
1

Introduction

Social and personality psychologists often use psychological inventories, tests, or questionnaires to measure important psychological phenomena. Indeed, such instruments may be the most widely-used method of measuring variables such as attitudes, traits, self-concept, self-evaluation, beliefs, abilities, motivation, goals, social perceptions, and so on. In both experimental and non-experimental research, social and personality psychologists often rely upon previously-developed scales, develop entirely new scales, or generate revised scales based upon those developed by other researchers when measuring one or more variables. These methods have produced important advances, revealing the psychological mechanisms underlying many important psychological phenomena.

The current volume provides a conceptual and practical foundation for producers and consumers of research based upon psychological scales. More specifically, it addresses issues in scale construction, scale use, scale evaluation, and interpretation of research results emerging from psychological scales. It covers basic principles, practices, and processes, and it introduces advanced techniques that expand one's psychometric toolkit. In covering these issues, the volume highlights their fundamental importance for the analysis and interpretation of psychological research, and it provides relatively non-technical discussions intended to facilitate basic appreciation, understanding, and interest.

Attention to psychometrics and measurement seems somewhat compartmentalized. Some, perhaps many, researchers view psychometrics and measurement as relevant only for the study of "individual differences," for "correlational research," and/or for self-report scales.

Such perceptions are incorrect. In fact, psychometrics and measurement are important for all psychological research—experimental and non-experimental research, research-based self-reports and research based upon behavioral observations, physiological data, reaction times, and other form of measurement used in social/personality psychology. Regardless of the internal validity of one's research, the importance of one's research questions, or the apparent objectivity of one's measurement strategy, psychometric issues such as dimensionality, reliability, and validity have important implications for one's ability to draw meaningful conclusions from psychological research.

Importance of Well-grounded Scale Construction and Psychometric Understanding

Effective scale construction and adequate psychometric quality have important implications for the proper interpretation of psychological research and its psychological meaning. An important goal of this volume is to articulate several such implications—hopefully providing broader insight into the importance of strong measurement.

First, the quality of our measures affects the apparent size of effects obtained in our analyses. According to basic psychometric theory, the apparent association between any two variables is affected directly by the reliability of the measures of one or more of those variables. More specifically, imperfect reliability reduces, or attenuates, the effects actually observed in one's research, as compared with the true psychological effects. This is true for experimental research as much as for non-experimental research. Whether a particular analysis involves manipulated independent variables and measured dependent variables or it involves several measured variables, the reliability of the measured variables directly affects the resulting magnitude of the differences or associations.

Second, by affecting the sizes of statistical effects, measurement quality indirectly affects the statistical significance of those effects. Of course, the size of an observed difference or the size of an observed correlation directly affects the likelihood that the difference or correlation will reach statistical significance. Thus, if poor measurement quality produces an attenuated effect for a given group difference, main effect, interaction effect, correlation, or regression slope, then that effect is relatively unlikely to reach statistical significance.

Third, the quality of one's measures (and manipulations) affects the psychological meaning of one's results. That is, the psychological meaning of a scale's scores has important implications for the psychological inferences to be drawn from research using that scale. If the scores have clear meaning in terms of a psychological construct, then any research using the scale can be interpreted confidently with regard to that construct. However, if a scale's scores have ambiguous or undemonstrated psychological meaning, then research using the scale cannot be interpreted confidently in terms of any particular psychological construct. More generally, if a measurement process lacks empirically-demonstrated validity evidence, then researchers cannot draw well-grounded inferences about its psychological implications. However, if measurement process is constructed with attention to psychometric quality, then researchers—both producers and consumers of the research—can confidently interpret the size and statistical significance of the result, and they can make well-grounded psychological inferences.

This volume will examine these implications in depth, reviewing procedures that are valuable for producers and consumers of psychological research. For producers, this volume hopefully enhances motivation and ability to implement

effective and well-understood measurement strategies. For producers and consumers of psychological research, it hopefully enhances motivation and ability to interpret research within the proper psychometric context—understanding the implications of specific measurement strategies, understanding how to evaluate the quality of those strategies, and understanding the ways in which measurement quality affects psychological conclusions.

Overview

After briefly highlighting basic principles, practices, and recommendations, this volume provides guidance and background helping social/personality psychologists construct, use, evaluate, and interpret psychological measures. The first section describes steps in the construction of psychometrically-sound scales, it introduces basic psychometric properties such as dimensionality, reliability, and validity, and it examines potential threats to psychometric quality. The second section introduces special topics and advanced psychometric perspectives, focussing on the use of difference scores, and on the logic and use of Confirmatory Factor Analysis, Generalizability Theory, and Item Response Theory as advanced psychometric perspectives. These advanced perspectives differ in important ways from the traditional psychometric perspective with which most readers might be familiar.