



education review // reseñas educativas

editors: gene v glass gustavo e. fischman melissa cast-brede

a multi-lingual journal of book reviews

August 5, 2010

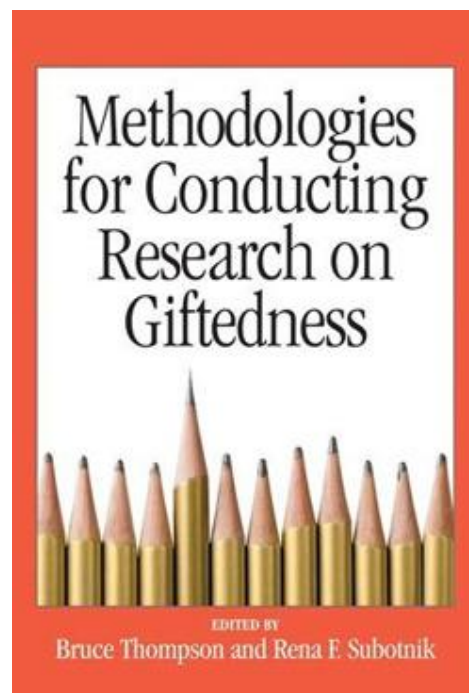
ISSN 1094-5296

Thompson, Bruce & Subotnik, Rena F. (Eds.) (2010).
Methodologies for Conducting Research on Giftedness. Washington, D.C.:
American Psychological Association.

Pp. 266 ISBN 978-1433807145

Reviewed by Scott J. Peters
University of Wisconsin—Whitewater

With this book, editors Thompson and Subotnik position the field of gifted and talented education as willing and able to embrace some of the most advanced quantitative methods in order to answer some of the most pressing questions. Following general introductory remarks, the book is broken into three sections: advanced techniques, complex analyses, and reflections from leaders in the field. Specific chapters delve into topics such as confidence intervals, statistical significance, mixed-data collection, structural equation modeling and factor analysis, hierarchical linear modeling, and missing data. Each in turn



Citation: Peters, Scott J. (2010 August 5) Review of *Methodologies for Conducting Research on Giftedness* by Thompson, Bruce & Subotnik, Rena F. *Education Review*, 13. Retrieved [Date] from <http://www.edrev.info/reviews/rev951.pdf>

highlights components of their respective methods that make them especially attractive to the study of giftedness and talent.

Chapter one begins with factor analysis where the author highlights particular uses of the method – specifically instrument validity research – before providing a gifted-specific example. Although the example code would certainly be helpful to researchers, the space limitations might have prevented the author from fully discussing a few topics. For example, although principal components may be common over the life of factor analytic research, its use in construct validity studies remains controversial. Still, the author makes clear the highly-useful nature of factor analysis to the study of giftedness, especially in a field so focused on construct validity. The second chapter delves further by addressing Q-technique factor analysis, a well-established but rarely used method in which the people themselves are “factor analyzed” as opposed to the variables of interest. The author makes a compelling case for the utility of this method in gifted education research where it has yet to see any application. This topic is referenced again in the final chapter.

The third chapter moves to a different topic, that of p -values and confidence intervals. The author explains that the often-applied tests of statistical significance actually tell us very little about any given relationship, and that additional information is almost always necessary. This is certainly true and has been supported by a greater call for effect size reporting by the primary journals in the field of gifted education research as well as a special mythological brief in *Gifted Child Quarterly*. It should also be noted that the field has done an excellent job of noting its shortcomings in such methods as evidenced by a comprehensive review of effect size reporting (Published in the journal *Experimental Education*) that would have done well to be referenced in this chapter. This chapter would make excellent reading for any future researchers taking a methods class as it shows the serious limitations to many traditional methods of significance testing. The author furthers this point in chapter four where the next author details differences in statistical vs. practical and even meaningful significance. The author



noted that since, in the social sciences, almost everything is correlated, the tests of statistical significance actually yield very little meaningful information. The examples provided from outside the field are well explained and provide further motivation and rationale for effect size reporting in gifted education research.

The fifth chapter addressed reliability generalization within the context of measurement and instrumentation. In a field as focused on identification and instrumentation as that of gifted and talented education, these are very important topics. The authors gave an excellent overview of reliability, validity, and conceptions of classical test theory – several often misunderstood topics. Although it contains especially advanced topics, this chapter would make an excellent supplement for any new or seasoned researcher interested in evaluating reliability or validity evidence in psycho-educational instruments. The second half of the chapter contained detailed review and example of meta-analysis. Although a very important topic becoming more and more common in the field, this section might have been better as its own chapter. The example given using the CogAT provided a thorough illustration. The authors would have also been aided by referencing some of the meta-analytic work completed in the field on the topics of academic acceleration that have been published since the mid 1980s. Still, the detail presented was a nice addition for those interested in how meta-analysis as a method might be applied to a variety of instruments within the field.

Chapter six approached gifted education research from a mixed-method perspective suggesting using mixed methods offers a better perspective for the largest and most typical challenges facing the field. The authors presented an especially detailed chapter in which they overviewed several different methods for designing research questions, data collection, and data analysis within a mixed framework, all aimed at minimizing the weaknesses inherent in each method when applied in isolation. However, even those researchers planning to or interested in conducting a completely quantitative or qualitative research study might do well to consider the methods proposed in this chapter as

they could allow for better overall conceptualization of the study itself. The steps and procedures explained would force any researcher to consider a wide array of confounding variables or alternative design considerations that might otherwise be missed in the planning stages. Although a mixed design does not necessarily improve every study by its very nature, the consideration of alternative methods and procedures by a researcher would yield a more thorough and well-executed study regardless of the design.

Chapter seven moved from a variety of techniques to more advanced quantitative methods that are beginning to gain in popularity within the field of gifted and talented education. The first of these topics is structural equation modeling (SEM). As the author correctly noted, confirmatory factor analysis (one portion of a SEM model) has seen use in gifted education research; however, full SEM models are still somewhat rare. However, through a detailed review of what the method actually does followed by a presentation of several examples conducted within the field and published in the scholarly literature, the author made a compelling case for the use of this method when dealing with questions related to giftedness and talent. Sub-SEM methods of path analysis, CFA, latent growth models, and multi-group SEM are all discussed with examples and implications given for each method. The special attention paid to errors common to SEM studies as well as to gifted-specific examples make this a highly informative chapter for gifted education researchers. The authors make a compelling case for the role of SEM methods in the future of gifted education research.

Perhaps no topic was more appropriate for this book than chapter eight on hierarchical linear modeling (HLM). This method, among many things, helps yield more accurate parameter estimates as it takes the nested nature of most educational data into account, leading to fewer type I errors. The authors present both mathematical and conceptual background before presenting a gifted-related hypothetical example as done in previous chapters. The authors presented the example related to analyzing gifted vs. non-gifted students assessed over multiple time periods in multiple schools (a common occurrence) as well as more

complex longitudinal studies – both being useful in gifted education research. As with the chapter on SEM, chapter eight makes an excellent case for the role of HLM in gifted education research. However, it seemed odd that those studies which have employed HLM, in one of its many forms, were not referenced, nor was a new book on the specific topic of multi-level modeling in the context of education given that one of the authors also authored a later chapter in this book.

The final chapter (chapter nine) in the advanced quantitative methods section dealt with missing data. As the authors of chapter six pointed out, subject attrition is a common issue in gifted education research as are other kinds of missingness. The authors explain that even the most well-designed sample can quickly become biased, and therefore no longer generalizable, to the larger population due to non-response, attrition, or any other kind of missing data, particularly when such missingness is systematic. One of the reasons this remains a problem is that most techniques to address missingness are either simple, and therefore not especially effective, or technical, and therefore not especially common. The authors present both the easy and the technical methods for addressing missingness before illustrating their application in an example. This example highlights the actual effects of the various methods on parameter and error estimates. The authors end the chapter via a detailed presentation of the preferred and more accurate methods for countering missing data: multiple imputation and methods employing propensity score analysis. The authors attempted to make it as easy as possible for researchers to apply such methods by explaining applications in various software packages as well as making some materials available to the reader via e-mail. Although perhaps written for a slightly more experienced researcher, this chapter presents the cutting edge of methods and processes available to deal with missing data.

The final section of the book (chapters 10 – 12) involved reflections from leaders in the field of gifted and talented education. Perhaps the best part about chapter 10 is that it presents what some of the previous methods chapters were

lacking: specific examples of the methods addressed that were employed by researchers in the field of gifted and talented education. The author did an excellent job of presenting past applications of these methods as well as detailing areas in which the field can improve. In the second half of this chapter the author presented her past research experience in the field. The most interesting aspect about this perspective is not claims of research perfection, but rather it is honest discussion of where this researcher's work can grow and improve thanks to the information presented in this book. Such explicit examples, both those done well and those ripe for application of the methods described in earlier chapters, are what will help readers to see the implications and applications of the various methods described.

Chapter 11 continues in the same fashion as Chapter 10 with personal reflections from researchers from the field. What is different about this chapter is that the authors present personal applications of two methods that were not addressed in the book: cluster analysis and latent class analysis (although it can be argued that latent class analysis is a sub-method of those described). Separate chapters giving detailed descriptions of both methods would have added to the value of the book as a whole.

In the final chapter the Author looked forward to future directions for gifted and talented education research. Perhaps the most interesting consideration and contribution by this final author involved the application of Q-factor analysis to the study of underachievement in gifted and talented students. This seems especially appropriate given the interest in analyzing the people (individuals) and why they underachieve (common characteristics), as opposed to variables themselves. Use of this method would allow for underachieving students to be further classified in order to better understand this frustrating phenomenon. The author also referenced a current study underway using propensity score analysis. The greatest implication of this method is that it could (and was) applied to the greatest question facing the field: do gifted programs influence students in a positive

manner? There is no more pressing question for the field, this method has clear potential.

Finally, no review is complete without some constructive considerations for the future. As a general statement, a disconnect seems to exist between those chapters written by seasoned quantitative methodologists and those chapters covered by individuals within the field of gifted and talented education. As indicated in their respective chapters on specific methods, some neglected to reference work (applied correctly or otherwise) that has been completed using the methods within the field of gifted and talented education. Although the many methods chapters provide great detail concerning the potential uses of their topics, each chapter also seems somewhat disconnected from the next, a problem that can exist with edited books. In fact, some authors seem to contradict each other in their suggestions; whereas others seem to present very similar points. Perhaps my greatest wish would have been for individuals who had applied such methods in primary research in the field of gifted education research to have written each of the methods chapters. This is not to say that the current authors are not knowledgeable as many of them are in fact scholars within research methodology, but gifted education researchers and their respective work do exist and could have served as concrete examples for the methods chapters.

This book represents a very positive step forward for the field of gifted and talented education. As noted by more than one author in this book, the field of gifted education needs to apply rigorous research methods to improve the quality of its scholarly literature. This book can help researchers begin to think about and incorporate the most advanced methods that the social sciences have to offer. The editors did an excellent job of locating experts in their respective methodological disciplines and those scholars did a wonderful job of explaining their trades as related to the field of gifted and talented education.

About the Reviewer

Scott J. Peters is an Assistant Professor of Educational Foundations at the University of Wisconsin – Whitewater where he teaches courses related to measurement and assessment, research methodology, and gifted education. He received his Ph.D. from Purdue University in 2009 specializing in gifted and talented education with secondary areas in applied research methodology and English education. His research interests include educational research methodology with particular focus on assessment and identification as well as nontraditional giftedness and secondary student programming outcomes. He has published in *Teaching for High Potential*, *Gifted Child Quarterly*, the *Journal of Advanced Academics*, the *Journal of Career and Technical Education Research*, *Ed Leadership*, and *Pedagogies*.



Copyright is retained by the first or sole author,
who grants right of first publication to the *Education Review*.
<http://edrev.asu.edu>



Editors
Gene V Glass
glass@edrev.info
Gustavo Fischman
fischman@edrev.info
Melissa Cast-Brede
cast-brede@edrev.info
