijs. Eerder onderzoek laat zien dat motivatie van leerlingen in het voortgezet onderwijs afneemt (De Fraine et al., 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Marchand, Furrer & Kindermann, 2008; Van der Veen & Peetsma, 2009). De studies die beschikbaar zijn over ontwikkelingen in motivatie gedurende het basisonderwijs geven aanwijzingen dat er in het basisonderwijs mogelijk ook al sprake is van een dalende trend in motivatie. Echter, longitudinaal onderzoek naar de ontwikkeling van motivatie in het basisonderwijs is beperkt. Daarom werden in dit deelonderzoek ontwikkelingen in motivatie van groep vijf tot en met groep acht onderzocht onder 722 leerlingen.

De bevindingen van deze studie laten zien dat ontwikkelingen in motivatie gedurende de tweede helft van de basisschool verschillen per deelaspect van motivatie. Tussen groep vijf en acht bleek taakoriëntatie af te nemen, cognitief zelfvertrouwen liet een niet-lineaire ontwikkeling zien en nam eerst af, maar daarna toe, en de werkhouding ten slotte, nam zelfs toe tussen groep vijf en acht. Daarnaast werden opvallende verschillen gevonden tussen jongens en meisjes en leerlingen met verschillende sociaal-economische en etnische achtergronden. Het meest opvallend waren de verschillen die werden gevonden in werkhouding. In groep vijf waren de meeste groepen min of meer vergelijkbaar wat betreft hun werkhouding, maar tegen het einde van de basisschool begonnen verschillen te ontstaan of werden bestaande verschillen groter, in het nadeel van jongens, leerlingen met een lage SES en leerlingen van niet-westerse allochtone afkomst. De negatievere ontwikkelingen die werden gevonden bij deze groepen kunnen als zorgwekkend worden beschouwd, ook omdat de resultaten van deze deelstudie lieten zien dat voor alle groepen leerlingen, ongeacht hun achtergrondkenmerken, ontwikkelingen in motivatie substantieel samenhingen met groei in leerprestaties.

In de daaropvolgende studie, beschreven in **hoofdstuk 3**, werd onderzocht in welke mate ontwikkelingen in motivatie en leerprestaties samenhingen met de

etnische en sociaal-economische samenstelling van de klas. In het algemeen wordt verondersteld dat segregatie in het onderwijs tot negatieve uitkomsten leidt voor leerlingen in een klas met veel leerlingen met een lage SES en/of veel leerlingen van niet-westerse allochtone afkomst. Een veelgehoorde zorg is dat een grote proportie leerlingen met een lage SES of van niet-westerse allochtone afkomst (met andere woorden "achterstandsleerlingen") de rest van de groep 'naar beneden zal halen' en dat deze leerlingen zelf niet kunnen profiteren van het potentieel van meer bevoorrechte klasgenoten (Bakker, Denessen, Peters, & Walraven, 2011).

In de betreffende studie werd de houdbaarheid van deze assumptie longitudinaal bij dezelfde steekproef van 722 leerlingen in de tweede helft van de basisschool nagegaan. De uitkomsten lieten zien dat gedurende iedere meting lage SES leerlingen minder goed presteerden op begrijpend lezen wanneer zij in een klas zaten met meer leerlingen met een lage-SES achtergrond dan wanneer zij in een klas zaten met meer leerlingen met een hogere SES. Hierbij werd rekening gehouden met individuele achtergrondkenmerken van leerlingen, waaronder cognitieve capaciteiten, geslacht en etniciteit. Daarentegen bleek dat zowel allochtone als autochtone leerlingen beter presteerden in klassen met een hoger aantal allochtone leerlingen, waarbij opnieuw rekening was gehouden met individuele achtergrondkenmerken van leerlingen. Mogelijk zullen in de praktijk de genoemde effecten van etnische en sociaal-economische samenstelling van de klas vaak tegen elkaar wegvallen. De rekenprestaties van allochtone leerlingen waren echter lager wanneer allochtone leerlingen in een klas zaten met meer allochtone leerlingen. De uitkomsten lieten verder zien dat ongeacht de achtergrondkenmerken van leerlingen, persoonlijke motivationele opvattingen zich positiever ontwikkelden in klassen met meer achterstandsleerlingen. In andere woorden, de motivationele opvattingen van leerlingen (taakoriëntatie en cognitief zelfvertrouwen) – ongeacht of zij een allochtone, autochtone, lage, gemiddelde of hoge SES hadden – lieten een positievere ontwikkeling zien wanneer zij meer klasgenoten hadden met een lage SES of een allochtone achtergrond. Vooral allochtone leerlingen leken te profiteren wat betreft hun motivatie wanneer zij in een klas

zaten met veel andere allochtone leerlingen. Deze laatste uitkomst sluit aan bij de specialisatiehypothese (Driessen, Doesborgh, Ledoux, Van der Veen, & Vergeer, 2003), die veronderstelt dat leerkrachten van gesegregeerde klassen beter in staat zijn te voorzien in de specifieke behoeften van hun leerlingpopulatie.

De specialisatiehypothese heeft normaliter vooral betrekking op de inhoud of het tempo van instructie (bijvoorbeeld het besteden van meer tijd aan taalonderwijs), maar zou mogelijk ook betrekking kunnen hebben op het aanpassen van de wijze van instructie aan de specifieke leerlingpopulatie. Eerder onderzoek naar leerkrachtverwachtingen heeft aangetoond dat leerkrachtpercepties van het niveau of de achtergrond van individuele leerlingen effect kunnen hebben op een verscheidenheid aan leerkrachtgedragingen ten aanzien van individuele leerlingen (zie bijvoorbeeld, Rosenthal 1994; Rubie-Davies, 2010). Echter, er is weinig onderzoek verricht naar de vraag in hoeverre leerkrachten hun praktijken ten opzichte van de gehele groep aanpassen op hun percepties van hun leerlingpopulatie. De wijze waarop een leerkracht lesgeeft kan variëren van traditioneel tot innovatief (Hickey, 1997; O'Donnell, 2012; Simons, Van der Linden, & Duffy, 2000; Wilson, 2011). In traditioneel onderwijs geven leerkrachten instructie en sturen het leerproces van hun leerlingen. In innovatief onderwijs is hun rol verschoven naar het bieden van een leercontext waarin leerlingen actief en autonoom hun kennis construeren en waarin zij begeleiding daarbij bieden. De rol van de leerling verschuift daarmee van passieve ontvanger van instructie naar autonome deelnemer die actief betrokken is en verantwoordelijk is voor het eigen leerproces (Furtak & Kunter, 2012). In **hoofdstuk 4** wordt onderzoek naar de opvattingen van leerkrachten beschreven. Er werd onderzocht of voorkeuren van leerkrachten en wijze van lesgeven samenhingen met de wijze waarop ze de leerlingpopulatie percipieerden. Meer specifiek werd er nagegaan in hoeverre leerkrachten een persoonlijke voorkeur hadden voor autonomie-ondersteunend versus sturend onderwijs en in hoeverre hun zelf-gerapporteerde wijze van lesgeven beïnvloed werd door percepties van hun leerlingpopulatie. Ook andere contextuele factoren, zoals formele regels of schoolbeleid werden in ogenschouw genomen.

In deze deelstudie werden negen groep acht leerkrachten geïnterviewd. Zij waren op basis van hun zelfgerapporteerde mate van innovatief leren geselecteerd uit de grotere steekproef die deelnam aan de eerder beschreven deelstudies. De leerkrachten waarvan de scores het meest uit elkaar lagen werden gelecteerd zodat de steekproef zo veel mogelijk variatie bevatte. Hoewel vrijwel alle leerkrachten aangaven een persoonlijke voorkeur voor autonomie-ondersteunend onderwijs te hebben, gaven zij eveneens aan dat zij regelmatig op sturende wijze lesgaven. Vooral op achterstandsscholen werd vaak een sturende wijze van lesgeven gerapporteerd. Leerkrachten op andere scholen gaven vaker aan autonomie-ondersteunend les te geven. Echter, de meeste van deze leerkrachten gaven aan dat ook zij bij hun 'risicoleerlingen' meer sturend waren, daarbij vooral refererend aan leerlingen die laag presteren, of leerlingen met lage SES of allochtone achtergrond. In het algemeen leken leerkrachtpercepties van individuele leerlingen of van hun leerlingpopulatie de belangrijkste redenen voor leerkrachten om te kiezen voor een sturende wijze van lesgeven, ook als dit niet aansloot bij hun persoonlijke voorkeur. Dit leek voor hen zwaarder te wegen dan andere contextuele factoren, zoals formele regels of schoolbeleid. Aansluitend bij de specialisatiehypothese, waren de meeste leerkrachten van mening dat een sturende wijze van lesgeven het meest geschikt en gunstig was voor 'risicoleerlingen' en dat, door het bieden van deze meer sturende wijze van lesgeven, zij zo goed mogelijk probeerden aan te sluiten bij de behoeften van hun leerlingpopulatie.

In de daaropvolgende deelstudie, beschreven in **hoofdstuk 5**, werd gekeken naar de opvattingen van leerlingen. In deze studie werd onderzocht in hoeverre leerlingen met verschillende achtergrondkenmerken verschilden in hun voorkeuren ten aanzien van de wijze van lesgeven en in hun percepties van de wijze waarop bij hen in de klas les werd gegeven. Het '*person-environment fit* perspectief' (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, Eccles, & Sameroff, 2000) veronderstelt dat een goede aansluiting tussen kenmerken van de leerling (bijvoorbeeld wat betreft voorkeuren of behoeften) en leeromgeving essentieel is voor goede leeruitkomsten. Conform dit perspectief heeft eerder onderzoek laten zien dat een hogere mate van overeenstemming tussen

voorkeuren van leerlingen voor de wijze van lesgeven en hun percepties van de wijze waarop daadwerkelijk les werd gegeven positief bijdroeg aan groei in leerprestaties (Fisher & Fraser, 1983; Johnson & Engelhard, 1992). In de deelstudie die in hoofdstuk 5 wordt beschreven, werd nagegaan in hoeverre leerlingpercepties en de voorkeuren van leerlingen ten aanzien van de mate van innovatief leren (IL) varieerden naar gelang hun sociaal-economische en etnische achtergrond en hun geslacht. Ook werd de overeenstemming tussen leerlingpercepties en hun voorkeuren vergeleken voor de verschillende groepen. Op basis van interviews met 45 leerlingen uit negen verschillende klassen werden percepties en voorkeuren in kaart gebracht. De percepties die leerlingen hadden met betrekking tot de wijze van lesgeven werden allereerst vergeleken met de percepties van hun leerkrachten (de leerkrachten beschreven in hoofdstuk 4). De leerlingpercepties bleken in hoge mate overeen te komen met leerkrachtpercepties. Verder bleek dat allochtone leerlingen en leerlingen met een lage SES, in vergelijking met autochtone leerlingen en leerlingen met een gemiddelde of hoge SES, vaker hun leeromgeving als traditioneel percipieerden en zij gaven ook vaker aan een voorkeur te hebben voor een meer traditionele wijze van lesgeven. Er werden geen verschillen tussen jongens en meisjes gevonden in voorkeuren of percepties. Voor de meeste leerlingen kwamen de percepties van de wijze van lesgeven in hun klas in hoge mate overeen met hun voorkeuren. Als gevolg werden geen verschillen tussen de groepen gevonden in de mate van overeenkomst tussen percepties en voorkeuren.

De uitkomsten van zowel hoofdstuk 4 als 5 suggereren dat leerkrachten hun wijze van lesgeven aanpassen aan (de voorkeuren van) hun leerlingpopulatie om zo een zo goed mogelijke '*person-environment fit*' te creëren voor hun leerlingen. In overeenstemming met hun voorkeuren bleken lage SES en allochtone leerlingen namelijk vaker op sturende en meer traditionele wijze les te krijgen in vergelijking met hogere SES en autochtone leerlingen die vaker op meer innovatieve, autonomie-ondersteunende wijze les kregen. Echter, in deze studies werd niet nagegaan of de mate van innovatief leren ook daadwerkelijk samenhangt met de motivatie en leerprestaties van leerlingen. In **hoofdstuk 6** is daarom nagegaan in hoeverre relaties tussen innovatief leren (IL) volgens de

leerkracht en ontwikkelingen in motivatie en prestaties verschilden voor leerlingen met verschillende achtergrondkenmerken (lage versus gemiddelde en hoge SES, allochtone versus autochtone leerlingen en jongens versus meisjes). In deze studie werd onderscheid gemaakt tussen drie aspecten van innovatief leren, namelijk authentiek leren, samenwerkend leren en aandacht voor zelfregulatie.

De relaties tussen de mate van IL volgens leerkrachten en ontwikkelingen in motivatie en prestaties gedurende de laatste twee jaren van het basisonderwijs werden onderzocht bij de steekproef van 722 leerlingen uit 37 verschillende klassen. De uitkomsten lieten zien dat de meeste relaties tussen aspecten van IL en ontwikkelingen in motivatie en prestaties niet significant of klein waren. De relaties die wel significant waren, bleken zowel positief als negatief, afhankelijk van welk aspect van IL in beschouwing genomen werd. Een hogere mate van samenwerkend leren hing positief samen met de ontwikkeling van motivatie, terwijl de mate van authentiek leren vooral negatief samenhing met ontwikkelingen in motivatie en aandacht voor zelfregulatie zowel positief als negatief samenhing met ontwikkelingen in motivatie. Afhankelijk van het aspect van IL waar naar gekeken wordt, kan een hogere mate van IL dus zowel samenhangen met groei als afname in motivatie. De resultaten wezen verder uit dat de relaties tussen IL en ontwikkelingen in motivatie en prestaties varieerden voor leerlingen met verschillende achtergrondkenmerken. Voor jongens, lage SES en allochtone leerlingen hing een hogere mate van IL samen met negatievere ontwikkelingen in motivatie en rekenprestaties in vergelijking met meisjes, leerlingen met gemiddelde en hoge SES en autochtone leerlingen. In het algemeen lijken de uitkomsten van de twee kwalitatieve studies beschreven in hoofdstuk 4 en 5 en de studie beschreven in hoofdstuk 6 erop te wijzen dat leerkrachten minder goed in staat zijn op succesvolle wijze innovatief les te geven aan jongens, leerlingen met lage SES en allochtone leerlingen.

# DISCUSSIE

Hierboven zijn de belangrijkste bevindingen van de vijf studies die dit proefschrift vormen samengevat. In deze sectie zullen de bijdragen en conclusies van dit proefschrift kritisch besproken worden.

## ONTWIKKELINGEN IN MOTIVATIE GEDURENDE DE TWEEDE HELFT VAN DE BASISSCHOOL

De resultaten van dit proefschrift dragen bij aan bestaand motivatieonderzoek doordat ze inzicht geven in de aard van motivationele ontwikkelingen in de laatste jaren van de basisschool en de samenhang met groei in leerprestaties. Daarnaast wordt inzicht gegeven in factoren van de leercontext die samenhangen met ontwikkelingen in motivatie, waarbij rekening gehouden werd met verschillen tussen groepen. Terwijl eerder onderzoek voornamelijk een afname in de motivatie van leerlingen voor school liet zien nadat leerlingen de overgang naar het voortgezet onderwijs maken (De Fraine et al., 2007; Gottfried, Fleming, & Gottfried, 2001; Skinner, Marchand, Furrer & Kindermann, 2008; Van der Veen & Peetsma, 2009), laten de uitkomsten van dit proefschrift zien dat motivatie zich volgens een meer gedifferentieerd patroon ontwikkelt voordat leerlingen de overgang naar het voortgezet onderwijs maken. Of de motivatie van leerlingen wel of niet afneemt, bleek te variëren voor verschillende aspecten van motivatie en bleek samen te hangen met diverse achtergrond- en contextuele factoren en met het samenspel tussen deze factoren.

Opvallend was dat de werkhouding van leerlingen zelfs toenam gedurende de laatste jaren van de basisschool. Voortgezet onderwijs in Nederland kent verschillende niveaus waar leerlingen hun schoolloopbaan kunnen vervolgen. In het laatste jaar van het basisonderwijs geeft de leerkracht van groep acht een schooladvies met betrekking tot het niveau van vervolgonderwijs dat hij of zij het meest geschikt acht voor een leerling. De CITO eindtoets weegt vaak zwaar mee in de keuze voor het uiteindelijke niveau van voortgezet onderwijs. Als

gevolg hiervan is het laatste jaar van de basisschool, groep acht, een erg belangrijk jaar voor de verdere schoolloopbaan van leerlingen. De toename in werkhouding suggereert dat leerlingen aan het einde van de basisschool harder werken en zich bewust zijn van het belang van dit laatste jaar. Deze positieve ontwikkeling in werkhouding verschilde van ontwikkelingen in persoonlijke motivationele opvattingen (taakoriëntatie en cognitief zelfvertrouwen) en geeft aan dat de verbetering in werkhouding niet toe te schrijven is aan positieve ontwikkelingen in motivationele opvattingen. De toename in werkhouding is dus vermoedelijk toe te schrijven aan externe oorzaken. Gedurende dit laatste jaar zullen zowel leerkrachten als ouders leerlingen waarschijnlijk aanmoedigen om hun best te doen en werken leerlingen mogelijk harder om een hoger niveau van vervolgonderwijs te bereiken en niet vanuit intern aangestuurde motieven.

Verder bleek dat lage SES leerlingen, allochtone leerlingen en jongens in vergelijking met andere groepen minder gunstige ontwikkelingen in werkhouding lieten zien. Deze verschillen ontstonden of namen toe in de loop van de basisschool en konden eveneens niet toegeschreven worden aan ontwikkelingen in motivationele opvattingen aangezien deze leerlingen vergelijkbare, of zelfs positievere ontwikkelingen in motivationele opvattingen hadden in vergelijking met andere groepen. De resultaten suggereren dat aan het einde van de basisschool – een periode die van essentieel belang is voor de verdere schoolloopbaan – lage-SES leerlingen, allochtone leerlingen en jongens er minder goede in slagen gemotiveerde gedragingen te laten zien die door leerkrachten opgevat kunnen worden als tekenen van een goede werkhouding. Leerkrachten hebben mogelijk een voorkeur voor gedragingen die meer typisch zijn voor meisjes, autochtone leerlingen of leerlingen met een hogere SES. Een *bias* in het voordeel van laatstgenoemde groepen zou derhalve deze uitkomsten kunnen verklaren. De bevinding dat de verschillen in werkhouding in groep vijf nog relatief klein waren en dus pas later ontstonden of toenamen zou erop kunnen wijzen dat deze *bias* van leerkrachtenmogelijk beperkt is. Aan de andere kant zou een dergelijke *bias* van leerkrachten zich meer kunnen gaan manifesteren naarmate leerlingen ouder worden en de adolescentiefase gaan bereiken. De precieze oorzaken van deze verschillende ontwikkelingen in

werkhouding zijn moeilijk vast te stellen. Er kan echter wel gesteld worden dat deze bevindingen zorgwekkend te noemen zijn.

Vanwege de sterke relatie die werd gevonden tussen ontwikkelingen in werkhouding en groei in prestaties, zou de minder gunstige ontwikkeling in werkhouding van lage SES leerlingen, allochtone leerlingen en jongens kunnen suggereren dat dit een belangrijke factor is die bijdraagt aan bestaande achterstanden in leerprestaties van deze groepen. Gezien de wederkerige aard van de relatie tussen motivatie en prestaties, regelmatig aangetoond in eerder onderzoek (Harackiewicz, Durik, Barron, Linnenbrink,-Garcia & Tauer, 2008; Schunk et al., 2008, Steinmayr & Spinath, 2009; Marsh, & Martin, 2011; Martin & Liem, 2010), kan eveneens verondersteld worden dat toenemende verschillen in werkhouding tussen groepen zowel bijdragen aan als gevolg zijn van bestaande achterstanden in leerprestaties.

## DE LEEROMGEVING

Door de longitudinale relatie tussen aspecten van de leercontext en ontwikkelingen in motivatie en prestaties in beschouwing te nemen, draagt dit proefschrift bij aan bestaand leercontextonderzoek dat veelal effecten van de leeromgeving in cross-sectionele studies onderzocht heeft (Reynolds, Sammons, De Fraine, Townsend, & Van Damme, 2011). Longitudinale analysetechnieken, zoals latente groeicurve analyse, autoregressie en *multilevel* technieken werden gecombineerd om na te gaan in hoeverre de samenstelling van de klas en wijze van lesgeven samenhingen met ontwikkelingen in motivatie en prestaties. Dit werd aangevuld met kwalitatieve studies om dieper inzicht te verkrijgen in opvattingen van zowel leerkrachten als leerlingen met betrekking tot de leeromgeving.

In dit proefschrift bleek dat de samenstelling van de klas samenhing met ontwikkelingen in motivatie en prestaties. Er werden effecten gevonden die aansloten bij de specialisatiehypothese (Driessen et al., 2003), waarin wordt verondersteld dat leerkrachten in gesegregeerde klassen beter in staat zijn aan te sluiten bij de specifieke behoeften van hun leerlingpopulatie. Als aanvulling op

de specialisatiehypothese, die normaal refereert aan het aanpassen van de inhoud of het tempo van instructie, geeft dit proefschrift inzicht in de wijze waarop leerkrachten ook hun wijze van lesgeven aanpassen aan hun leerlingpopulatie.

Verder bleek uit dit proefschrift dat relaties tussen IL en ontwikkelingen in motivatie en prestaties over het algemeen niet significant of klein waren. Dat geeft aan dat we geen algemene conclusies kunnen trekken over de mate waarin IL bijdraagt aan motivatie of prestaties. Gezien de complexe aard en de situatie-specificiteit van motivatie, is dit geen ongebruikelijke bevinding (zie bijvoorbeeld, Van Nuland, 2011). De mate waarin leerkrachten IL of traditioneel onderwijs toepassen in hun lespraktijk is vermoedelijk van minder groot belang dan de kwaliteit waarmee zij dat doen. Verder bleken de uitkomsten voor verschillende aspecten van IL te verschillen. Zo bleek de mate van samenwerkend leren positiever samen te hangen met ontwikkelingen in motivatie dan authentiek leren of aandacht voor zelfregulatie. Dit duidt erop dat IL een multidimensioneel construct is en dat het belangrijk is onderscheid te maken tussen verschillende aspecten van IL. Er zijn verschillende studies met betrekking tot IL die zich inderdaad richten op specifieke aspecten en tot doel hebben zeer precies en zorgvuldig te onderzoeken welke aspecten effectief zijn en onder welke voorwaarden, zie bijvoorbeeld het onderzoek naar samenwerkend leren (zie bijvoorbeeld, Johnson & Johnson, 2009; Slavin, 1980). Echter, in veel onderzoek naar onderwijskundige vernieuwingen worden IL en gerelateerde onderwijskundige concepten zoals sociaal-constructivisme als eendimensionale concepten gezien die wel of niet succesvol kunnen zijn. De uitkomsten van dit proefschrift pleiten voor een meer precieze en gedifferentieerde benadering waarbij zorgvuldig gekeken wordt welke componenten van een onderwijsvernieuwing effectief zijn.

## "ONE SIZE DOES NOT FIT ALL?"

In dit proefschrift werd in het bijzonder naar verschillen tussen groepen leerlingen gekeken met betrekking tot relaties tussen leercontext en

ontwikkelingen in motivatie en prestaties. Daaruit bleek dat in het onderwijs de stelling "*one size does not fit all*" ook lijkt op te gaan. Een wijze van lesgeven die goed werkt bij de ene leerling of groep leerlingen, is niet noodzakelijkerwijs even succesvol bij andere (groepen) leerlingen. Meer specifiek bleek dat leerlingen met lage SES en allochtone leerlingen minder vaak de voorkeur gaven aan innovatief onderwijs en daar ook minder van profiteerden met betrekking tot ontwikkelingen in motivatie en prestaties. Bovendien gaven leerkrachten van 'achterstandsscholen' aan dat zij vormen van innovatief onderwijs minder geschikt vonden voor hun leerlingen en vaak op meer sturende, traditionele wijze lesgaven. IL vereist actieve, zelfsturende en gezamenlijke deelname aan leeractiviteiten. Daar hebben lage SES en allochtone leerlingen mogelijk meer moeite mee als gevolg van het type taalgebruik en communicatie dat thuis gestimuleerd wordt.

Het onderwerp schoolsegregatie heeft ook betrekking op gelijkheid en gelijke kansen. Eén van de belangrijkste doelstellingen van onderwijsbeleid is het verkleinen van onderwijsachterstanden en compenseren voor initiële verschillen tussen leerlingen met verschillende achtergronden (Cohen, 2005). De uitkomsten van dit proefschrift suggereren echter dat IL mogelijk bestaande verschillen vergroot, maar deze conclusie is mogelijk te voorbarig. Hoewel leerkrachten op achterstandsscholen er beter in lijken te slagen motivatie van leerlingen te verbeteren en prestaties te verhogen wanneer zij op traditionele wijze lesgeven, onthouden zij deze leerlingen daarmee wellicht ook de kansen om zich te ontwikkelen tot autonome leerlingen die in staat zijn hun eigen leerproces te reguleren. In de onderwijspraktijk sluiten IL en traditioneel onderwijs elkaar echter niet uit. De uitdaging voor leerkrachten is het vinden van een optimale balans waarbij leerlingen de juiste hoeveelheid sturing en begeleiding krijgen en tegelijkertijd de mogelijkheden krijgen zich tot autonome, zelfsturende leerlingen te ontwikkelen.

Hoewel uit het in dit proefschrift beschreven onderzoek aanwijzingen naar voren komen dat er verschillen zijn tussen groepen leerlingen met verschillende achtergrondkenmerken in de mate waarin ze profiteren van IL, is de vraag niet beantwoord of IL – onder bepaalde voorwaarden – wel succesvol kan zijn voor

populaties van achterstandsleerlingen. Op achterstandsscholen zal het meer moeite kosten om in de loop van de jaren de vaardigheden te stimuleren die leerlingen nodig hebben om zelf hun leerproces te kunnen sturen. Om gelijke kansen voor iedere leerlingen te creëren is het de moeite waard verder te onderzoeken hoe leerkrachten, en in het bijzonder leerkrachten op achterstandsscholen, op succesvolle wijze een goede balans kunnen vinden tussen het overdragen van verantwoordelijkheid naar de leerlingen en het bieden van voldoende structuur.

Een belangrijk aandachtspunt waren verschillen tussen leerlingen met verschillende sociaal-economische en etnische achtergrond en tussen jongens en meisjes. Dit proefschrift liet verschillen zien tussen deze groepen in de mate waarin ze profiteren van aspecten van IL. Deze uitkomsten hebben echter betrekking op geaggregeerde resultaten over groepen van leerlingen. met vergelijkbare achtergrondkenmerken. Individuele verschillen tussen leerlingen binnen deze groepen zullen vermoedelijk zwaarder wegen dan de verschillen tussen de groepen. Het bestuderen van verschillen tussen groepen kan waardevolle inzichten opleveren met betrekking tot effectieve wijzen van lesgeven op scholen met verschillende leerlingpopulaties, maar daarbij is het van groot belang dat individuele verschillen niet over het hoofd gezien worden. In hun wijze van lesgeven passen veel leerkrachten zich aan aan hun leerlingpopulatie. Leerkrachten dienen echter ook in staat te zijn de leerbehoeften van individuele leerlingen te diagnosticeren om zo een leeromgeving te creëren waarin alle leerlingen zich optimaal kunnen ontwikkelen.

De uitkomsten lijken te suggereren dat IL minder effectief is voor leerlingen met lage SES, allochtone leerlingen en jongens. Deze uitkomst kan mogelijk ook toegeschreven aan een alternatieve verklaring. Leerkrachten op achterstandsscholen gaven vaker les op traditionele wijze omdat zij *geloofden* dat hun leerlingen niet beschikten over de vaardigheden die nodig zijn IL succesvol toe te passen. Hoewel deze leerkrachten de beste bedoelingen hadden en zich probeerden aan te passen aan de behoeften en mogelijkheden van hun leerlingen, zijn leerkrachtpercepties van de mogelijkheden van leerlingen niet

altijd correct en kunnen deze percepties gebaseerd zijn op vooroordelen ten opzichte van groepen (Van den Bergh et al., 2010). Als gevolg daarvan zijn veel lage SES en allochtone leerlingen mogelijk meer gewend aan traditioneel onderwijs. Wanneer zij op een later moment wel op innovatieve wijze les krijgen, profiteren ze daar mogelijk minder van omdat ze niet de mogelijkheden hebben gehad de benodigde vaardigheden te ontwikkelen. De oorspronkelijke opvatting van leerkrachten dat leerlingen niet geschikt waren voor IL, wordt op die manier ook bewaarheid en wordt dus een *self-fulfilling prophecy*.

De vraag of IL daadwerkelijk minder effectief is, vraagt om verder onderzoek, maar de resultaten laten in ieder geval zien dat het creëren van *succesvolle* innovatieve leeromgevingen door leerkrachten op achterstandsscholen als een veel grotere uitdaging wordt gezien dan door leerkrachten van andere scholen. Daarmee wijzen de resultaten uit dat schoolsegregatie niet alleen effect heeft op het type klasgenoten, de inhoud of tempo van instructie, het heeft ook effect op de rol die leerkrachten en leerlingen aannemen in het leerproces.

## BEPERKINGEN EN VERDER ONDERZOEK

Dit proefschrift heeft een aantal beperkingen om rekening mee te houden. Het proefschrift richtte zich op de mate waarin IL toegepast werd in de dagelijkse praktijk van leerkrachten. Leerkrachten rapporteerden over het algemeen een hoge mate van IL, maar de kwaliteit waarmee ze deze wijze van lesgeven toepasten is niet onderzocht. Veel leerkrachten zijn mogelijk meer gewend aan traditionele vormen van onderwijs. IL vereist dat leerkrachten geleidelijk de verantwoordelijkheid over het leerproces overdragen aan leerlingen en dat kan voor sommige leerkrachten lastig zijn. Verder onderzoek naar hoe IL succesvol kan worden geïmplementeerd bij verschillende leerlingpopulaties kan leiden tot meer inzicht in effectieve wijzen van lesgeven.

Taakoriëntatie werd in dit onderzoek meegenomen als een van de centrale aspecten van motivatie. Volgens doeltheorieën zijn ook andere doeloriëntaties

belangrijke componenten van de motivatie van leerlingen. Vooral prestatiegerichte doeloriëntaties, die zowel toenaderend als vermijdend kunnen zijn, zijn in dit verband relevant. Door ons alleen op taakoriëntatie te richten, hebben we ons beperkt tot relaties tussen de leercontext en de doeloriëntatie waarvan gebleken is dat deze gunstige effecten heeft op leren. In toekomstig onderzoek zou het ook interessant zijn na te gaan hoe verschillende aspecten van de leercontext samenhangen met minder gunstige doeloriëntaties of met doelprofielen (mogelijke combinaties van taak- en prestatiegerichte doeloriëntaties) volgens het *'multiple goal'* perspectief (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

Een aantal methodologische beperkingen dient ook te worden opgemerkt. De drie grootschaliger studies (hoofdstukken 2, 3 en 6) waren op vragenlijstgegevens gebaseerd. Taakoriëntatie en cognitief zelfvertrouwen werden beiden gemeten door middel van zelfrapportage door leerlingen. Zelfrapportage heeft een aantal beperkingen omdat het gevoelig is voor sociale wenselijkheid en het vereist dat leerlingen zich volledig bewust zijn van hun onderliggende motivationele opvattingen (Jobe, 2000). Echter, de interne aard van motivationele opvattingen maakt zelfrapportage tot één van de meest geschikte instrumenten die we tot onze beschikking hebben. Gemotiveerd gedrag (werkhouding) is echter een zichtbaar aspect van motivatie en derhalve niet met zelfrapportage gemeten maar door de leerkracht geëvalueerd. Dit draagt echter het risico met zich mee dat deze evaluaties door vooroordelen ten opzichte van bepaalde groepen gekleurd worden (Van den Bergh et al., 2010). Deze beperking kan onze conclusies met betrekking tot verschillen tussen groepen beïnvloed hebben. De mate waarin vooroordelen de leerkrachtevaluaties van de werkhouding van leerlingen beïnvloed hebben in verschillende leerjaren is onbekend en vraagt verder onderzoek.

Ook de mate van IL is vastgesteld met behulp van zelfrapportage door leerkrachten. In de studies beschreven in de hoofdstukken 4 en 5 had deze zelfrapportage de vorm van interviews en in hoofdstuk 6 ging het om vragenlijsten. Het gebruik van leerkrachtpercepties in onderzoek naar de leercontext is bekritiseerd omdat er sprake kan zijn van vooroordelen of sociale

wenselijkheid (Wubbels, Brekelmans, & Hooymayers, 1992). Andere studies betwisten die bewering (Fraser, 1982; Kunter & Baumer, 2006). Doordat de uitkomsten die wij vonden met betrekking tot IL veelal niet significant of klein waren, roept dit vragen op met betrekking tot de validiteit van het gebruikte instrument. Verschillende stappen zijn ondernomen om de validiteit van het instrument zo veel mogelijk te garanderen, waaronder het vergelijken van interview- en vragenlijstgegevens, het vergelijken van leerkracht- en leerlingpercepties, en het vergelijken met observaties die in een drietal klassen waren verricht. Al deze vergelijkingen lieten een substantiële mate van overeenstemming zien wat het minder waarschijnlijk maakt dat de uitkomsten het gevolg zijn van validiteitsproblemen. Echter, met deze instrumenten is alleen de *mate* van IL gemeten. In verder onderzoek zouden observaties verder inzicht kunnen geven in *hoe* IL toegepast wordt op scholen met verschillende leerlingpopulaties.

In termen van sociale integratie, kan segregatie in het onderwijs als onwenselijk beschouwd worden. Schoolsegregatie tegengaan is echter een moeilijke opgave omdat het door een verscheidenheid aan factoren wordt veroorzaakt, zoals woonsegregatie en keuzeprocessen van ouders (Karsten et al., 2006). Het gaat daarbij om factoren die moeilijk veranderbaar zijn. Segregatie in het onderwijs zal daarom een blijvend probleem zijn. Voor verder onderzoek is het daarom van groot belang na te gaan hoe de effecten van de wijze van lesgeven variëren voor scholen met verschillende leerlingpopulaties en het identificeren van praktijken die succesvol zijn in het verhogen van de motivatie en het verbeteren van prestaties van leerlingen op scholen met verschillende leerlingpopulaties.

## IMPLICATIES

De uitkomsten van dit proefschrift hebben ook enkele implicaties voor de onderwijspraktijk. Er bleek geen algehele afname in motivatie van leerlingen plaats te vinden gedurende de laatste jaren van het basisonderwijs, maar de resultaten lieten zien dat sommige groepen leerlingen wel meer kwetsbaar zijn voor een dergelijke afname. In het bijzonder bleek de werkhouding van allochtone leerlingen, lage SES leerlingen en jongens zich gedurende de tweede helft van de basisschool minder gunstig te ontwikkelingen in vergelijking met de werkhouding van andere groepen leerlingen. De jaren voordat leerlingen de overgang naar het voortgezet onderwijs maken zijn cruciaal in het bepalen van het niveau waarop leerlingen hun verdere schoolloopbaan zullen doorlopen. Het vinden van manieren om juist deze leerlingen te motiveren, al in de periode voorafgaand aan de overgang naar het voortgezet onderwijs, zou daarom een belangrijk aandachtspunt moeten zijn voor leerkrachten en beleidsmakers.

Verder blijken er verschillen te zijn in wat effectieve wijzen van lesgeven zijn op scholen met verschillende leerlingpopulaties. Beleid dient scholen de ruimte te geven om werkwijzen te vinden die aansluiten bij hun leerlingpopulaties waarbij tegelijkertijd ondersteuning wordt geboden aan scholen om de meest succesvolle manieren te vinden om les te geven aan hun leerlingen. Vooral leerkrachten op achterstandsscholen ervaren moeilijkheden bij het lesgeven op innovatieve wijze en bij het vinden van de juiste balans tussen innovatief en traditioneel lesgeven. Het bieden van ondersteuning aan deze leerkrachten, gericht op het vinden van de juiste balans passend bij hun leerlingen, kan hen helpen bij het lesgeven en zal de leerlingen op deze scholen ten goede komen. Bovendien is het van essentieel belang dat lerarenopleidingen leerkrachten een breed repertoire aan instructievormen bieden, variërend van traditioneel tot innovatief, waarbij ook aandacht besteed wordt aan de vaardigheden om te kunnen bepalen hoe en wanneer welk aspect uit hun repertoire toe te passen.

De bevindingen suggereren dat IL niet zondermeer tot positieve effecten leidt. Niet alle aspecten van IL die op scholen werden toegepast waren even effectief met betrekking tot motivatie en prestaties van leerlingen en bovendien waren

niet alle aspecten even effectief voor verschillende leerlingpopulaties. Een hoge mate van pedagogisch-didactische vaardigheden van leerkrachten is een vereiste om op succesvolle wijze innovatief les te geven en leerkrachten die staan voor onderwijsvernieuwingen dienen daarom goed voorbereid te worden. Bovendien is voorzichtigheid geboden bij iedere vorm van onderwijsvernieuwing. Een zorgvuldige analyse van hoe verschillende elementen van de onderwijsvernieuwing zullen uitwerken voor een specifieke schoolpopulatie dient altijd vooraf te gaan aan of op zijn minst samen te gaan met dergelijke vernieuwingen.

# ABOUT THE AUTHOR

Lisette Hornstra was born on January 30, 1984, in Ede, the Netherlands. In 2002, she completed secondary education at 'Het Streek' in Ede. After a gap year in which she travelled to Australia and New Zealand, she studied Pedagogical and Educational Studies at the Radboud University in Nijmegen and obtained her bachelor in 2006. From July to September of that year, she studied Spanish and worked as a volunteer at a day care center for children in Quito, Ecuador. Thereafter, she started the research master Behavioural Science. During her studies, she worked as a teaching assistant and research assistant at the department of Educational Science at the Radboud University. She combined her research master with a clinical internship at a school for children with special needs. She wrote her master thesis on teachers' implicit attitudes toward dyslexia and collaborated on several other articles on teachers' attitudes. In 2009, she graduated cum laude and started as a PhD candidate and lecturer at the department of Child Development and Education at the University of Amsterdam. In 2012, Lisette worked as a visiting scholar at Murdoch University in Perth. In 2013, she received funding from NWO PROO for a three year project on developmental trajectories of potentially excellent students. She is currently working on this project as a postdoctoral researcher and is employed as a lecturer at the department of Child Development and Education at the University of Amsterdam.

# LIST OF PUBLICATIONS

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