Series Editor's Note

The importance of the topic of power cannot be understated. The validity of statistical inference is predicated on having sufficient power to detect effects of interest. Simple designs can be addressed with formulaic methods to determine sufficient power, though Monte Carlo simulation is still preferred. Complex designs, on the other hand, are not as straightforward and necessitate a Monte Carlo approach. As James Peugh and Kaylee Litson clarify, Monte Carlo simulation is the only technique that can reliably produce power estimates for all designs, from cross-sectional designs, path models, to all manner of structural equation models. Peugh and Litson provide us with a wonderful and comprehensive resource to conduct Monte Carlo simulation power analysis. They offer thorough examples of conducting such analyses using the R platform as well as the Mplus software package.

Worthwhile, real-world data are decidedly complex and messy, with issues like attrition, nonresponse, and nestedness being ubiquitous. Peugh and Litson detail step-by-step instructions for navigating the complexity and messiness of data in the context of power analysis. The accessible examples are comprehensive in our massively multivariate world, including multiple groups, growth curves, mediation, moderation, using covariates (time varying and time invariant), randomized clinical trials, and categorical variables. Moving beyond simple models and cross-sectional data, they cover numerous longitudinal models, survival models (both discrete time and continuous time), two-level models, and moderated mediation.

Conducting an appropriate power analysis is a necessary element of any quantitative grant proposal. A key element of Peugh and Liston's book is the clear explication of how to write up each type of power analysis that they present. Moreover, the topics are self-contained such that users can go directly to the example that is most relevant to the analysis needed to address the research question. The write-up examples are perfect models for convincing grant reviewers that the study is properly powered to accurately address the aims and goals of the proposed study. This book will have a lasting impact on the conduct

of science across the social, behavioral, and health sciences. The costs and losses incurred by underpowered studies will be eliminated and resources will be realistically allocated toward the sweet spot of a properly powered project that will effectively inform policy and practice.

As always, enjoy!

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