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### Studying motivation in classrooms

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# 7

General discussion

## 7.1 Introduction

For many early adolescent students, motivation for school declines after the transition towards secondary education. This dissertation aimed to identify how these motivational developments are affected by teaching practices. Next to the longitudinal nature of this research, a unique asset for the domain is that studies were conducted “in” classrooms; that is, the focus was on (consequences of) what is actually going on in current educational practice instead of on, for example, how students perceive what is going on. In the five interrelated studies (four empirical research studies and one review study), multiple methods were employed to examine teaching practices at distinct levels and from distinct theoretical frameworks.

At the highest level, comparisons were made between three types of schools that can be contrasted on their educational approach: Prototypically traditional schools, prototypically social constructivist schools, and schools that substantially combine elements of both. A focus on social constructivist and combined schools fits this dissertation’s aim of studying motivation in classrooms because schools have typically implemented (elements of) of a social constructivist educational approach with the aim to enhance student motivation. Traditional schools represent contrasts because in educational theory social constructivist views contrast traditional views. In traditional views, teachers should take large degrees of responsibility for students’ learning and put relatively much emphasis on their students reproducing knowledge, while in social constructivist views teachers should assist their students in organising and regulating their own learning processes and put emphasis on their students actively constructing and accumulating knowledge.

At the lower levels of the class and the student, (effects of) teacher-student interactions were examined. For this purpose Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000) was applied. According to SDT, to foster active, self-regulated, and motivated learning teachers should stimulate their students to (come to) personally value school-related goals and to pursue their own school-related interests. Teachers can do this by supporting instead of thwarting their students’ needs for autonomy, competence, and relatedness. Teaching is need supportive when it provides the positive dimensions of autonomy support, structure, and involvement and not the negative dimensions of autonomy thwart, chaos, and disaffection or reject (based on Connell & Wellborn, 1991).

In the empirical research studies incorporating students’ motivation as outcome measure, a distinction was made between motivation with a positive impetus to action, e.g. a task being inherently satisfying or personally valuable and motivation with a negative impetus e.g. avoidance of punishment or shaming. Whereas motivation with a positive impetus is pivotal to students’

active, self-regulated learning (e.g. Meece, Blumenfeld, & Hoyle, 1988; Boggiano, 1998; Ryan & Connell, 1989), motivation with a negative impetus tends to relate to students' learning negatively (e.g. Ryan & Connell, 1989; Dowson & McInerney, 2001; Lepper, Corpus, & Iyengar, 2005). Further, as motivation is known to contain strong domain-specific components (Bong, 2004) we decided to focus on course-specific motivation. Specifically, we focused on motivation for math and mother language as these are considered key subjects in the curriculum.

In the remainder of this final chapter, first a summary of main findings is presented (7.2). Then, theoretical and practical implications (7.3) are discussed. Finally, limitations and recommendations for future research (7.4) are elaborated on.

## 7.2 Summary of main findings

The summary of findings presented below is clustered along two themes. First, findings are summarised on developmental trends in early adolescents' motivation and in teachers' observed need support. Second, effects of teaching practices are examined as teacher-student interactions and types of schools are interlinked and related to (developments in) early adolescents' motivation.

### 7.2.1 Developmental trends

The results as presented in the first empirical chapter of this dissertation (Chapter 2) indicated positive developmental trends in early adolescents' motivation for school over the first months of the school year, followed by developmental trends with a negative tenor as the school year advanced. These findings were replicated for all motivational constructs that were the focus of this study, for both math and mother language, i.e. negative trends were found for intrinsic motivation, identified motivation, and values, while a positive trend was found for the negative construct of performance avoidance. The complex trajectories were found to differ between constructs. Further, for all motivational constructs for mother language, and, even more so for math the results showed developmental trends to differ meaningfully between classes.

The results presented in Chapter 4 corroborated a small body of prior research on developments of quality indicators of teaching practices over time as they indicated negative developmental trends for total levels of observed need supportive teaching. Further, concerning the positive dimensions of need supportive teaching developmental trends were negative for autonomy support and involvement, while for structure they did not differ significantly from 0. Concerning the negative dimensions, unexpectedly, a slightly negative developmental trend

was found for chaos (approaching significance), while for autonomy thwart and disaffection developmental trends did not differ significantly from zero.

### 7.2.2 Effects of teaching practices

The study reported in Chapter 2 concerned the association of early adolescents' motivation as measured at five measurement points with the type of school students attended: A prototypically social constructivist school, a prototypically traditional school, or a combined school. The results of multilevel analysis indicated substantially lower levels over measurement occasions (significant or approaching significance) of intrinsic motivation, identified motivation, and values, but not performance avoidance, for math and mother language in combined schools than in the other two types of schools. No indications were found of differences in levels between prototypically traditional and prototypically social constructivist schools. Further, for most motivational constructs developmental trends were not found to differ between types of schools; exceptions were the developmental trends being somewhat more negative for identified motivation for mother language in social constructivist than in traditional schools and for values of mother language in social constructivist and in combined schools than in traditional schools.

SDT was applied to examine how teacher-student interactions related to educational approaches of schools as well as to developments of early adolescents' motivation. First, the review study in Chapter 3 pursued to unveil the extent to which available evidence supported SDT, including the gaps that remained. For this purpose, a systematic review of available empirical evidence on effects of need supportive teaching on early adolescents' motivation and engagement was conducted. Studies were incorporated that focused on early adolescents in the first years after their transition toward secondary education and that were conducted between 1990 and 2011. The findings of an in-depth analysis of 71 studies showed clear positive associations between the three dimensions of need supportive teaching, whereas evidence on singled-out components was less conclusive. Research on unique contributions of the three dimensions of need supportive teaching was scarce, as were longitudinal, experimental, and interview studies. In addition, in most of the selected studies student perceptions were used to measure need supportive teaching, while in the small body of studies relying on observations or teacher perceptions much smaller or even no associations were found with students' motivation and engagement.

In Chapter 4, levels of observed need supportive teaching were examined in the three types of schools. The results of multilevel analysis indicated higher net levels of need supportive teaching (levels of its negative dimensions subtracted from levels of its positive dimensions) in prototypically social constructivist school than in prototypically traditional schools, and, even more

so, than in combined schools. Further, levels of autonomy thwart were lower in prototypically social constructivist than in the other two types of schools. This difference was induced by the teachers in the former type less frequently disrupting their students' rhythms than the teachers in latter two types of schools. In addition, levels of structure were higher in the prototypically social constructivist than in the combined schools (approaching significance) as the teachers in this former type spent more time on individual guidance than the teachers in the latter type. Finally, levels of disaffection were lower in both prototypically social constructivist and traditional schools (approaching significance) than in combined schools. This difference was induced by it being less common for the teachers in the former types than in the latter type to talk to the students in an unfriendly tone and treat them unfair in the sense of being inconsequent.

In Chapter 5, a narrative analysis of teacher-student interactions was conducted in two contrasting cases: A highly prototypical traditional and a highly prototypical social constructivist class. The findings showed the educational approaches to trigger striking differences in typical manifestations of need support and thwart, while similarities were apparent as well. Among differences were the typical manifestations of cognitive autonomy support, what refers to giving students leeway in choosing their own approach and defining their own solution paths. Whereas in the traditional class the teachers occasionally provided cognitive autonomy support in teacher-class dialogues on content, in the social constructivist class they did so in individual or small group instruction only. A further difference concerning the dimension of autonomy support was that the teachers in the social constructivist class regularly acknowledged students' thoughts and feelings and fostered relevance of tasks, while in the traditional class discussions on the value of tasks did not occur. Regarding the dimension of structure a difference appeared that while the teachers in the social constructivist class regularly provided students with individual guidance, for the teachers in the traditional class this was uncommon. Further, we found that the teachers in the traditional class more regularly expressed their disaffection and thwarted students' autonomy in interactions of a disciplinary nature. A final difference was that the interactions on students' learning processes that were common in the social constructivist but not in the traditional class yielded specific manifestations of need supportive teaching; e.g. providing structure by guiding students in directing their learning processes. Similarities between classes included regular provision of structure by means of encouragement and informational feedback, manifestations of chaos being rare, and regular expression of involvement through brief remarks.

In Chapter 6, developments over four time-points of observed need supportive teaching in math classes and early adolescents' motivation for math were related. For this study, net levels of need supportive teaching were determined by subtracting each of the three negative dimensions

from each of the three positive dimensions; e.g. the net level of autonomy supportive teaching was determined by subtracting levels of autonomy thwart from levels of autonomy support. Multilevel analysis did not indicate associations of autonomy supportive teaching with any of the four motivational constructs that were incorporated in the study (autonomous motivation, controlled motivation, amotivation, and performance avoidance). For structure, substantial associations in expected directions were found with autonomous motivation (positive) and amotivation (negative), but not with the other two motivational constructs. For teacher involvement, substantial associations in the expected direction were found with all four motivational constructs.

In the analyses, a distinction was made between two conceptualisations of teachers' need support. First, teachers' average levels of need support over the school year (1 measure per teacher) were considered. Second, for each of four measurement points, teachers' deviations of their individual average levels (4 measures per teacher) were considered. Surprisingly, associations with students' motivational developments were found for average levels but not for deviations. In other words, students appeared more motivated when they were taught by a teacher who—on average, over the course of the school year—showed higher levels of need support. However, students' motivation as measured at a specific time-point was not associated with their teachers at that time-point being more or less need supportive than usual.

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Finally, when combining findings from Chapters 2, 3, and 6 a summary can be provided on the multiple motivational constructs that were used in this dissertation's studies. First, the review of Chapter 3 indicated a pattern in the design of studies in the sense that connections existed between the dimension of need supportive teaching and the outcome measures being studied. Specifically, in all studies on autonomy support either autonomous motivation or engagement was used as outcome measure, whereas teacher involvement typically was related to student engagement. Second, in both Chapters 2 and 6 associations of teaching practices with early adolescents' motivation appeared mostly lacking for the construct of performance avoidance while for the other constructs such associations were found. The findings did, however, suggest that what is going on in the classroom affects early adolescents' performance avoidance as it was for this construct that relatively large parts of variance were at the level of the class (instead of at student or occasion level).

### **7.3 Implications**

The findings of this dissertation further understanding of what makes teaching practices effective

in fostering early adolescents' motivation in the complex contexts of classrooms. As such, the findings have implications for both theory and practice.

### 7.3.1 Developments over time

Results corroborated the large body of research indicating declines in students' motivation after their transition toward secondary education. At the same time, findings extended prior research as they showed this negative tenor to be shared between multiple motivational constructs. Combined with the finding that students' developmental trends were dependent on the class they belonged to, these results affirm the relevance of studying motivation in classrooms among students in their first years of secondary education.

For developments in teachers' need support, findings largely corroborated a small body of prior research that is indicative of declining trends in quality indicators of teaching practices over time. It seems that as a result of getting acquainted with their classes teachers are triggered to develop less need supportive teaching styles. Educational practice can benefit from teachers and educational supervisors being alert and anticipating such fluctuations and trends.

### 7.3.2 Comparing between educational approaches

The findings have several implications that regard the educational approaches that were the focus of this dissertation. As argued in the Introduction, the presented studies on this topic were innovative by focusing on effects of educational approaches as implemented in schools and—in doing so—purchasing a high level of ecological validity.

First, findings did not corroborate the promising results of prior research showing positive effects on students' motivation of singled-out characteristics of social constructivist instruction (e.g. Benware & Deci, 1984; Turner, 1995), of the extent to which early adolescents perceived their instruction as social constructivist (e.g. Nie & Lau, 2010), and of social constructivist interventions (e.g. Wu & Huang, 2007). Explanations for differences in findings must be sought in this dissertation's focus on comparisons between (prototypical) types of schools and, thereby, it's incorporating not only of effects of social constructivist instruction per se, but also of its implementation in practice. The focus of this dissertation was on prototypical types of schools, i.e. schools that had well-implemented all characteristics of their respective educational approaches. This does not imply that implementation effects are not apparent, because also well implementing an educational philosophy in practice tends to have much broader consequences than accounted for in theory (Slavin, 2012).

Although the focus of this dissertation was not on separating effects resulting from social



constructivist instruction per se and effects resulting of its implementation in practice, the narrative analysis of Chapter 5 does shed some light on this issue. An illustrative example is that findings suggested a social constructivist approach to trigger teachers to refrain from initiating teacher-class dialogues, and thereby from having class discussions on problems that do not have clear-cut solutions. The latter being considered an important manifestation of autonomy support (e.g. Stefanou et al., 2004; Kunter & Baumert, 2007; Tsai, Kunter, Lüdtke, Trautwein, & Ryan, 2008), this effect clearly was not accounted for in social constructivist educational theory that emphasises the importance of awarding students autonomy and volition in their learning. In conclusion, findings implicate the importance of incorporating implementation effects as they suggest these—partly—responsible for differences between types of schools. Accordingly, the other way around, implementation of an educational approach with potential in fostering early adolescents' motivation does not necessarily result in effective types of schools and, sometimes, instead of alternations in the approach itself alterations in its implementation should be considered.

Second, the findings did suggest teacher-student interactions in prototypically social constructivist schools to have potential to foster early adolescents' motivation. In the educational literature, the importance is emphasised of providing students with opportunities for self-set learning episodes and allowing them an active role in their learning processes to foster motivation and self-regulated learning (e.g. Boekaerts & Niemivirta, 2000). Here the crux is that students are given sufficient freedom and own responsibility, what is closely related to autonomy supportive teaching as defined in SDT. By showing higher levels of need supportive teaching and lower levels of autonomy thwart in the prototypically social constructivist than in the prototypically traditional schools, findings supported the idea that a social constructivist approach allows students the sufficient levels of own responsibility that have been argued lacking in traditional schools (e.g. Simons, van der Linden, & Duffy, 2000). Further, the results of the narrative analysis confirmed that expressions of autonomy supportive teaching such as encouraging students to express their opinions and fostering relevance when choice is constrained are related to a social constructivist educational approach.

Third, in the educational literature social constructivist schools have been criticised as well: For providing students with too much freedom and too little instructional guidance, thereby undermining their learning (Kirschner, Sweller, & Clark, 2006; Mayer, 2004; Anderson, Reder, & Simon, 2000). This criticism is not unfounded; e.g. as in the Dutch context large-scale implementation of 'het studiehuis' (a social constructivist educational reform) more than a decade ago resulted in ill-prepared students abruptly being handed over a large degree of own responsibility for their learning process while, ideally, a gradual transfer of learning functions from

teachers to students should be realised (Shuell, 1996; Vermunt & Verloop, 1999; Boekaerts, 2002). For the prototypical social constructivist schools, however, the findings of this dissertation did not substantiate this criticism. Whereas daily teaching practices providing too much freedom too early would have resulted in relative low levels of structure (e.g. being available when students need help) and high levels of chaos (e.g. not monitoring students' levels of comprehension), this dissertation did not show such differences (effects were in opposite direction). Further, the narrative analysis indicated providing structure in the sense of giving step-by-step directions, thereby adjusting to the students, related to a social constructivist instead of a traditional educational approach. Amongst others, it seems plausible that the prototypical social constructivist schools having had a tradition in social constructivist instruction helped to overcome negative effects that were reported earlier.

Fourth, the results indicated potential detrimental effects of combining elements of a traditional and a social constructivist educational approach. For most motivational constructs, levels were lower in combined schools than in the other two types of schools. Further, levels of need supportive teaching were lowest in the combined schools, although the difference with the prototypical traditional schools was not significant. These findings corroborate prior evidence demonstrating the importance of comprehensive implementation of social constructivist educational reforms (Rozendaal, Minnaert, & Boekaerts, 2005; Felner and Jackson, 1997). A plausible explanation is that when combining elements of different educational approaches a certain degree of ambivalence tends to be apparent; either because views on instruction are less crystalized or because contradictions are inherent in the educational approach. This can result in inconsistencies or lack of clarity in individual teachers' practices, as well as in large differences between teachers causing unpredictability for students. Such ambivalence has been argued to be potential detrimental to students' learning (Minnaert, 2013), while clear and consistent communication is considered of particular importance (see Boekaerts & Minnaert, 2003; Perry et al., 2006). In conclusion, an important implication of these findings is that caution is required when combining elements of distinct educational approaches in practice.

### 7.3.3 Need supportive teaching

In this dissertation, teacher-student interactions were examined from the perspective of SDT. Innovative elements of the presented studies included their relying on an observational measure to assess need supportive teaching in context as well as their longitudinal nature.

First, the findings implicated support for SDT. The review study of Chapter 3 supported SDT by consistently showing positive associations of student perceived need supportive teaching with early adolescents' motivation and engagement. Further, the findings in Chapter

6 indicated substantial positive associations of observed structure and involvement, but not autonomy support, with developments of early adolescents' motivation over time. These findings importantly advanced support for SDT by substantiating its premise that observed characteristics of need supportive teaching can be identified; a premise that is crucial for translating SDT to educational practice. In conclusion, these findings implied the potential value of teacher trainings aimed at enhancing teachers' provision of structure and involvement as well as their incorporation in programmes educating and professionalising (future) teachers. For the dimension of autonomy support, more research is necessary to sort findings out.

Second, this dissertation contributed to translating the theoretical construct of need supportive teaching to educational practice and furthered understanding of what need supportive teaching entails. Having comprehension of the daily practices that make up need supportive teaching is of value for designing SDT-interventions, as well as for moving forward the theoretical debate on this issue (e.g. Stefanou et al., 2004; Assor, Kaplan, & Roth, 2002). By incorporating a newly developed rating sheet, an overview was provided of characteristics of need supportive teaching. This overview had firm theoretical grounding as it was based on an extensive review of SDT-literature on need supportive teaching practices. Further, the narrative analysis of Chapter 5 provided fine-grained information on manifestations of need supportive teaching in practice; thereby being among the first studies conducted among early adolescents to do so (see for an exception Stefanou et al., 2004).

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Third, the results yielded points of attention for implementing SDT-interventions in educational practice. Of relevance in this regard is the study of Chapter 6 that revealed substantial associations with student motivation of teachers' average levels of need supportive teaching over the course of the school year, but no associations of teachers' deviations of these average levels at single-measurement points. In other words, it seemed that whereas in the long run need supportive teaching had a positive effect on early adolescents' motivation, this effect was not immediate. A plausible explanation for this finding is that changes in teaching practices, whether in a positive or in a negative direction, at first generate negative side effects because they cause unpredictability. Such negative side effects could have masked potential positive effects resulting of enhanced need supportive teaching. A related explanation is that need supportive teaching generates positive effects only when students are well prepared to act upon the opportunities their teachers provide them with. Both these explanations align with the suggestion above, in reference to implementing (elements) of a social constructivist educational reform, that inconsistencies and unpredictability can have detrimental effects on early adolescents' motivation. Regarding SDT, these findings suggest the importance of long-term implementation of interventions as well as of

preparing students for change that is coming up.

Of further relevance is the study of Chapter 5, as the findings of this narrative analysis of teacher-student interactions in a prototypical traditional and a prototypical social constructivist class showed that teachers' opportunities are—in many ways—bounded by the (type of) school they work at. An illustrative example is that teachers in prototypical traditional schools did not seem to have much opportunity for contingent, differentiated instruction, which is an important means to foster students' need for competence. Accordingly, when the aim is to stimulate teachers to differentiate their instruction—among the main targets of current Dutch educational policy—interventions need to be tailored to educational approaches of schools (in line with Boekaerts & Minnaert, 1999; Rozendaal et al., 2005). Amongst others, this could be accomplished by involving teachers in the development of their own training program, as recommended by Aelterman et al. (2013) to foster teachers' motivated participation. In addition, these findings implicate that for realising changes that do not fit the educational approach of a school, school-based interventions are necessary. An additional advantage of such school-based interventions is that these would attend to the issue raised above (in reference to combined schools) that large differences between teachers can result in inconsistencies and unpredictability for students, thereby undermining their motivation.

## 7.4 Limitations and recommendations for future research

A major strength of this dissertation is its focus on studying what makes teaching practices effective in the complex contexts of classrooms. Because the complexity of classrooms cannot be fully incorporated in any research design, a challenge inherent in such an approach is that well-considered choices need to be made. Several limitations of this dissertation can be thought of that relate to this challenge and inform directions for future research.

A first limitation is that although the studies of Chapters 2 and 4 informed about developments over time and effects of the educational approaches as implemented in practice, they did not incorporate examination of underlying mechanisms. For the future it would be recommended to conduct in-depth studies on the educational approaches' potential in fostering early adolescents' motivation as well as on bottlenecks when implementing these approaches in practice. In such studies it would be advisable to incorporate not only what is going on in classrooms, but to also map processes occurring at the level of the school; e.g. ambivalence and unpredictability resulting of large differences between teachers. Specifically, the findings of this dissertation suggest

some focus points for further research. First, more research is necessary to sort out if a social constructivist educational approach has the potential to be more beneficial for early adolescents' motivation than a thoroughly implemented traditional approach. Second, a question of relevance is what are the mechanisms underlying negative effects of combined schools on need supportive teaching and student motivation. Finally, more research would be of interest on the question what triggers teachers to develop less need supportive teaching styles as the school year advances.

A second limitation is that at the level of the class it was only teaching practices that were examined, and not, for example, peer interactions or wording of assignments. Future research combining such different aspects would be recommended to generate richer pictures of what is going on in classrooms. Further, such research could shed light on the question how the complex interplay between contextual events affects students' motivation. Amongst others, of interest in this vein would be to examine effects on students' performance avoidance, as for this motivational construct findings suggested that differences between students can be explained by what is going on in classrooms but not by teaching practices, at least not as operationalized in this dissertation, alone.

Third, a limitation is that in the analyses the individual- and context specificity of what effective teaching practices entail were not explicitly incorporated. In this vein, it has been suggested, for example, that optimal provision of structure could be something different for students with learning difficulties than for students with behavioural problems, gifted students, or 'regular' students. In addition, it has been argued that meanings and understandings derived from the different cultures in which students operate, i.e. their school but also home and peer culture, combine to affect students' engagement in learning (Phelan, Davidson, & Cao, 1991). This would imply, for example, that the match with a student's home environment could influence effectiveness of a type of school. For the future, research on such individual- and context specific differences would be recommended.

An alternative way to incorporate individual- and context specificity would be to adopt a dynamic systems approach, thereby analysing how the teacher and the student(s) mutually influence each other and continuously negotiate meaning (see Kunnen & van Geert, 2011). Although in this dissertation we did consider both the students' and the teachers' expressions in our interpretation of teacher-student interactions, we did not comprehensively map their dynamic interplay over time. Advantages of using a dynamic systems approach include its potential to incorporate the complex interplay between contextual events. Specifically, for future research, adopting a long-term, dynamic approach would be of value to shed light on how prior experiences shape students' responses in teacher-student interactions and how a gradual transfer of learning functions from teachers to students can be realised.

