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978-0-521-11524-7 - Structural Modeling by Example: Applications in Educational,  
Sociological, and Behavioral Research

Edited by Peter Cuttance and Russell Ecob

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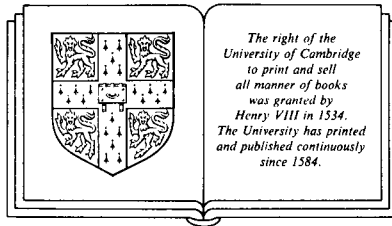
APPLICATIONS IN EDUCATIONAL,  
SOCIOLOGICAL, AND  
BEHAVIORAL RESEARCH

*Edited by*

Peter Cuttance  
*University of Edinburgh*

*and*

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## Preface

Since the development of structural equation models in the early 1970s, there has been a steady growth in their use in educational, social, and behavioral research. In the early period, two or three textbooks for researchers with a relatively advanced statistical knowledge were available, but it was not until the early 1980s that a basic introductory textbook (Saris & Stronkhorst 1983) became available. That volume, however, did not tackle the full range of issues in the application of structural modeling methods to the types of theories that most researchers work with in applied settings. Thus, the Saris and Stronkhorst text is best viewed only as a general introduction to the theory and methodology. There are also several introductory articles and short monographs that outline the basic methodology of structural modeling, but again they rarely describe in detail the process of applying the methodology to an applied research setting.

This volume attempts to fill that gap by providing several extended examples of the application of structural modeling to applied problems and by contrasting its strengths and weaknesses with the more naïve methods that are still the mainstay of applied research in these disciplines. These examples provide the reader with the rationale for, and a view of, the operational decisions that have to be made as the researcher works through an applied problem. In most publications, information is hidden from the view of the reader, since the focus is, rightly, on substantive issues rather than methodological issues.

This volume also reports a set of evaluations of the robustness of the method written from the point of view of the applied researcher rather than from the view of the statistician. The discussion is focused on the issues that emanate from a substantive perspective of the data, measurement, and modeling questions of most relevance to educational, social, and behavioral research. It is suggested that, although the statistical properties of estimators and of hypothesis testing are important, their salience in applied research is dependent on the properties of measurement and data generally available in these disciplines. Thus, the replication of

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findings, rather than a slavish adherence to hypothesis-testing methodologies, is given prominence as the basic means of evaluating the validity of theories and of models based on them.

This does not mean, however, that hypothesis testing is in any sense irrelevant, because the other fundamental component of structural modeling is the proposing of alternative models to explain the grid of relationships among the observed variables in the data. Models that do not adequately explain this pattern of relationships are rejected, and other model formulations developed from the literature and other sources of knowledge are put forward.

Although the volume does assume some basic familiarity with the fundamentals of structural modeling, it attempts to discuss the process of decision making as nontechnically as possible, although this is a tall order given the vocabulary surrounding the development of this methodology.

The authors are indebted to many colleagues in the research community for their generous contributions to the discussion of the issues that arose in the planning and development of this volume. The chapters benefited from the critical comments of colleagues too numerous to mention here, and the overall development of the volume owes much to the invisible college of researchers both in Edinburgh and in the international community.

We are particularly grateful for the support provided by the Centre for Educational Sociology at the University of Edinburgh. The program of research on the effectiveness of schooling initiated there in the early 1980s provided the impetus to reconsider the appropriateness of various statistical modeling techniques and to survey the applied modeling requirements of the wider social and behavioral science community. This work has recently led to the consideration of models for modeling multilevel processes, for which structural modeling, in its present stage of development, is not suitable.

We acknowledge the assistance provided by the U.K. Economic and Social Research Council through their support of workshops conducted by the editors and fellowships held by them during the production of the volume. The Centre for Educational Sociology at the University of Edinburgh provided generous secretarial and administrative support.

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