

ENHANCING EFFORT AND ACHIEVEMENT: THE IMPORTANCE OF PARENT INVOLVEMENT AND HOME-SCHOOL PARTNERSHIPS

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1. INTRODUCTION

Although prior ability and achievement are often found to be the best predictors of subsequent achievement (Reynolds & Walberg, 1992) research has also demonstrated that motivational factors have important influences on student learning (Wang, Haertel & Walberg, 1993). The way a student accepts the school and its role in society determines the effort that the student is willing to put into schoolwork. But why do some students accept the school and its role in society, and are willing to put effort into schoolwork and others do not? Schools, teachers and peers can be important facilitators (Opdenakker, 2004). However, the limited available research literature on non-cognitive outcomes indicates that the overall effects of schools and classes on non-cognitive outcomes seem to be rather small (see e.g. Van Landeghem *et al.*, 2002), especially when compared with the effects on cognitive outcomes (Opdenakker & Van Damme, 2000). Some of the reasons can be that schools do not explicitly work on non-cognitive outcomes and/or do not differ from each other in this respect. Another reason can be that characteristics of the home environment (e.g., parent involvement) are very important to non-cognitive outcomes. Research has established that differences in the experiences children have in the home (cognitive stimulation and motivational practices) are predictive of individual differences in motivation and cognitive competencies (Bradley & Corwyn, 1999; Gottfried *et al.*, 1994; Gottfried *et al.*, 1998; Hoff-Ginsburg & Tardiff, 1995; Luster, Lekskul & Min Oh, 2004). Furthermore, research of Flouri, Buchanan and Bream (2002) gives evidence for a link between parent involvement, which is an aspect of the home environment, and motivation for school. The meta-analysis of Fan and Chen (2001) indicates a relationship between parent involvement and achievement. It is also possible that interactions between home environment or individual student characteristics, on one hand, and school or class characteristics (e.g., peer group characteristics), on the other hand, influence outcomes.

The central questions addressed in this study are: (1) What factors are associated with individual differences in effort and achievement during the first grades of secondary education among children? (2) Does effort during the school year has an effect on achievement additional to the effect of SES, prior achievement and ability? (3) Is there a relation between SES and parents' involvement? (4) Does the parents' involvement in the schooling of their child has an effect on motivation, effort, and achievement above and beyond SES? (5) Is there evidence for interactions between home/student characteristics and class environment characteristics (mean parent involvement of class mates) with respect to achievement?

Our work is based on a model of student/home factors explaining effort and achievement of Opdenakker (2004) (see also Opdenakker & Van Damme, 2004). In this model parent involvement is conceptualized in terms of parents' attitudes and activities that stimulate, coach and support the formal

education of their child and is in agreement with the 'learning' dimension of Epstein (1995) and what Manz, Fantuzzo and Power (2004) name as 'home-based activities'.

2. METHOD

2.1. Participants

This study is part of a larger longitudinal study (Opdenakker, 2004) and is based on the database of the LOSO-project (see Van Damme, De Fraine, Van Landeghem, Opdenakker & Onghena, 2002). Participants in this study include 4403 students of the second-grade general track or A-stream1 belonging to 266 classes and 57 secondary schools of the Dutch speaking part of Belgium (Flanders).

2.2. Procedures

Surveys

Students (and their teachers) completed surveys during the school year in which the students were in the first and second grade of secondary education. Ability and prior motivation of the students were registered at the start of the first grade and the parents' involvement in the schooling of their child, as well as their educational level and economical capital was also registered in that grade. The registration of the parents' involvement included information from the students' teachers of primary and secondary education. Mathematics achievement was measured at the end of the first and at the end of the second grade. Effort was measured at the end of the second grade but before the mathematics achievement in the second grade was registered

Survey Measures

Student Characteristics

Cognitive ability is based on student scores on the numerical intelligence scale of a Flemish intelligence test (GETLOV) (Lanckswaert, 1991) (56 items, KR-20 varies between .82 and .90 for the subscales) and on the verbal intelligence scale of the same test (60 items, KR-20 varies between .74 and .85 for the subscales). Prior motivation is based on scales about achievement motivation (29 items, KR-20= .82) and (positive) fear of failure (18 items, KR-20= .82) from a Dutch motivation questionnaire (PMT-K) (De Froidmont & Mortier, 1975; Hermans, 1976).

Home Characteristics

Parents' involvement in their child's schooling is based on teachers' answers on questions about the parents' interest in school life and parental support (5 items, $\alpha = .80$). (Examples of items are 'The student is well coached by his parents with respect to school matters' and 'The parents of the student have a positive orientation towards education and school'.) The educational level of the mother and the economical capital of the family are used as indicators of the socio-economical status of the family. The economical capital of the family is based on parent information on monthly income, housing accommodation and facilities, the availability of several consumer goods at home, holiday habits, etc. which was factor analysed. The internal consistency of the scores of the scale (Cronbach's α) is almost .60, which is an underestimation because of the diversity of item response alternatives (Van Damme *et al.*, 1997). The economical capital correlates .50 with the educational level.

Student Outcome Measures

The outcome measures are based on student achievement tests (mathematics achievement) and student and teacher questionnaires (effort). The mathematics achievement is measured by means of curriculum-based multiple choice tests approved by a board of inspectors and teachers. The mathematics test of the first grade covers set and relations theory, theory of numbers and geometry. The test of the second grade covers theory of numbers and geometry. Construct validity of the tests was obtained by choosing test items which were operationalisations of learning goals considered in the curriculum of the catholic and public school sector and by the evaluation of the operationalisation of the learning goals by experts (inspectors and mathematics teachers of both sectors). Content validity was obtained by the operationalisation of the most important learning goals of the curriculum of both school sectors and by an evaluation of the content of the tests by the mentioned experts. A study on the predictive validity of the mathematics achievement tests revealed that the predictive validity of the test scores of the first grade test was .63 for mathematics achievement at school (as measured by the teacher in the first trimester of second grade) and that the predictive validity of the test scores of the second grade test for mathematics achievement at school at the end of the first trimester of the third grade was .68. It was also found that, as usual, students studying classical languages scored significantly higher than students studying other general subjects, and these students scored significantly higher than students taking technical options. The scores on the tests were converted into IRT-scores with the programme BIMAINM2 (Zimowsky, Muraki, Mislevy & Bock, 1994).

The outcome measures with regard to effort are ‘effort for learning tasks’ (Effort_lt), ‘motivation for learning tasks’ (Mot_lt) and ‘effort for mathematics’ (Effort_m). The effort for learning tasks is measured with a scale from a student questionnaire with five items ($\alpha = .82$); examples of items are ‘I really do my best at school’ and, negatively formulated, ‘For some subjects I could work much harder than I do now’. The motivation for learning tasks is based on an item from a class teacher questionnaire and the effort for mathematics is based on an item from a mathematics teacher questionnaire.

Class Environment Characteristics

One class environment characteristic was used in this study: the level of parents’ involvement of the students belonging to the same class. This group composition measure is based on the already mentioned scale about the involvement of the parents in the schooling of their child. The composition measure is calculated by averaging the scores of all the students belonging to the same class. The calculation of the reliability of the scores on the group composition measure is based on the formula of Snijders and Bosker (1999, p. 25). The reliability value is .80.

2.3. Data Analysis

Multilevel and structural equation modeling was used to get an answer on the mentioned questions (Goldstein *et al.*, 1998; Jöreskog & Sörbom, 1993).

3. RESULTS

How do home environment and student characteristics affect students’ effort and achievement during the first grades of secondary education? The completely standardised solution of the structural equation model relating all these (latent) variables to each other is visualised in Figure 1. Information about the relationship between observed and latent variables is given in Table 1. The goodness of fit

indices of the model indicate a sufficient fit ($c_{43}=326.31$; $RMSEA=0.048$, $pclose\ fit=0.72$; $GFI=0.98$; $IFI=0.97$).

Figure 1. Totally standardised solution of the structural model.

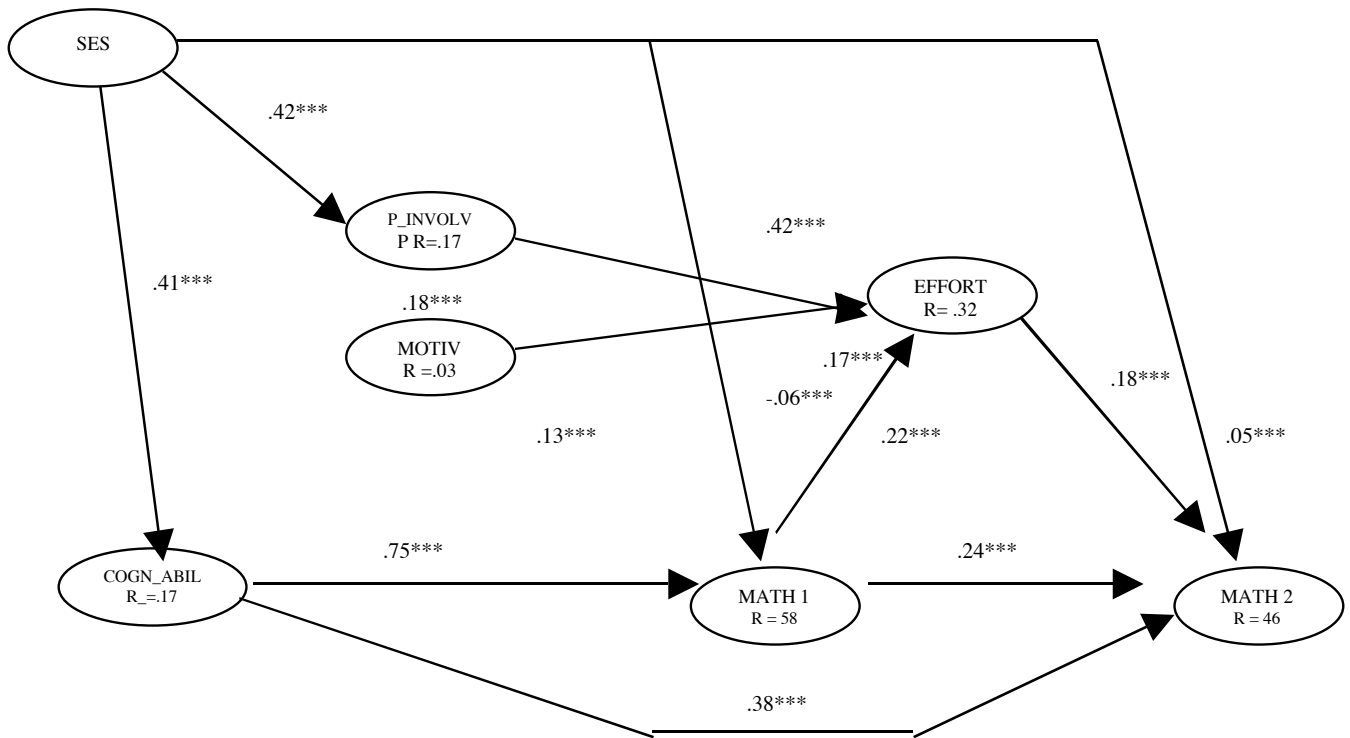


Table 1. Relations between Observed and Latent Variables (Standardised Parameter Estimates of Measurement Model)

Latent variable	Observed variable	Estimate
Socio-economical status (SES)	Mother's education	.77
	Economical capital of family	.59
Parents' involvement (P_involv)	Parents' involvement in the schooling of their child	1.00
	Achievement motivation	.86
Prior motivation (Motiv)	Positive fear of failure	.25
	Numerical intelligence	.74
Cognitive ability (Cogn_abil)	Verbal intelligence	.61
	Mathematics achievement at the end of the first grade	1.00
Mathematics achievement first grade (Math1)	Mathematics achievement at the end of the first grade	1.00
	Effort for learning tasks	.54
Effort (Effort)	Motivation for learning tasks	.86
	Effort for mathematics	.76
Mathematics achievement second grade (Math2)	Mathematics achievement at the end of the second grade	1.00

The results indicate that effort has an effect on mathematics achievement next to effects of ability, prior achievement and SES. Motivation at the entrance of secondary education and prior achievement, and especially the parents' involvement in the schooling of the child are important characteristics that can explain differences in effort. When parents have a positive orientation towards

education and school and coach, monitor and support their children with respect to school matters their children put more effort in learning tasks during the school year, which in turn has a positive effect on their achievement. Furthermore, our study revealed that the parents' involvement has a unique positive effect on effort and achievement although it is (weakly) related to the SES of the family.

Research on the importance of the parent involvement of class mates revealed that the parent involvement of class mates has a positive effect on the mathematics achievement of students and can explain almost 24% of the total variance in achievement, which is quite a large part of the variance (see Table 2). However, because the mean parent involvement of class mates might correlate with the level of parent involvement of the individual student it is necessary to control for the parent involvement of the individual students.

Table 2. Percentages of Total Variance in Achievement Explained by Mean Parent Involvement of Class Mates

Latent variable	% of explained total variance in achievement
Mean PI of class mates	23.6%
Mean PI of class mates (controlled for PI student)	18.2% (additional)
Mean PI of class mates (controlled for four student characteristics)	7.4% (additional)

After controlling for the parent involvement of the student the mean parent involvement of class mates remained very important and could additionally explain 18% of the total variance in achievement. This means that, irrespective to the parent involvement of the individual students, the class they belong to and, especially the parent involvement of their class mates, is very important for their mathematics achievement. Even when we controlled for numerical and verbal ability and achievement motivation next to parent involvement of the student the parent involvement of class mates remained important and could additionally explain almost 7.5% of the variance in achievement.

Research on interactions with this class characteristic revealed that, although all students are sensitive to their school context (parent involvement of peer group), some students are more sensitive than others. Girls (see Figure 2), students with highly involved parents (Figure 3), and students with high prior achievement (see Figure 4) seemed to be more sensitive for this class characteristic with regard to their mathematics achievement.

Figure 2. Interaction between parent involvement, mean parent involvement of class mates and mathematics achievement.

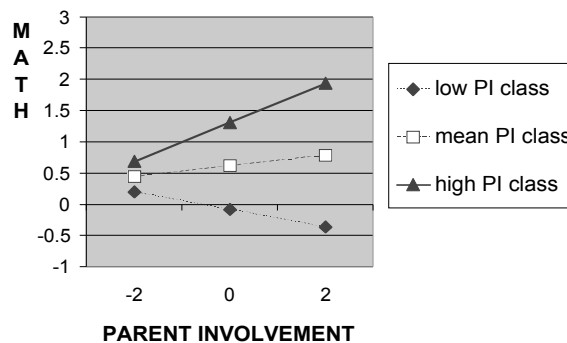


Figure 3. Interaction between gender, mean parent involvement of class mates and mathematics achievement.

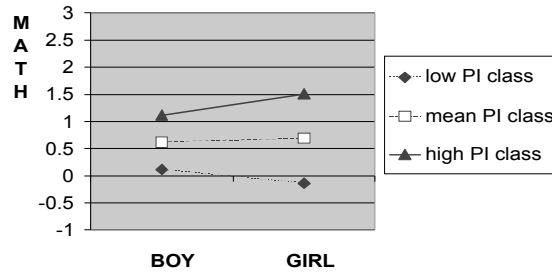
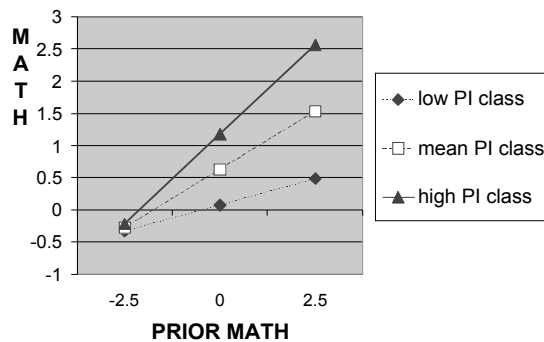


Figure 4. Interaction between prior mathematics achievement (first grade), mean parent involvement of classmates and mathematics achievement (second grade).



4. CONCLUSIONS AND DISCUSSION

The results of our study indicate that parents' involvement conceptualized as 'parents' attitudes and activities that stimulate, coach and support the formal education of their child' has a unique positive effect on effort and achievement although it is (weakly) related to SES. Also the parents' involvement of classmates has an important impact on the mathematics achievement of students above their own parents' involvement and other important student characteristics. Research on interactions revealed that all students are sensitive to their school context, but girls, students with highly involved parents and students with high prior achievement somewhat more.

An important question is how parents' involvement can be enhanced and what schools can do with regard to the stimulation of parents' involvement. In this respect are some results of a study about the evolution in parents' involvement (when students make the transition from primary to secondary school) of Opdenakker (2005) relevant. In this study, based on the same students as this study, it was found that a positive attitude of the school and teachers towards parents could explain evolutions in parent involvement with respect to coaching and supporting children's learning and school work in the transition from elementary or primary school to secondary school: the higher the positive attitude, the better the evolution taking into account the parent involvement when the students were in the last year of elementary education. A positive attitude towards parents meant that the school and teachers had a positive attitude towards parent participation and towards the influence of parents on school politics and school organization. It meant also that they liked meetings with parents and found them very

useful for their work at school and were willing to exchange expectations with parents. The results of the study suggest the importance of close lines of communication between home and school and of good partnership between parents and the school team for enhancing parent involvement. It seems to us necessary that schools and teachers see parents as their relevant partners in coaching and supporting the developmental and learning process of children and that they undertake action to make their vision (of positive attitude towards parents) visible. They need to inform parents about classroom and school practice, about the way parents can coach and support their child for specific subjects, about the general development and achievements of the students in the class and the parents' child in particular (about cognitive development, as well as motivation, effort and social development) and about problem behaviour of the parents' child. It is also stimulating for parents when they can participate in classroom activities and when communication about expectations from and for parents, teachers and the school can take place at school. Schools, teachers and parents should see each other as equal partners when communicating to each other and coaching and supporting the developmental and learning process of children. Parents should acknowledge the professionalism of the school and the teachers and should be willing to cooperate with the school and the teachers. The school and the teachers should acknowledge the qualities and competencies of parents and the useful information and expertise parents can offer to them. Thus, the creation of educational networks and home-school partnerships, breaking down existing barriers at school for parents, and enhancing the communication between parents and educators seem to us a fruitful way to foster parent involvement for all students and an important step in helping parents to create a favourable environment for their children at home and in giving children the environment which gives them optimal starting chances for life.

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