

## **On the Importance of Parental Participation for Student Achievement in Reading Literacy**

Elisabeth Frank, University of Kalmar, Sweden, elisabeth.frank@hik.se  
Monica Rosén, University of Gothenburg, Sweden, monica.rosen@ped.gu.se

### **Abstract**

The main aim of this study is to investigate the effect of home and school interplay on students' reading achievement at both individual and class level. While previous research has shown that interplay between home and school may be of importance for student achievement, no consistent pattern has been found. The analyses presented here are based on data from PIRLS 2001, using variables from both the teachers', the schools', students' and the parents' reports of communication and collaboration between home and school. A series of theoretically based structural equation models was fitted to these data. In the first stage, measurement models of broad constructs such as "parental participation" was identified and later included in a two-level structural model. These latent variables were related to achievement both at the individual and at the class level. The results indicate that the home-school relationships play an important role in explaining differences between classes in reading achievement, whilst the effect at the individual level is almost negligible. In the final analysis the relationships are investigated in a model where both teacher competence and student SES in terms of general capital is included. It is shown that the positive effect of parental participation on achievement was dependent on student home background and teacher competence. The results also showed that teacher competence and student home background to a certain degree was mediated through the parental participation factors.

Keywords: PIRLS, Reading achievement, Parental participation, Two-level structural equation modeling.

### **Introduction**

Parents' involvement and interest in the child's education is considered by educators, school management as well as politicians to be a key factor to success in school, and perhaps no topic about school is more professed to be important for students' improvement as parental participation. One question is if this perhaps is a misleading rhetoric, or if there in fact is a positive relation between parental participation and student achievement? Parental participation in turn may be highly influenced by the family socio-economic background. Parental participation may also be dependent of the competence of the teachers. These issues are investigated in the present study.

In Sweden school and the pupils' home have traditionally been seen as separate venues where interaction has been limited to expectations about the parents bringing the child to school, that homework was done, to reprove unwanted conduct or otherwise act when the school has requested (Ribom, 1993). However, the curricula from the 1980s onwards, and in a sense even earlier curricula, stress the importance of collaboration between the parts and it emphasizes that all school personnel should work together with the pupils' guardians to develop both the content taught in the classroom and the activities of the school (Ministry of Education, 2006). The curriculum also points out the importance of continuously providing the parents with information concerning the pupil's school situation, well-being, and acquisition of knowledge as well as in a respectful manner staying informed about the individual pupil's personal situation. The conclusion is that "the joint responsibility of the guardians and the school

concerning the pupils' schooling should create the best possible conditions for the development and learning of children and young persons" (ibid, p 14).

Across a wide range of school areas, populations and ages, studies also have indicated a positive outcome of parental involvement. For example, parents who participate in decision-making are more committed to supporting the school's mission and they also believe that they are affecting the school's agenda (Tal, 2004). Studies also show that parents' perception of the quality of education and teaching are highly and positively correlated with the schools and teachers efforts to involve them in the child's education (Dauber & Epstein, 1993; Epstein, 2001a: 2001b). Other outcomes of parental participation are improving student attendance (Sheldon, 2007), student behavior (Hawkins, Catalano, Kosterman, Abbot & Hill, 1999), homework completion (Cooper, Jackson, Lindsay & Nye, 2001) but also student motivation to learn and student academic self-confidence (Grolnick & Slowiaczek, 1994). Ho and Willms (1996) also pointed out the positive correlation between discussions about education at home and academic achievement. In this study the findings also suggested that a child's academic achievement is more closely associated with the total parental engagement in school and not so much to whether the own parents were participating or not.

Within the field of school effectiveness and school improvement research it is also argued that pupils learning is likely to be enhanced when staff and management makes efforts to inform and involve parents on a collaborative basis, when goals and values are shared, and when parents are regarded as key persons in supporting children's learning (Macbeth & Mortimore, 2001; Rutter, Maughan, Mortimore & Ouston, 1979). However, even if there are numerous studies focusing the relation between parental involvement and school outcomes it seems to be unclear which components influence academic achievement, and besides the effect studies seems to be only a fraction of all the studies conducted in the area. In a review Fan and Chen (2001) initially identified over 2 000 articles, paper or reports spanning a ten-year period on the subject. It turned out that the great of the literature was qualitative and non-empirical, and the number of studies that reported empirical findings about the relationship between parental involvement and students' academic achievement (e.g. Pearson correlation was reported) was in the clear minority. In all, twenty-five studies were included in the meta-analysis that followed, and among those there appeared to be considerable inconsistencies. However, three substantial types of involvement were found, namely communication (e.g. parents frequently and systematically discussing schoolwork with their children), supervision (e.g. monitoring homework) and expectations (e.g. communication about academic aspiration to the child). The findings revealed a small to moderate relationship between these sorts of in-home parental involvement and academic achievement, where parental expectation for children's educational achievement had the strongest relationship among those.

One conclusions drawn from the research on participation so far is that parental participation does seem to have positive outcomes, but also that there are a variety of ways parents are involved in children's schooling. Another thing to notice is that there are different levels of participation, and this can be regarded through the concept of the Ladder of Citizen Participation (Arnstein, 1969). Originally this eight-level metaphorical model was constructed for thinking about public power but it can also be used as a tool to make the degrees of parent participation visible. At the bottom of the original ladder is the first phase including two steps of pseudo-participation, where citizens are seen as not competent to participate in society. In the three steps that follow in the next phase the citizen will above all be informed but also to some extent consulted. However, in this phase they have nothing or just a little to say in the matter. The third phase named as citizen power includes partnership, delegated power and citizen control. In this stage the power-holders agree to share plans and decision-making responsibilities, and here is also the citizen managerial power found. This opportunity to be able to exert influence is closely related to the confidence and trust in the cooperation partner while non-participation more is associated with mistrust and a feeling of hopelessness. However, information is, according to Arnstein, the most basic rung in development of

participation, and the benefit of information is also shown in the literature. The gains from efforts to involve parents on a collaborative basis as well as the benefit of participation in decision-making are also shown. Thus, a hypothesized 'Ladder of parent participation in school' could start from non-participation at the bottom through information, participation and at the top, influence and power.

### *Student family home-background*

In the Swedish public school system there is a long tradition of supplying all students equal opportunities to education (Husén, 1974), and from a democratic point of view all parents are supposed to be equal. However, regarding parents' opportunities to participate in children's schooling previous research has demonstrated that there may be some obstacles against this, and through Bourdieu's (1997) hypothesized forms of capital, which also are related to social class, it is possible to explain these issues. Capital can adopt three fundamental, convertible and interrelated guises namely cultural, economic and social capital of which, according to Bourdieu, the middle-class generally has more and the working-class less. However, the economic capital is according to Pilegaard Jensen and Turmo (2003) of secondary importance in welfare states, which is because education in these countries largely is free of charge. The cultural capital has repeatedly been shown to be a most influential factor on student achievement (e.g. Yang, 2003; Yang & Gustafsson, 2004). Thus, parents' cultural capital but consequently also social class can affect their ability to communicate with the school and be involved in the child's schooling. For example, language barriers may cause difficulties for helping children and this can also cause parents to refrain from participating in parental meetings and other activities organized by the school (Finder & Lewis, 1994; Pena, 2000). Parents' own education and own educational experience may improve or limit the possibilities to help the child with homework and support (Lacina-Gifford, 2004; Lareau, 1987; Paratore Hindin, Krol-Sinclair & Duran, 1999; Pena, 2000). Social class can consequently also have an impact on participation but also on the treatment of the students in school. For example, middle-class parents seem to have, through their social contacts and knowledge of the education system, greater opportunities to exert influence in the school (Lareau & Weininger, 2003; Weininger & Lareau, 2003; McGrath & Kuriloff, 1999; Reay, 1999).

These forms of capital may also give a head start in learning to read, and the influence of family background on reading achievement in the early school years also is well documented (e.g. Burchinal, Peisner-Feinberg, Pianta & Howes, 2002; Dunkin & Biddle, 1974; Myrberg & Rosén, 2006; Snow, Burns & Griffin, 1998; Sulzby & Teale, 1991; Wigfield & Asher, 1984). In large-scale surveys student home-background also has proven to be correlated with reading achievement both in primary grades (Ellie, 1992; Hansen, Rosen, & Gustafsson, 2004; Mullis, Martin, Gonzales & Kennedy, 2003) and in secondary grades (OECD, 2002; 2004; 2006). Moreover, positive relations between parents' education and factors correlated with reading achievement has also emerged, such as parent's expectations concerning school performance (Trivette & Anderson, 1995) and their interest of the child's reading performance (Artelt, Baumert, Julius-McElvany & Peschar, 2003). From a national representative sample including almost twenty-five thousand American eight-grade students Ho and Willms (1996) also pointed out the positive outcomes of discussions about education at home. Concerning the relation between SES and participation Ho and Willms stated that "our findings provide little support for the conjecture that parents with high SES and parents in two-parent families are more involved in their children's education. /---/ Also, the result do not support the acceptance that parents from ethnic-minority groups participate less than do than White-parents" (p 137). Similar result was also found in some English studies, where many of the parents, regardless of background, supported the children in reading development (Hannon, 1995; Hewison and Tizard, 1980).

Several studies indicate a rather consistent positive relation between student achievement and

socioeconomic background. However, some meta-analyses show that this relation gradually becomes weaker from primary to middle school (White, 1982; Sirin, 2005). One possible explanation of this result is that school and education may provide equalizing experiences, and thus reduce the impact from SES. As well as in the case of parental participation the teacher may play a critical roll.

### *Teacher competence*

Almost twenty years ago Hanushek (1989) after a review of two decades of research declared that differences in teacher quality exist but differences in teacher skills are neither related to educational backgrounds nor to teaching experience. Even if a majority of the 187 studies included in the review pointed at a positive correlation between teacher experience and student achievement it appeared, according to Hanushek, that selection effects may have caused effects to “run from achievement to experience and not the other way around” (p. 47). However, later analysis of the same set of studies, but using other techniques, produced more consistent and convincing findings regarding the relationship between teacher background and student achievement which turned out to be quite strong (Hedges, Laine & Greenwald, 1994).

Darling-Hammond, Holtzman, Gatlin and Heilig (2005) found that certified teachers consistently produced stronger student achievement gains for fourth- and fifth-grade students than did uncertified teachers. In another study Croninger, Rice, Rathbun and Nishio (2003) using a three-level random intercept model to examine the effects of first-grade teachers’ qualifications on children’s first grade achievement. After controlling for student’s prior learning, the findings indicated that only two teacher qualifications were associated with significant positive effects on reading achievement, namely were those that capture emphasis of the coursework taken in preparation for the profession (.047 at the school level) and the specific type of degree earned (.078 elementary education, at teacher level). Broader measures like certification status, possession of an advanced degree, teacher’s age or teacher experience was not in this study found to be significant related to student reading achievement.

Although the findings about the benefits of experience are mixed it appears that there are important gains in teaching quality in the first years of the career, but just as is the case with subject-knowledge the effect of experience seems to be curvilinear, and there seems to be little evidence that the improvement continues after the first three to five years (Darling-Hammond, 1999; Nye, Konstantopoulos & Hedges, 2004; Rikvin, Hanushek and Kain, 2005). However, teachers’ self-efficacy (e.g. belief in her or his capability) tends to rise with more years of teaching experience (Goddard & Skrla, 2006; Soodak & Podell, 1998).

Taken together, these multiple sources of evidence, however diverse in nature and not always consistence, all indicate that the competence of the teachers is a crucial determinant of student achievement. It therefore seems necessary to control for the effect of teacher competence but also to investigate the mediating effect of such a factor. In the present study data was drawn from a teacher questionnaire, which also contributed this sort of information.

### *Overall study purpose*

In the context of the earlier body of research and theory about parental participation, the present study is designed to examine both the extent to which students’ reading achievement is influenced by the effect of parental participation when student home background and teacher competence are taken into account, and also to investigate the relative importance of these two mediating factors. In order to reach this aim the statistical method principally used was structural equation modeling (SEM). Within a theoretical framework this analytic

technique allows testing hypothesized direct and indirect relationships among latent variables whereby parameters representing relations, covariance and variances are identified and computed.

Figure 1 displays the proposed model including these scholastic enablers and their relationship with reading achievement. For clarifying the hypothesized relationships the unidirectional arrows give the direction of structural influences, and a two-way arrow gives covariance.

[Take in Figure 1 about here]

The path model is based on the assumption that the participation factor has a direct effect on reading achievement. However, previous research also suggests that this factor is influenced by home background and teacher competence. Both these exogenous factors also have direct effects on reading achievement, and previous research also suggests that these two factors are correlated.

## Methodology

In this section the study design is outlined, and the sample, variables and methods of analysis are described.

### *Data source – the IEA PIRLS 2000 study, design and samples*

This study was based on the data from the Swedish participation in the PIRLS 2001 study conducted by the International Association for the Evaluation of Educational Achievement (IEA), and the sampling procedure is described by Mullis et al. (2003) and Rosén et al. (2003). Sweden participated with three nationally representative but separate samples of students in this study. One of the samples was in grade 4, and two of the samples were in grade 3, one for the repeat of the Reading Literacy study in 1991 (Ellie, 1992), and one for PIRLS (Campbell, Kelly, Mullis, Martin, & Sainsbury, 2001; Mullis, Martin, Gonzales & Kennedy 2003). The analysis in this study is based on the latter selection whose design and the instruments are briefly outlined in Table 1.

[Take in Table 1 about here]

Table 2 presents the valid number of schools, classes, and students in PIRLS grade 3 samples in Sweden.

[Take in Table 2 about here]

Valid N is based on the number of students with reading achievement scores. Missing data for each of the questionnaires was less than 10 percent.

## *Variables*

Two-level structural equation modelling (SEM) was used to examine the extent to which parental participation affect students reading achievement, including factors that mediate this influence. Latent variable models were fitted to the data and the manifest variables used as indicators were selected from the questionnaires. A standardized total IRT reading achievement score (TOTACH) was used as an outcome variable.

Key constructs in the current study are “Parental participation” (ParPart), “School engagement” (SchEnga), “Teacher competence” (T-Comp) and “Student home background” (SES). The indicators selected to represent these constructs’ is presented in Table 3 below along with their mean, standard deviation, and intra-class correlation (ICC). Reading achievement (TOTACH) is indicated by the mean of the five plausible values of the total score on the PIRLS achievement test.

[Take in Table 3 about here]

Altogether 27 variables were involved in the measurement of constructs. It should be noted that the variable HIGED is a derived variable representing the highest educational level of child’s parents. In the Swedish version of the teacher questionnaire there were more detailed questions about the teacher education. This information was used to create an ordinal scale for various types of teacher educations. Those teacher educations that held most preparation for the teaching of reading to primary students received the highest code. As shown in Table the size of intra-class correlation coefficients (ICC) for all variables indicate that a substantial part of the variance may be due to between class differences and thus two-level modelling is needed (e.g. Hox, 2002).

As each indicator to a large degree is affected by multidimensionality and measurement errors, a multivariate latent modeling approach is needed to produce more reliable measures of the desired constructs. The indicators will thus be included in a measurement model process where the desired constructs are defined along with plausible sub-factors in order to obtain good model fit.

The correlations and covariances among the 27 indicators have been estimated and are presented in Table A in the appendix.

## *Methods of analysis*

In the analysis the influence of parental participation on reading achievement, including factors that may mediate this influence, are explored by applying a two-level structural equation model with latent variables. With this analytical method it is possible to decompose the variation at the student level as well as the class level simultaneously. This gives information about the extent to which the total variation of different variables can be assigned to differences between classes and to differences between individuals.

All preliminary data file preparation such as computing, recoding of variables, aggregating and merging of files was done using Statistical Package for the Social Sciences (SPSS Inc, 2005). The decomposition process was carried out with Mplus (Muthén & Muthén, 1998-2007) under the STREAMS 3.0 modelling environment (Gustafsson & Stahl, 2005).

The problem of missing data was dealt with using the missing data modelling option available in Mplus. In this modelling approach imputation is made in such way that cases with valid scores on the same subset of variables are grouped together and a separate covariance matrix is computed for each subset. The analysis then weights the separate matrices into a total matrix, which represent the population matrix (Alison, 2003).

The research question was addressed in a stepwise procedure as described below.

- First a two-level measurement model was fit for the construct of Parental Participation and its relation to reading achievement was investigated.
- The second step was to fit a two-level measurement model for the SES construct of Student home-background, and this model too was related to achievement.
- The third step was to fit a measurement model to the indicators of Teacher Competence, and then relate it to student achievement at the class level.
- Student SES and teacher competence were then one at the time included in the parental participation model, and the importance of these variables for parental participation was investigated.
- In a final step all models were added into the two-level structural model previously described and depicted in Figure 1.

It should be noted that modelling is a phased process, and in this paper only the final models are presented.

## Finding and Discussion

### *The measurement model of parental participation*

According to the previously described Ladder theory by Arnstein (1969) parents' participation is on a basic level dependent on the information they receive from school about what happens in school and about the achievement progress of their own child. The final two-level measurement model for Parental Participation was based on 16 indicators (see Figure 2). Six of the indicators were selected from the parental home questionnaire, three from the teachers' questionnaire, and seven from the school questionnaire. In Figure 2 the within-level model is drawn below the observed variables, while the between-level model is drawn above the observed variables in the model. The proposed model provided a good fit to the data according to all fit statistics ( $\text{Chi}^2 = 252$ ,  $\text{df} = 109$ ,  $p < .000$ ,  $\text{RMSEA} = .016$ ,  $\text{CFI} = .972$ ).

[Take in Figure 2 about here]

The within-level model identified a general information factor (InfW) with relations to all six manifest parental variables. In addition, a residual factor was identified, representing parental feelings about participation and trust in school (P-trustW) with relations to three of the manifest variables, which reflect more active and social parental participation. P-trust is consistent with Arnsteins argument that trust is an indicator of participation.

At the class-level two factors were identified: one general participation factor (PartB) which accounted for parental involvement and teachers call for collaboration, and one school engagement factor (SchEngB), which accounted for overall parental engagement in school

issues. The correlation between the latent factors PartB and SchEngB on the between level was weakly negative (-.11).

All the loadings were positive and significant. The largest loading in InfW was parents' view about how often they were given examples of the child's classroom work. In the nested factor P-trustW the largest loading was parents' degree of agreement to a statement that school cares about the child's progress in school. On the between level this indicator also had the largest loading in the PartB-factor. Parents doing fundraising and other supporting activities for the school had the highest loadings in the overall school engagement factor SchEngB.

The next step was to introduce reading achievement, TOTACH, into the model as shown in Figure 3. This structural model had good fit statistics ( $\chi^2 = 326$ ,  $df = 127$ ,  $p < .000$ ,  $RMSEA = .017$ ,  $CFI = .962$ ).

[Take in Figure 3 about here]

Figure 3 displays the standardized regression coefficients of the outcome variable reading achievement on the latent variables. The standardized estimates of the relations refer to the variance in TOTACH at each level respectively. On the within-level the general information-factor (InfW) was weakly negatively related to reading achievement. One possible explanation of this may be that parents whose children are less good readers are more often informed about this issue. On the class-level both the participation factor from parents and teachers viewpoint (PartB) and the school engagement factor from headmasters view about overall parental engagement at school (SchEngB) were significantly and positively related to achievement. The correlation between these factors was not significant.

For the between level a substantial part of the variation ( $r^2 = .27$ ) between classes was explained by the participation factors. However, previous research indicates that family home-background and teacher competence are of importance both for parental participation in school and for student achievement. The question thus arises what amount of influence the parents' involvement have when these two factors are taken into consideration. This will be examined in the next steps of analysis.

### *The structural model of student home-background*

The theory of capital (Bourdieu, 1997) was guiding the composition of the student home-background factor, and instead of using a full estimated structural model with different forms of capital a more parsimonious construct was fitted to the data, identifying one general capital factor (Gcap). Behind this choice were primarily two reasons. First, the forms of capital factors are, according to Bourdieu, convertible and interrelated and therefore it seems to be logical to use just a cut-out of the capital form as a control variable. Another, and more important reason is that a less complex model including just a few indicators is one way to avoid the iterative estimation algorithm to fail to converge (Gustafsson, 2000).

Thus, the starting point was to set up a two-level one-factor structural model for student home-background and relate it to reading achievement. The selection of indicators to this model was guided by a model of SES, which has been tested and proven to be stable for data of different countries (Gustafsson, 1998; Yang & Gustafsson, 2004). The one-factor model is pictured in Figure 4.

[Take in Figure 4 about here]

As shown in Figure 4, the selected indicators of General Capital were parents' highest education (HIGHED), number of books at home (BOOKS), annual household income (HINCM) and the possession of more than one computer (COMP). These were the indicators that received the highest loadings at both the within and between levels in the full measurement model of capital. The model accounted for 16 percent of the variance in reading achievement at the within-level and 61 percent at the between-level. These findings are consistent with previous research (Sirin, 2005; White, 1989).

### *The structural model of teacher competence*

Earlier empirical research and theory guided the construction of a teacher competence factor. Consequently, teacher experience, certification and subjects of importance in teacher training courses were selected as indicators for the model. Only a one-level model was needed since all the selected variables were teacher variables observed at the class level. From a large three-factor measurement model including one general teacher competence factor and two nested factors (Subject and Experience) a proxy factor of teacher competence was constructed based on the variables with the strongest standardised factor loadings. A graphic representation of this one-factor model with six indicators and its parameter loadings, all significant, is sketched in Figure 5. The relation between the general teacher competence-factor and reading achievement is also included in the Figure.

[Take in Figure 5 about here]

The largest loadings on the teacher competence factor were, as shown in Figure 5, teacher experience, an adequate teacher education and studies in pedagogy teaching reading. Some six percent of the variance between classes in reading performance was explained by the teacher-competence factor, which is slightly higher than shown in previous research (Hanushek, Kain & Rikvin, 1998).

The p-value in the present model indicated a very good fit and so did the other goodness of fit statistics ( $\chi^2 = 16$ ,  $df = 12$ ;  $p < .171$ ,  $RMSEA = .032$ ,  $CFI = .990$ ).

### *Controlling for student home-background and teacher competence*

In this step, the student home-background factor and the teacher competence factor, separately, was inserted in the original structural parental participation model in order to investigate their influence on the relationship between parental participation and reading achievement. In Table 4 the estimated relation between parental participation and reading achievement is presented in three different models.

[Take in Table 4 about here]

As shown in Table 4 the initial participation estimates changed when the control factors were inserted in the original participation model. Model 2, controlling for Student home background, affected some of the original estimates in the baseline model and particularly so at the between level. The estimated relations between the general participation-factor (PartB) and achievement decreased somewhat. However, the major change occurred in the relation between the overall parental school engagement factor and reading achievement. When Gcap was introduced the positive and significant relation between SchEngB and achievement vanished completely. This result indicates that family background confounded the effects of overall parental engagement at school.

When the teacher-competence factor was introduced instead the rather strong positive relation between PartB and reading achievement was radically reduced from .34 to .18. This indicates that teacher competence interplay with parental participation and this was further investigated in the final step of the analyses.

In the final step of the analyses all factors and relationships were investigated in a common model. The aim was to establish to the role of parental participation on students' reading skills when student home background and teacher competence were considered simultaneously.

*The final structural model – direct and indirect effects of parental participation, student home-background and teacher competence on reading achievement*

The hypothesis formulated in the introduction about patterns of influence among variables representing parental participation, student home-background and teacher competence suggested that parental participation in children's schooling may have a direct effect on reading achievement. It was also expected that this factor was influenced both by student home-background and teacher competence, which in turn also was expected to influence reading achievement. Another expectation was that these two factors that now were treated as exogenous variables could be related to each other, as some American studies had shown. This set of hypothesised relations was thus tested in the final two-level structural model, which is presented in Figure 6.

[Take in Figure 6 about here]

Fit indices for this final model was acceptable ( $\chi^2 = 795$ ,  $df = 351$ ;  $p < .000$ , RMSEA = .015, CFI = .944). The loadings match those in previously described measurement models, which is a sign of robustness. At the within-level in this final model the only independent variable was students home background, GcapW. This variable quite strongly influenced reading achievement directly, whilst there was no significant indirect influence via the parental trust in school factor or via the parental information factor. Only the parental information factor, InfW, showed a small but significant negative relation to reading achievement, which was also the case in previous estimated models.

At the between level, the estimates of the direct effects of the participation factors and achievement were reduced to insignificance, showing that the positive effect of parental participation on reading achievement is due to student home-background and qualified teachers. The student background variable, GcapB, had significant positive effects on both reading achievement and on the school engagement factor. However the latter variable did not

seem to affect reading achievement. Moreover, student background did not show any relation to the parental participation factor, which was expected from previous research. Teacher competence, GteachB, on the other hand showed strong and positive relation with the parental participation factor, which in turn had a significant and positive effect on reading achievement at this level. Interestingly, teacher competence showed no significant relation with the school engagement factor. Neither did teacher competence correlate with the student home background factor.

Notable but also unexpected was the absence of correlation between student home-background and teacher competence, a finding that speaks against the conclusion that qualified teachers select working with children with better opportunities for success in scholastic achievement (Hanushek, 1989).

Direct, indirect and total effects are also presented in Table 5.

[Take in Table 5 about here]

The estimates show that parental participation is of less importance when student home background and teacher competence are taken into account. However, the parental participation variables appear to mediate both the effect of student home background and teacher competence.

## **Conclusion and Implications**

With the aid of Swedish data from PIRLS 2001 this study investigated the relationship between parental participation in school and reading achievement and also the confounding and mediating effects of student home background and teacher competence. Although much research has addressed parent's involvement in children's schooling, there are only a few studies that empirically have investigated these relationships.

The result offer evidence that parental participation is positively associated with school-class differences in student reading achievement in the Swedish compulsory school, whereas within classes the relationship seems it to be negligible. These relationships proved to be dependent of students' home background and teacher competence. No evidence was found that qualified teachers selected classrooms with students from more privileged home conditions as previous research in the U. S. has suggested (Hanushek, 1989). Neither was there any indication that student home background was associated with parental participation at the class level. Thus, student home background was hardly associated with parental school engagement at all, while at the same time the student background factor accounted for almost all of the between class variance of reading achievement.

The results also show that parental participation at the class level is associated with teacher competence, so that a part of teacher competence is mediated by parental participation. This may indicate that more competent teachers are better able to collaborate to parents for the benefit of the children's progress. Even though parental participation does have a positive relationship with reading performance, the findings confirm that the competence of the teacher plays a substantially roll in this context. Teacher's education and subject matter competence really seems to make a difference but perhaps one key factor may be experience related to teacher self-efficacy as pointed out to by Tschannen-Moran, Woolfolk Hoy and Hoy

(1998). One assumption would thus be that more experienced teacher has the confidence to see parents as partners. How competent teachers shape the atmosphere of participation and shared responsibilities is an issue of interest for further research.

There are some limitations in this study that need to be made explicit. The main one is that the result from this study cannot, just like in many others cross-sectional studies, fully address the causality issue. Although participation was treated as a predictor in the analysis, the reading achievement could also have been used as a predictor of participation, meaning that parents whose children are good performers more likely have trust in the school and the teacher. To deal with this issue further research is needed using a longitudinal design.

Future studies of the importance of parental participation should also include other family characteristics such as parents' original nationality. It would also be of great interest to determine if the relations found in this study hold for other countries.

More work is also needed in order to investigate the relation between student outcomes and the degrees of participation sketched by the Arnstein (1969) ladder theory. It would be interesting to design a study from a hypothesised "Ladder of Parent Participation in School" in order to investigate to what degree parental control and power works in a positive direction for all students' learning. Perhaps unlimited parental control and power will benefit those who already got the societal power, as indicated by for example Lareau and Weininger (2003). In the light of the recent debate about parent-driven independent as well as public parent-driven schools in Sweden such analysis seem urgent.

Identification of a theoretical underpinning of parental participation calls for further research on parental participation. Furthermore, teachers and school leaders can apply these ideas in order to make their school a better place for students to learn and parents to be involved in. It is also desirable that this issue is recognized in teacher preparation programs so that teachers of tomorrow's school just not will be left to learn collaboration with the parents of their students by practice only.

Finally, student achievement in reading literacy seems to be facilitated by a collaborative climate where the parents are kept informed of children's progress, when teachers see parents as competent partners in children's schooling, and when there is trust between the parts. In the curricula for the Swedish compulsory school the importance of collaboration between school and pupils guardians is stressed, and executives linked to education state the importance of partnership for educational outcome. Indeed this also seems to be the case, and not just rhetoric.

## References

- Alison, P. D. (2003). Missing data techniques for structural equation modeling. *Journal of Abnormal Psychology, 4*, 545-557.
- Arnstein, S. R. (1969). A Ladder of Citizen Participation. *JAIP, (35)*, 4, 216-224.
- Artelt, C., Baumert, J., Julius-McElvany, N., & Peschar, J. (2003). *Learners for life, student approaches to learning. Result from PISA 2000*. Paris: OECD.
- Bourdieu, P. (1997). The forms of capital. In A. H. Halsey, H. Lauder, P. Brown, & A. S. Wells. (Eds.). *Education: culture, economy, and society* (pp 46-58). Oxford: Oxford University Press.
- Burchinal, M.R., Peisner-Feinberg, E. Pianta, R., & Howes, C. (2002). Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories. *Journal of School Psychology, (40)*5, 415-436.
- Campbell, J. R., Kelly, D. L., Mullis, I. V. S., Martin, M. O., & Sainsbury, M. (2001). *Framework and specifications for PIRLS assessment 2001 (2<sup>nd</sup> ed.)*. Chestnut Hill, MA: Boston College.
- Cooper, H., Jackson, K., Nye, B., & Lindsay, J. J. (2001). A model of homework's influence on the performance evaluations of Elementary school students. *Journal of Experimental Education,*

- 69(2), 181-199.
- Croninger, R. G., Rice, J. K., Rathbun, A., & Nishio, M. (2003). *Teacher qualifications and first grade achievement: A Multilevel Analysis*. University of Maryland: Center for Education Policy and Leadership.
- Darling-Hammond, L. (1999). *Teacher quality and student achievement: A review of state policy evidence*. Center for the Study of Teaching and Policy. University of Washington.
- Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005). Does teacher preparation matter? Evidence about teacher certification, teach for America, and teacher effectiveness. *Education Policy Analysis Archives*, (13)42, 1-32.
- Dauber, S. L., & Epstein, J. L. (1993). Parents' attitudes and practices of involvement in inner-city elementary and middle schools. In J. L. Epstein. (Ed.). *School, family and community partnerships: Preparing educators and improving schools*. Boulder, CO: West view Press.
- Dunkin, M., & Biddle, B. (1974). *The study of teaching*. New York: Holt, Reinhart and Winston.
- Ellie, W. B. (1992). *How in the world do students read? IEA study of reading literacy*. Hamburg, Germany: The International Association for the Evaluation of Educational Achievement.
- Epstein, J. L. (2001a). Parents' reactions to teachers practices of parent involvement. In J. L. Epstein. (Ed). *School, family and community partnerships: Preparing educators and improving schools*. Boulder, CO: West view Press.
- Epstein, J. L. (2001b). A question of merit: Principals' and parents' evaluations of teachers. In J. L. Epstein. (Ed). *School, family and community partnerships: Preparing educators and improving schools*. Boulder, CO: West view Press.
- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A Meta-analysis. *Educational Psychology Review*, 1, 1-22.
- Finders, M., & Lewis, C. (1994). Why some parents don't come to school. *Educational Leadership* 51(8), 50-54).
- Goddard, R. D., & Skrla, L. (2006). The influence social composition on teachers' collective efficacy beliefs. *Educational Administration Quarterly*, 4(2), 216-235.
- Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivation model. *Child Development*, 65, 237-352.
- Gustafsson, J-E. (1998). Social background and teaching factors as determinants of reading achievement at class and individual levels. *Journal of Nordic Educational Research*, 18(4), 176-185.
- Gustafsson, J-E. (2000). *Applied structural equation modeling*. Unpublished manuscript.
- Gustafsson, J-E., & Stahl, P. A. (2005). *Using Mplus with STREAMS 3.0*. Mölndal, Sweden: MultivariateWare.
- Hanushek, E. A. (1989). The impact of differential expenditures on school performance. *Educational Research*, 18(4), 45-51, 62.
- Hanushek, E. A., Kain, J. F., & Rivkin, S. G., (1998). *Teachers, schools, and academic achievement*. NBER Working Paper No. W6691.
- Hawkins, J. D., Catalano, R. F., Kosterman, R., Abbot, R., & Hill, K. G. (1999). Preventing adolescent health-risk behaviors by strengthening protection during childhood. *Archives of pediatrics & adolescent medicine*, (153), 226 -234.
- Hannon, P. (1995). *Literacy, home and school. Research and practice in teaching literacy with parents*. London: The Falmer Press.
- Hansen, K. Y., Rosen, M., & Gustafsson, J-E. (2004, May). *Effects of socio-economic status on reading achievement at class and individual levels in Sweden in 1991 and 2001*. Paper presented at the 1st IEA International Research Conference, Lefkosia, Cyprus.
- Hedges, L. V., Laine, R. D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes. *Educational Researcher* 23(3), 5-14.
- Hewison, J., & Tizard, J. (1980). Parental involvement and reading attainment. *The British Journal of Educational Psychology*, 50, 209-215.
- Ho, S. C., & Willms, J. D. (1996). Effects of parental involvement on eight-grade achievement. *Sociology of Education*, 69(2), 126-141.
- Husén, T. (1974). *Learning society*. London. Methuen.
- Hox, J. (2002). *Multilevel analysis. Techniques and applications*. London: Lawrence Erlbaum Publishers.
- Lareau, A. (1987). Social class differences in family-school relationships: The importance of cultural capital. *Sociology of Education*, 60(2), 73-85.
- Lareau, A., & Weininger, E. B. (2003). Cultural capital in educational research: A critical assessment.

- Theory and society*, 32, 567-606.
- McGrath, D. J., & Kuriloff, P. J. (1999). They're going to tear the door off this place: Upper middle class parent school involvement and the educational opportunities of other people's children. *Educational Policy*, 13(5), 603-629.
- MacBeath, J., & Mortimer, P. (2001). *Improving school effectiveness*. Buckingham – Philadelphia: Open University Press.
- Ministry of Education. (2006). *Curriculum for the Compulsory School System, the Pre-School Class and the Leisure-time Centre. Lpo 9*. Stockholm: Department of Education.
- Mullis, I. V. S., Martin, M. O., & Kennedy, A.M. (Eds.). (2003). *PIRLS 2001 Technical Report*. Chestnut Hill, MA: Boston College.
- Mullis, I. V. S., Martin, M. O., Gonzales, E. J., & Kennedy, A. M. (2003). *PIRLS 2001 international report: IEA's study of reading literacy achievement in primary schools in 35 countries*. Chestnut Hill, MA: Boston College.
- Muthén, L. K., & Muthén, B. O. (1998-2007). *Mplus user's guide. Fifth Edition*. Los Angeles, CA: Muthén & Muthén.
- Myrberg, E. & Rosén, M. (2006). Reading achievement and social selection in independent schools in Sweden – Result from IEA PIRLS 2001. *Scandinavian Journal of Educational Research*, 50(2), 185-205.
- Nye, B., Konstantopoulos, S., & Hedges, L. V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis*, 26(3), 237-257.
- OECD. (2002). *Reading for change. Performance and engagement across countries. Result from PISA 2000*. Paris: OECD Publications.
- OECD. (2004). *Learning for Tomorrow's World. First result from PISA 2003*. Paris: OECD Publications.
- OECD. (2006). *Science competencies for tomorrow's world. Volume 1 – Analysis*. Paris: OECD Publications.
- Paratore, J. R., Hindin, A., Krol-Sinclair, B., & Durán, P. (1999). Discourse between teachers and Latino parents during conferences based on home literacy portfolios. *Education and Urban Society*, 32(1), 58-82.
- Pena, D. C. (2000). Parent involvement: Influencing factors and implications. *Journal of Educational research*, 94(1), 42-55.
- Pilegaard Jensen, T., & Turmo, J. (2003). Reading literacy and home background. In S. Lie, P, Linnakylä, & A. Roe. (Eds). *Northern light on PISA. Unity and diverse in the Nordic countries in PISA 2000*. Oslo: Department of Teacher education and school development, University of Oslo, Norway.
- Reay, D. (1999). Linguistic capital and home-school relationships: Mothers' interactions with their children's primary school teacher. *Acta Sociologica*, 42, 159-168.
- Ribom, L. (1993). *Föräldraperspektiv på skolan. En analys från två håll. [Parents' perspectives on the school] : [an analysis from two directions]*. Diss: Uppsala: Acta Universitatis Upsaliensis, Uppsala Studies in Education 51.
- Rikvin, S. G., Hanushek, E. A., & Kain, J. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417-458.
- Rosén, M, Gustafsson, J-E., & Myrberg, E. (2003). *Läskompetens i skolor 3 och 4. Nationell rapport från PIRLS 2001 i Sverige. The IEA Progress in International reading literacy study. Göteborg's studies in educational sciences 236: Acta Universitatis Gothoburgensis*.
- Rutter, M., Maughan, B., Mortimore, P., & Ouston, P. (1979). *Fifteen thousand hours: Secondary schools and their effects on children*. London: Open books.
- Sheldon, S. B. (2007). Improving student attendance with school, family, and community partnerships. *The Journal of Educational Research*, 100(5), 267 –275.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417–453.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington: National Academy Press.
- Soodak, L. C., & Podell, D. M. (1998). Teacher expectations. In Brophy, J. (Ed.). *Advances in research on teaching. Vol. 7, Expectations in the classroom*. Connecticut: JAI Press Inc.
- SPSS, Inc. (2005). *SPSS Base 14.0 users guide*. Chicago: SPSS, Inc.
- Sulzby, E., & Teale, W. (1991). Emergent literacy. In R. Barr, M. L. Kamil, P. Mosenthal, & D. P. Pearson. (Eds). *Handbook of Reading Research vol. II*. New Jersey: Lawrence Erlbaum Associates.
- Tal, T. (2004). Community-based environmental education – A case study of teacher-parent

- collaboration. *Environmental Education Research*, 10(4), 523 –543.
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: its meaning and measure. *Review of Educational Research*, 68(2), 202-248.
- Trivette, P., & Anderson, E. (1995). The effect of four components of parental involvement on eight grade student achievement: Structural analysis of NELS:88 data. *School Psychology Review*, 24(2), 299-318.
- White, K. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin*, 91, 461–481.
- Weininger, E. B., & Lareau, A. (2003). Translating Bourdieu into American context: The question of social class and family-school relations. *Poetic*, 31, 375-402.
- Wigfield, A., & Asher, S. R. (1984). Social and motivational influences on reading. In R. Barr, M. L. Kamil, & P. Mosenthal. (Eds.) *Handbook of Reading Research vol. I*. New Jersey: Lawrence Erlbaum Associates
- Yang, Y. (2003). *Measuring socioeconomic status and its effects at individual and collective levels: A cross-country comparison*. Acta Universitatis Gothoburgensis, Gothenburg Studies in Educational Sciences 193, Gothenburg.
- Yang, Y., & Gustafsson, J-E. (2004). Measuring socioeconomic status at individual and collective levels. *Educational Research and Evaluation*, 10(3), 259-288.

**[Take in Appendix in next page]**

**[Take in Appendix about here]**

## On the Importance of Parental Participation for Student Achievement in Reading Literacy

Elisabeth Frank, University of Kalmar, Sweden, elisabeth.frank@hik.se  
 Monica Rosén, University of Gothenburg, Sweden, monica.rosen@ped.gu.se

### Tables and Figures + Appendix

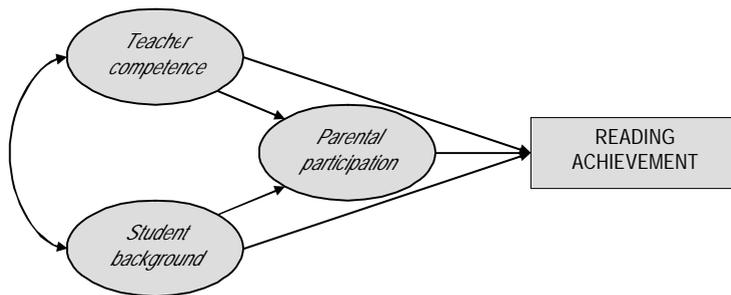


Figure 1. Schematic representation of the hypothesised explanatory model

Table 1. Instruments used in the PIRLS 2001 study, grade 3

<b>INSTRUMENT (Responding informant)</b>	<b>CONTENT</b>
READING ACHIEVEMENT TEST (Students)	Eight text passages distributed across 10 booklets, each holding two passages in a matrix sample design. Each student took one of the booklets during 2 x 40 minutes.
STUDENT QUESTIONNAIRE (Students)	School and teaching experiences, reading homework, self concept of reading abilities, attitudes towards reading, reading habits on leisure time, reading resources at home, and social background characteristics.
HOME QUESTIONNAIRE (Parents)	Reading activities with child, reading resources at home, and parent's attitudes towards reading and own reading habits, co-operation with school, and social background.
TEACHER QUESTIONNAIRE (Teachers)	Questions about class characteristics, teaching reading and reading material, reading assessment and collaborations with parents. Own education, teaching experience, and teacher collaboration.
SCHOOL QUESTIONNAIRE (Principals/Head masters)	School characteristics, demographics, availability of cultural and educational resources, school resources, school policy's regarding teaching reading, socio-economic mixture, school-home collaboration, school climate, and school management.

Table 2. Numbers of schools, classes and grade 3 students

	Total
Schools	144
Classes	351
Students	5 271
Of which girls	2 631
Of which boys	2 640

Table 3. Mean, standard deviation and intra-class coefficients for the indicators of parental participation, student background, teacher background, reading achievement as well as the hypothesised factors

Indicator							Con- struct
Source	Variable name	Variable lable	Information/Question/Statement	Mean	St. D	ICC class level	
Parent	asbhcon1	CNTRL	School asked parents about control of child's assignments	2.28	.80	.087	ParPart
	asbhcon2	EXMPL	School given examples of child's class work	2.35	.64	.061	ParPart
	asbhcon3	INFO	School given info about child's performance	2.26	.57	.067	ParPart
	asbhtk1	INCLD	Parents thoughts about school; school include them in child's education	3.37	.71	.116	ParPart
	asbhtk2	CARE	Parents thoughts about school; school cares about child's progress	3.64	.58	.114	ParPart
	asbhtk3	HELP	Parents thoughts about school; school helps child become better in reading	3.55	.64	.110	ParPart
	asbhbook	BOOKS	Number of books at home	4.00	1.10	.110	SES
	asbhincm	HINCM	Annual household income	3.92	1.58	.180	SES
	Derived variable	HIGED	Maximal education mother/father MAX (asbheduf, asbhedum)	5.5	2.03	.137	SES
Teacher	atgnbrd8	PTRAIN	If children fall behind; teacher prepare for training with parents	1.78	.41		ParPart
	atgnpro7	PINDC	Teacher regard indications from parents to monitor student's progress in reading	2.78	.44		ParPart
	atbgpar2	SEND	Frequency of teacher sending examples of child's classroom work in reading to home	3.00	1.19		ParPart
	atbgtaug	EXALL	Teachers years taught all together	17.51	12.59		T-Comp
	atbg4tau	EXGR3	Teachers years taught in grade 3	6.47	5.67		T-Comp
	atbgcert	CERT	Teaching certificate	1.93	.25		T-Comp
	atbgare3	PED	In teacher training; study pedagogy/teaching reading	2.6	.58		T-Comp
	atbgare5	RREAD	In teacher training; study remedial reading	1.88	.69		T-Comp
	atgnedu	TEDUC	Type of teacher education	4.35	1.65		T-Comp
Principal	acbginf4	PWISH	Influence on school; wishes from parents	1.76	.61		SchEnga
	acbg4fa3	RPORT	School provide written reports to families	2.06	1.29		SchEnga
	acbg4fa5	EVENT	School provide events with parents	3.46	.74		SchEnga
	acbgpar1	PHELP	Parents help in school	1.69	1.10		SchEnga

	acbgpar3	PATND	Parents attend school events	2.66	1.27		SchEnga
	acbgpar4	PACT	Parents do activities for school	2.55	1.29		SchEnga
	acbgcha3	PENG	Parents engagement in children's performance	3.57	.80		SchEnga
Student	asbgps10	COMP	Home possession; more than one computer	1.44	.47	.06	T-Comp
Derived variable		TOTACH	Students total reading achievement score on the reading achievement test	523.57	72.61	.18	TOTACH

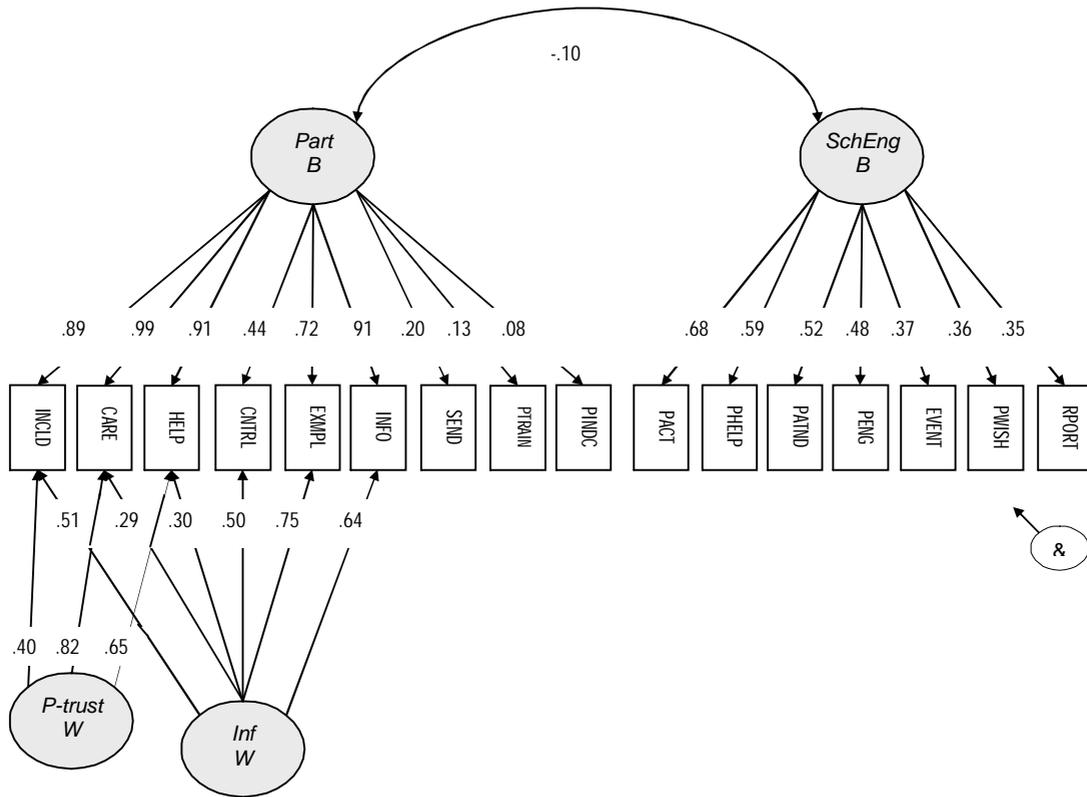


Figure 2. Two-level measurement model of parental participation and its relation to reading achievement

Note. All loadings except PTRAIN and PINDC are significant  $p < .05$ .

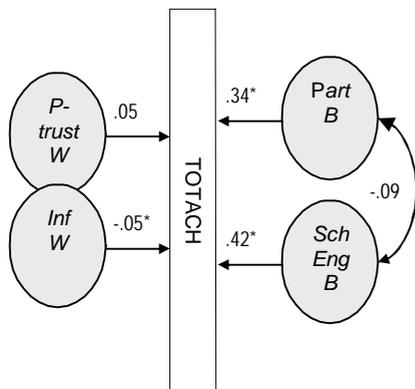


Figure 3. Two-level structural model of parental participation and its relation to reading achievement

Note.  $*p < .05$ .

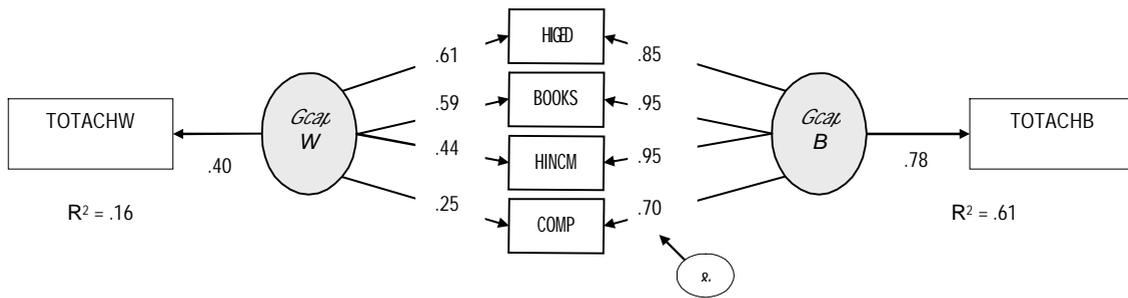


Figure 4. A structural model of student home-background and its relation to reading achievement

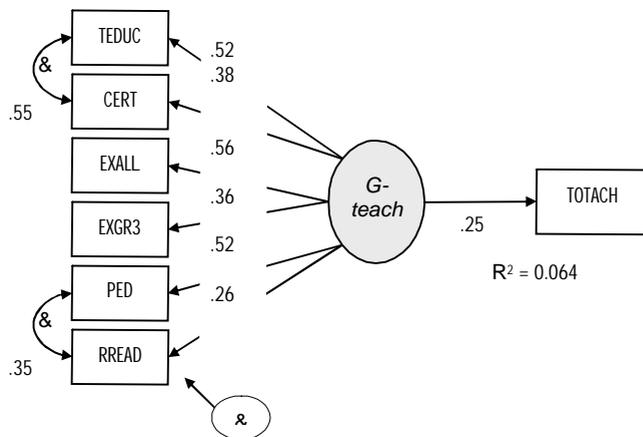


Figure 5. A structural model of teacher competence and its relation to reading achievement

Table 4. Relations to reading achievement, comparisons with the baseline model

Model number	Relation to TOTACH			
	Within level		Between level	
	P-trustW	InfW	PartB	SchEngB
1 Baseline model	.05	-.05*	.34*	.42*
2 Controlling for Student home background	.05	-.08*	.30*	.07
3 Controlling for Teacher competence	.05	-.05*	.18	.44*

Note. \* $p < .05$ .

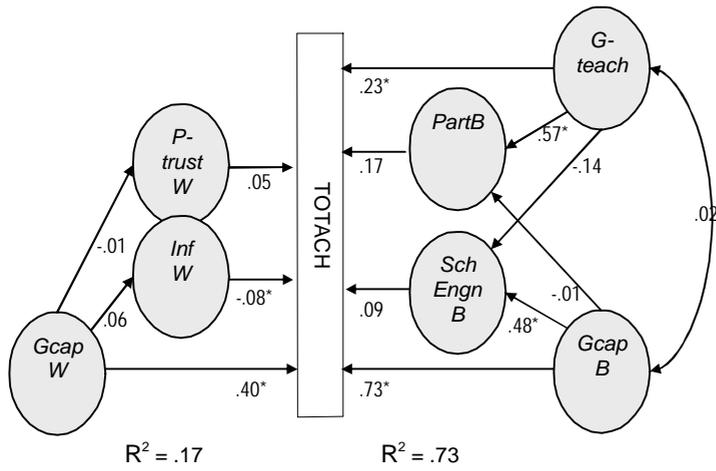


Figure 6. A two-level structural model of parental participation, student home background and teacher competence and its relation to reading achievement

Note. \* $p < .05$

Table 5. Direct, indirect and total effect of exogenous and endogenous variables on reading achievement

	Direct	Indirect	Total
P_trustW	.05		.05
InfW	-.08		-.08
GcapW	.40	-.02	.38
PartB	.17		.17
SchEngB	.09		.09
GcapB	.73	.04	.77
GteachB	.23	.09	.32

## Appendix

In order to facilitate the reading of the matrix, covariances are shown in light grey colour field above the diagonal, correlations are coloured in medium grey tone below the diagonal, and the constructs are marked with squares.

Table A Covariances and correlations among manifest variables. Covariances above the diagonal, and correlations below the diagonal. Factors are marked in squares.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27		
<i>Participation; InfW, P_trustW, PartB</i>																													
1. Parents control CNTRL	.64	.21	.14	.14	.06	.07	.02	.00	.03	.01	.02	-.01	-.03	-.06	-.02	.00	.03	.07	.08	.00	-.01	-.01	.01	.01	.01	.05	.01	-.01	
2. Examples given EXMPL	.40	.41	.17	.18	.09	.09	.01	.00	.04	.00	.02	.01	.00	-.02	-.01	.01	.07	.07	.07	.00	.02	.01	.01	.02	.02	.06	.02	-.03	
3. Inf. performance INFO	.31	.48	.32	.16	.10	.11	.01	.00	.03	-.01	.01	.00	-.02	-.02	-.04	-.03	-.02	-.04	-.05	.00	.04	.01	.01	.03	.02	.10	-.03	-.03	
4. Parents included INCLD	.24	.40	.39	.52	.22	.21	.00	.01	.05	-.02	-.04	.03	.00	-.01	-.01	.01	.04	.03	.07	.00	.05	.01	.02	.04	.02	.12	.01	-.01	
5. School cares CARE	.14	.24	.29	.52	.34	.25	.00	.00	.03	.00	-.01	.01	.00	.00	-.02	-.01	.01	.00	.05	.00	.05	.01	.01	.03	.02	.13	.02	-.02	
6. School helps HELP	.14	.23	.29	.45	.65	.42	.00	.01	.03	-.01	.00	.00	-.02	.00	-.04	-.02	-.02	-.02	-.02	-.01	.05	.01	.01	.03	.02	.16	.03	-.03	
7. Parents train PTRAIN	.05	.03	.04	.01	.01	.01	.19	.02	.07	.01	.08	-.03	.04	.04	-.08	-.02	-.02	.00	-.04	-.01	.13	.05	.02	.03	.04	.12	.01	-.01	
8. Indications. fr. parents PINDC	-.01	.00	.00	.02	.02	.02	.09	.19	.07	.03	.01	.00	.02	.01	.05	.04	.00	.00	-.01	-.01	.04	.02	.00	.02	.00	-.01	.01	-.01	
9. Sending examples SEND	.03	.06	.04	.06	.04	.04	.14	.13	1.33	.05	.11	.01	.15	.04	-.11	.14	.02	-.02	.07	-.01	.20	.08	.01	.08	.01	-.03	.02	-.02	
<i>Parent school-engagement; SchEngB</i>																													
10. Wishes from parents PWISH	.01	.00	-.03	-.04	-.01	-.02	.04	.10	.07	.36	.11	.06	.11	.05	.18	.11	.03	.04	.07	.00	.04	.01	.00	.00	.04	.00	.02	-.02	-.02
11. Reports provided RPORT	.02	.02	.01	-.04	-.02	.00	.14	.01	.07	.14	1.82	.19	.24	.31	.05	-.01	-.07	.07	.04	-.01	-.15	-.10	-.01	-.03	.05	-.16	.00	-.01	-.01
12. Events provided EVENT	-.01	.03	-.01	.05	.04	.00	-.11	.00	.02	.14	.21	.49	.11	.13	.09	.13	.05	.13	.17	.01	-.04	.02	.00	.02	.00	-.01	.04	-.01	-.01
13. Parents help PHELP	-.04	.00	-.03	.01	.00	-.03	.09	.04	.14	.20	.18	.17	.96	.37	.35	.26	.05	.02	.14	-.01	-.13	-.08	.01	.05	.02	-.14	.05	-.01	-.01
14. Parents attend PATND	-.06	-.03	-.03	-.01	.01	.00	.08	.02	.03	.07	.18	.14	.30	1.58	62	.12	.08	.11	.16	-.01	-.12	.03	.04	.03	.06	.18	.10	-.01	-.01
15. Parents do activities PACT	-.02	-.01	-.06	-.01	-.02	-.05	-.15	.08	-.07	.24	.03	.10	.28	.39	1.61	.43	.12	.15	.22	.00	-.31	-.09	.03	-.05	-.13	-.26	.09	-.01	-.01
16. Parents engagement PENG	.00	.03	-.06	.01	-.01	-.05	-.06	.13	.15	.23	-.01	.24	.33	.12	.43	.63	.15	.29	.28	.03	-.03	.01	.01	.01	-.03	-.17	.09	-.01	-.01
<i>Gen. stud. capital; GcapW, GcapB</i>																													
17. No. of books BOOKS	.03	.10	-.03	.04	.02	-.02	-.03	.00	.01	.05	-.05	.07	.04	.06	.09	.17	1.23	.54	.93	.10	.02	.00	.00	.03	-.02	.02	.27	-.01	-.01
18. Household income HINCM	.06	.07	-.05	.03	.00	-.02	.00	.00	-.01	.05	.04	.12	.02	.06	.07	.23	.32	2.41	1.13	.17	-.04	-.03	.00	.02	-.01	-.04	.29	-.01	-.01
19. Parent education HIGED	.05	.05	-.04	.05	.04	-.01	-.04	-.01	.03	.06	.01	.12	.07	.06	.09	.18	.41	.36	4.10	.17	-.11	-.07	.01	.04	-.04	-.03	.44	-.01	-.01
20. Computers COMP	.01	.01	-.02	.00	-.01	-.04	-.02	-.04	-.01	.00	-.01	.03	-.02	-.02	.00	.08	.19	.22	.17	.24	-.01	.00	.00	.01	.00	-.02	.04	-.01	-.01
<i>Gen. teacher competence; GtechB</i>																													
21. Teach. experience EXALL	-.01	.03	.05	.05	.07	.06	.24	.07	.13	.06	-.09	-.04	-.11	.08	-.19	-.03	.01	-.02	-.04	-.01	1.62	.58	.10	.21	.15	.94	.05	-.01	-.01
22. Teach. exp. grade 3 EXGR3	-.02	.01	.03	.02	.03	.02	.18	.07	.12	.03	-.12	.05	-.14	.04	-.12	.02	.00	-.04	-.06	.01	.75	.37	.10	.07	.03	.16	.00	-.01	-.01
23. Teaching certificate CERT	.04	.04	.06	.09	.08	.07	.15	.03	.04	.03	-.01	-.01	.02	.14	.09	.03	.01	.00	.02	-.03	.30	.22	.06	.04	.02	.12	.01	-.01	-.01
24. Pedagogy/ teach. read. PED	.01	.06	.08	.08	.08	.08	.12	.07	.12	.01	-.04	.05	-.09	.04	-.06	.03	.04	.02	.03	.02	.28	.18	.29	.35	.19	.40	.04	-.01	-.01
25. Remedial reading RREAD	.01	.04	.06	.04	.05	.05	.13	.00	.02	.10	.06	.00	.03	.07	-.15	-.05	-.02	-.01	-.03	.00	.17	.06	.12	.45	.48	.33	.01	-.01	-.01
26. Teacher education TEDUC	.04	.06	.11	.10	.14	.15	.17	-.02	-.02	.00	-.07	-.01	-.09	.09	-.12	-.13	.01	-.02	-.01	-.03	.45	.16	.30	.41	.29	2.66	.11	-.01	-.01
27. Reading achievem. TOTACH	-.02	.04	-.06	.02	.05	.07	.02	.04	.02	.05	.00	.07	.07	.11	.09	.16	.34	.26	.30	.10	.05	-.01	.05	.09	.02	.10	.54	-.01	-.01

Note: Correlations significant least at the 5%-level are marked with bold letters.