

4. Research Questions

As the literature review of family background and approaches to measuring its different aspects has shown, measurement of family background raises a number of issues:

- *The many components to students' family background:* Grasping all of these within one study is a considerable challenge, if even possible, due to different limitations, such as time and financial constraints and limits on the length of the background data-collection instruments.
- *The difficulty of measuring some of the aspects:* This difficulty arises for various reasons, including respondents' unwillingness to provide information on sensitive data, such as income. Other sources of difficulties in obtaining information lie in the lack of census information on important variables such as community SES, the lack of accuracy in answers provided by young students, and answers that respondents make in accordance with what they think are socially desirable answers.
- *Quality:* Even when it is possible to obtain the information, issues remain with regard to quality, in terms of missing data and reliability of the indicators used.
- *Difficulty of operationalizing constructs:* Some of the constructs of family background are quite nebulous and hard to operationalize. Because each study defines different measures of aspects of family background and develops items to measure them in a different way, problems with validity may occur.
- *Different constructs and indicators:* The constructs and indicators selected for inclusion tend to differ across the different studies.
- *Lack of applicability:* Not all of the measures are likely to be applicable in all countries participating in a study, which leads to problems with crosscultural validity.
- *Derivation of indices and scales of latent variables:* The various studies differ in how they derive specific indices or scales of latent variables as part of family background, such as cultural possessions, for example. The studies also use different components of these indices. The composition of the indices can furthermore depend on the research goals of the study.

These issues associated with measuring family background and its different aspects led us to develop and seek answers to the following research questions:

1. Which measures of family background provide the highest quality data in terms of missing data and reliability?
2. How do the quality of scales (in terms of bias, reliability, and validity) and the association with achievement change if components with low quality (in terms of nonresponse and reliability) are removed?
3. Which of the measures of family background and derived variables used in the studies in scope have substantial association with achievement across all participating countries and which of them explain the highest amount of variance in achievement?
4. What are the differences in association between the family background measures and achievement across the studies when controlling for student age groups?
5. Within the context of future large-scale education studies, which family background measures seem to be the most appropriate ones to use when endeavoring to account for students' achievement with regard to different content domains, target populations, missing data, reliability, and validity?