

# Executive Summary

## Research Objectives

Parental involvement is seen as one of the most malleable factors of the student's home situation, which makes it a relevant subject for schools, educational policies, and research. Though many studies have researched its role in student achievement, effects are not univocal. It is difficult to tell whether these inconsistent results are caused by differences between educational systems and cultural differences, or by the great variation in the methods used to assess student achievement and parental involvement across studies. Large-scale international assessment studies like the Progress in International Reading and Literacy Study (PIRLS) undertaken by the International Association for the Evaluation of Educational Achievement (IEA) therefore provide valuable data. However, a limiting factor may be the extent to which data from different countries can be compared, as cultural differences could influence the international validity of the indicators.

The purpose of this research was to develop a suitable psychometric framework for the assessment of the relation between parental involvement and reading literacy, using the PIRLS-2011 data for 41 countries as a case study. The framework included country-specific differences, both at the item and scale level, to gain insight into cultural differences in the parental involvement construct and its relation to student achievement in reading literacy. The project may thus also contribute to the issue of measurement invariance across cultures in large-scale assessment studies.

Three main research questions guided the project:

- Which dimensions of parental involvement can be discerned and to what extent is there empirical evidence that these dimensions are related to student attainment?
- To what extent are there any cultural differences (differences between countries) in the constructs that measure dimensions of parental involvement?

- To what extent are the different dimensions of parental involvement related to student achievement in reading literacy, taking into account student background characteristics and differences between countries?

## **Literature Review**

The introductory literature review (1) investigated the underlying dimensions of the parental involvement concept in current research literature and how these dimensions were related to educational outcomes; (2) explored which dimensions showed the most significant relationship with student attainment, and reading literacy in particular; and (3) determined whether cultural differences existed between countries in the perception of relationships between parental involvement and student achievement.

The review identified four key dimensions of parental involvement and provided a comprehensive analysis of existing studies on parental involvement and student achievement. Overall, the literature suggested that parental involvement had a positive influence on student achievement; however, when the key four dimensions characterizing parental involvement were considered separately, the results were less straightforward. None of the meta-studies in the literature addressed cultural differences in parental perceptions of parental involvement or how parents behaved towards their child's education as possible reasons for the diverse results.

## **Modeling Parental Involvement**

The psychometric framework aimed to identify and model cultural differential item functioning (CDIF) using five item response theory (IRT) models: the generalized partial credit model (GPCM), a GPCM with 10 % and 20 % country-specific parameters, a GPCM with random item parameters, and the bi-factor GPCM. These models were each applied to five components of parental involvement identified by the literature review and constructed from the PIRLS-2011 dataset.

All models clearly and consistently supported the identification of CDIF. However, the results obtained varied across models. This disagreement was because different aspects of model fit were assessed by the models; the method using residuals (i.e., the first four models) specifically targeted uniform CDIF, while the bi-factor GPCM specifically targeted nonuniform CDIF. Practitioners should not rely on one model and one approach to investigate CDIF, but diversify in their methods.

## Latent Multilevel Model

After modeling parental involvement including CDIF, its relation with reading literacy was investigated using a latent three-level regression model. The analyses confirmed that the control variables for gender and socioeconomic status (SES) were important predictors for reading literacy. Parental involvement in early literacy activities with their child had a small but positive influence on student achievement. Parental involvement in helping their child with homework in the current grade appeared to have a weak negative influence. The effect of other components was negligible.

A model with random slopes at the country level for the components “early literacy activities” and “helping with homework” was tested to establish whether their effects differed across countries. There were large differences in the impact across countries, especially for parental help with homework. There was a positive correlation between the country-level intercept slopes, indicating that the effect of helping with homework was less significant in low-achieving PIRLS countries than in high-achieving countries.

To establish the impact of CDIF, the analysis was replicated with the a posteriori estimates of the latent student parameters from all five IRT models. The resulting estimates were very close, and within one standard deviation from the estimates under the GPCM. Thus, CDIF did not appear to bias the inferences.

## Conclusions

The main purpose of this study was to assess whether there were cultural differences in the measurement of parental involvement in PIRLS and, if so, whether correction for these differences led to differing interpretations with regard to its relation with reading literacy. Although some of the constructed scales for parental involvement may require improvements to increase reliability, the PIRLS scales remain internationally valid. Analyzing the impact of CDIF on the estimates of country means and on the outcomes of latent regression analyses established that CDIF did not influence the results.

By providing a robust framework to identify and model cultural differences, this project contributes to the field of large-scale assessments in educational research by modeling the relationships between parental involvement and student learning over a large number of educational systems. Most importantly, the work confirms that there is a positive relationship between parents’ early literacy activities and students’ reading literacy, and conversely, a negative relationship between parental help with homework and students’ reading literacy.