

# 1. Introduction

The results from various education studies show that family background or socioeconomic status (SES) is (sometimes highly) correlated with students' achievement in schools. The influence of family background and family's SES in particular on students' achievement in school has been of considerable interest for a long time. One of the most prominent studies of background characteristics and their relationship with educational outcomes was published by James Coleman and his colleagues in 1966 under the title *Equality of Educational Opportunity*, but it is better known as the Coleman Report (Coleman et al., 1966). This comprehensive exploration of the background characteristics of schools and students that influence the outcomes of education was conducted with a sample of almost 650,000 students and teachers in over 3,000 schools in the United States. The results showed that student background characteristics have a marked impact on the outcomes of education. Although these results were published nearly 50 years ago, social scientists continue to discuss them (see Garoman & Long, 2006).

Family background is often measured using family SES. According to Buchmann (2002, p. 153), three components typically comprise a measure of SES: educational attainment, occupational status, and financial resources. However, as Bourdieu (1986) and Coleman (1988) pointed out, aspects in addition to SES also describe differences between individuals' backgrounds. What these researchers called social and cultural capital are resources that can also reside in the structure and history of the individual's family—hence, family background. Accordingly, in this paper, we do not constrain our analysis to measures of family SES, but extend it to include measures of social and cultural capital. Therefore, family background will be our scope of interest, with family SES included as just one aspect of that background.

In this paper, we attempt not only to identify best practices but also to provide suggestions on how best to measure family background with regard to a variety of premises related to the different content domains, budget and time considerations, target populations, and other features of (future) large-scale international education studies. We furthermore endeavor to give indications about the quality and strength of a scale that is lost when the combination of indicators and components used for analysis is not the best possible one.

More specifically, we explore the different approaches and concepts that large-scale assessments of educational achievement use to measure students' family background, analyze the relationships between family background measures and educational outcomes, and suggest ways to improve large-scale international education study data collection with regard to family background.

Our focus throughout this paper encompasses the measurement of family background within three of the largest international large-scale assessment studies in education: the *Progress in International Reading Literacy Study* (PIRLS), carried out by the International Association for the Evaluation of Educational Achievement (IEA), IEA's *Trends in International Mathematics and Science Study* (TIMSS), and the *Programme for International Student Assessment* (PISA), carried out by the Organisation for Economic Co-operation and Development (OECD). The operationalization of family background varies among the different education studies in scope. For example, while TIMSS mostly reports on single indicators, PIRLS and PISA derive scales (e.g., the PIRLS Index of Home Educational Resources and the PISA Index of Economic, Social, and Cultural Status).

To aid evaluation of the approaches used in these three assessments, we spend the first part of the paper reviewing the development and current use of concepts and indicators of family background, highlighting in particular the different aspects involved in measuring family background. We begin by overviewing developments in the measurement of family background to date, and follow this with an account of the most frequently and prominently used indicators of family background. Next, we introduce several combinations of those indicators that are widely used in the educational research arena. To complete our review of the diverse aspects of measuring family background, we sketch in two additional areas of relevance. These are the multilevel nature of family background and issues associated with administering international large-scale education studies. Our review covers matters additional to those within the ambit of the three international large-scale student assessments. Our purpose at this juncture is to aid identification of possible gaps in or favorable additions to the measurement of family background in those assessments.

During the second part of this paper, we use several criteria to evaluate the different approaches that the international large-scale education studies PIRLS 2006, PISA 2006, and TIMSS 2007 used to measure family background. In order to identify the best (i.e., most desirable) practice (see May, 2002, p. 126), we provide estimates of and numbers pertaining to the quality of the indicators used to measure family background in terms of missing data, reliability, and relationship with achievement. We also, in this regard, consider ability to explain variance in achievement that is lost because of the use of less ideal (sets of) indicators, due to, for example, budget constraints or lack of variables in secondary analysis. We furthermore look at differences across the countries participating in these studies with the aim of identifying possible issues pertaining to crosscultural validity and of assessing the extent to which these measures provide comparable information.

On the basis of this set of analyses, we provide (a) an evaluation of the quality of the indicators of family background used in the above-mentioned international large-scale education studies, and (b) recommendations on the indicators of family background that we consider are the most appropriate for use in future large-scale international education studies and offer the most powerful explanatory power. We end by identifying areas for further research.