

Chapter 1

Introduction

Although the role of parental involvement in student achievement (and reading literacy in particular) is widely acknowledged, research findings regarding its effect differ considerably (Fan and Chen 2001; Hoover-Dempsey et al. 2001; Mattingly et al. 2002; Jeynes 2005; Patall et al. 2008). Owing to the large variation in the methods used to measure student achievement and parental involvement in these studies, it is difficult to establish whether the inconsistency in the results is caused by differences between educational systems and cultures, or by the method applied and the instruments used. Empirical research is required into measurement of student achievement and indicators of the parental involvement, and how comparisons can be made between educational systems (countries), to find out to what extent and under which conditions, parental involvement influences student achievement. In-depth analyses of large-scale international comparative data, such as that contained in the Progress in International Reading and Literacy Study (PIRLS) undertaken by the International Association for the Evaluation of Educational Achievement (IEA), may provide valuable additions to the research into parental involvement.

The main purpose of this research was to develop a psychometric framework for assessing the relation between parental involvement and reading literacy, using the PIRLS-2011 data 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. One of the possible limitations of international large-scale assessment studies such as PIRLS is the extent to which the data of different countries can be usefully compared. Despite the high quality demands for the translation of the instruments and the conditions of administration in each participating country, cultural differences could influence the international validity of the indicators measured. PIRLS offers international scales based on partial credit item response theory (IRT) models, which can improve the quality of secondary analyses of data. However, the differences in the Cronbach's alphas of scales reported in the PIRLS-2011 international report suggest that the meaning of a scale and the interpretation of items within a scale could differ between countries (Martin and Mullis 2012).

The main research objective of this study was to assess the extent to which parental involvement is related to the achievement of primary school students in reading literacy, taking into account student background characteristics, differences between schools and countries, and cultural differences in the parental involvement construct. More specifically, the study aimed to respond to the following research questions:

- (1) *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 answer this first question, we reviewed the recent research literature on parental involvement. The main goal was to identify dimensions of parental involvement and to gain further insight into the extent to which the different dimensions were potentially related to student achievement in reading literacy and other achievement-related outcomes.

- (2) *To what extent are there any cultural differences (differences between countries) in the components that measure dimensions of parental involvement?*

To address this question, five extracted item sets using IRT models were studied for item-by-country interactions in item parameters, indicating cultural differential item functioning (CDIF). The five scales were subsequently modeled using random and country-specific item parameters for the most extreme interactions. A bi-factor IRT model was applied, where the country-specific covariance matrix gives an indication of the extent to which the scale loads on the intended latent variable and the extent to which the responses are country-specific.

- (3) *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?*

A multilevel analysis of the PIRLS-2011 datasets from 41 countries explored the relationship between parental involvement and student reading literacy. For all 41 countries, data from students, schools and parents were available. The analyses used a three-level model (consisting of a student, school and country level). The third question was addressed by exploring the three-level model with a random intercept with fixed effects for the predictors and by exploring a random model for each component showing a meaningful relation with achievement in the random intercept model. This random model explores the extent to which the association between the dimensions of parental involvement and student reading literacy differ between countries. Subsequently, a model without a correction for country differences in the parental components was compared with models with different types of corrections for country differences in the parental components.

In Chap. 2, we review the current literature on parental involvement and its perceived influence on student achievement. Chapter 3 covers the measurement of parental involvement in the PIRLS background questionnaires. In the first part of Chap. 4, we present a psychometric framework to identify and model CDIF in

multiple ways, including a non-standard application of the bi-factor model. We discuss the results of all approaches for each of the five parental involvement components in the second part of the chapter, providing insights into the extent to which they are affected by CDIF. The last step in the psychometric framework was to relate the parental involvement components to reading literacy, and compare the outcomes for the different methods used to model CDIF. In Chap. 5, we present the method and the multilevel analyses. Finally, in Chap. 6, we evaluate the meaning of the results both for measuring parental involvement in an international context, and in discussions of the importance of parental involvement for student attainment.

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