

# **IERI Monograph Series**

## **Issues and Methodologies in Large-Scale Assessments**

VOLUME 3



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# Introduction

**Dirk Hastedt (Editor)**

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We are pleased to present Volume 3 of the *IERI Monograph Series*.

In 2007, the International Association for the Evaluation of Educational Achievement (IEA) and Educational Testing Service (ETS) decided, as part of efforts directed at improving the science of large-scale assessments of educational achievement, to establish the IEA-ETS Research Institute (IERI). IERI undertakes activities focused on three broad areas of work: research studies related to the development and implementation of large-scale assessments, professional development and training, and dissemination of research findings and information gathered through large-scale assessments. Since IERI's establishment, many activities have taken place in pursuit of the institute's mission.

One such activity is the institute's biannual training academies, which typically see 20 to 25 researchers from around the world attending each session. These academies provide researchers with training on the use of international large-scale assessment databases, and on more advanced statistical techniques for analyzing these data. To date, a total of six academies have been held. By the time this volume is distributed, the seventh academy will have taken place.

This third volume of the series "Issues and Methodologies in Large-Scale Assessments" presents a range of research undertaken using large-scale assessment data. Some of the papers address substantive questions of concern to educational policymakers and other stakeholders; other papers address methodological and design issues of large-scale survey assessments.

In the first paper, Nicole Bellin, Oscar Dunge, and Catherine Gunzenhauser, drawing on IEA Progress in International Reading Literacy Study (PIRLS) data from Germany, use a multi-level approach to evaluate differences in student achievement among classes taught with different organizational approaches.

The second research paper, written by Sandip Sinharay, Zhumei Guo, Matthias von Davier, and Bernard P. Veldkamp, is more technical in orientation. Using U.S. National Assessment of Educational Progress (NAEP) data, the authors present an innovative approach to evaluate the fit of latent regression models. The authors assert that this new approach will improve the quality of analytical procedures in large-scale assessments.

The third paper, by Sonia Ilie and Petra Lietz, investigates the Heyneman-Loxley effect. This effect—or, perhaps more appropriately, conjecture—states that school quality has a greater impact on student achievement in countries that are less developed economically than in more economically developed countries. This effect was originally observed in 1982 and is also evident in analyses of the IEA Trends in International Mathematics and Science Study (TIMSS) 2003 data. Interestingly, this effect seems to have vanished in the last 20 years—at least for the data that have been examined. Nevertheless, the Heyneman-Loxley effect appears to interest policymakers today as much as it interested their counterparts more than two decades ago. As an example, several research papers presented at this year’s meeting of the American Educational Research Association (AERA) in Denver, Colorado, addressed this topic.

The fourth paper, by Jiahe Qian, again uses U.S. NAEP data, but aims this time to improve the measurement of trends in large-scale assessments. The author applies a mapping technique, originally designed for comparing performance standards from state assessments of public school students, to detect score inflation in certain districts over time.

In the fifth paper, Éva D. Molnár and László Székely use IEA PIRLS data for Hungarian-speaking children from three countries. This paper is a more content-oriented one. The authors analyze the relationship between reading literacy and learning motives and the factors determining motives for learning. They also compare learning motives and reading-literacy achievements across two data-collection time points.

The sixth paper, by Eugenio Gonzalez and Leslie Rutkowski, describes the logic of sparse booklet designs used in national and international large-scale assessments. The authors discuss past applications of matrix designs in educational measurement, outline the rationale for the formal design principles used, and, through examples, show how this important feature of all major educational survey assessments links to the goals of these studies.

The seventh and last paper, written by Enis Dogan and Ruhan Circi, presents an interesting new concept for evaluating invalid moderator effects that can be introduced in national versions of international large-scale assessment instruments. The authors use the Turkish version of the TIMSS 1999 assessment instrument.

We hope this volume provides interesting material and inspiration for your own work using large-scale survey assessment data. Comments may be sent directly to contributing authors, or to IERI: [ierinstitute@iea-dpc.de](mailto:ierinstitute@iea-dpc.de). Information on submitting papers can be found on the last two pages of this volume or online at <http://www.ierinstitute.org>.

### **About IEA**

The International Association for the Evaluation of Educational Achievement (IEA) is an independent, non-profit, international cooperative of national research institutions and governmental research agencies. Through its comparative research and assessment projects, IEA aims to:



- Provide international benchmarks that can assist policymakers to identify the comparative strengths and weaknesses of their education systems;
- Provide high-quality data that will increase policymakers' understanding of key school-based and non-school-based factors that influence teaching and learning;
- Provide high-quality data that will serve as a resource for identifying areas of concern and action, and for preparing and evaluating educational reforms;
- Develop and improve the capacity of educational systems to engage in national strategies for educational monitoring and improvement; and
- Contribute to development of the worldwide community of researchers in educational evaluation.

Additional information about IEA is available at [www.iea.nl](http://www.iea.nl) and [www.iea-dpc.de](http://www.iea-dpc.de).

### **About ETS**

ETS is a non-profit institution whose mission is to advance quality and equity in education by providing fair and valid assessments, research, and related services for all people worldwide. In serving individuals, educational institutions, and government agencies around the world, ETS customizes solutions to meet the need for teacher professional development products and services, classroom and end-of-course assessments, and research-based teaching and learning tools. Founded in 1947, ETS today develops, administers, and scores more than 24 million tests annually in more than 180 countries, at over 9,000 locations worldwide.



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