

Chapter 9

Multilevel Theory Model Development and Dissemination

John Turner

University of North Texas, USA

Jeff Allen

University of North Texas, USA

Pamela Scott Bracey

Mississippi State University, USA

ABSTRACT

In the past, a large number of research efforts concentrated on single-level analysis; however, researchers who only conduct this level of analysis are finding it harder to justify due to the advancements in statistical software and research techniques. The validation of research findings comes partially from others replicating existing studies as well as building onto theories. Through replication and validation, the research process becomes cyclical in nature, and each iteration builds upon the next. Each succession of tests sets new boundaries, furthering the verification and falsification process. For multilevel models to be correctly specified, the level of analysis needs to be in congruence with the level of measurement. This chapter provides an overview of theory with a primary focus on multilevel theory and multilevel theory development. Also, this chapter provides tips for writing theoretical articles along with guidelines for evaluating theoretical articles.

DEVELOPING MULTILEVEL MODELS FOR RESEARCH

Researchers analyze hierarchical or nested structures, when conducting applied research in organizations, schools, health care facilities, and family settings. Hofmann (2002) indicated that ignoring these simple hierarchical structures can lead to incomplete and misspecified models. These hierarchical structures “shape, create, encourage, and reward behavior in organizations” (Hofmann, 2002, p. 248). Including

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this hierarchical structure into conceptual and theoretical models allows researchers to better capture the level of complexity because hierarchical systems increase our levels of understanding.

In the past, a large number of research efforts concentrated on single-level analysis, primarily studies concentrating on one level of analysis (i.e., personality studies, evaluation of manager's leadership abilities). Researchers who only conduct a single-level analysis are finding it harder to justify because of advancements in statistical software and research techniques, which encourages the application of more complex multilevel analysis techniques. For example, researchers who study hierarchical systems, such as organizations and schools, want to consider multiple impacts within the system. In these hierarchical systems, when a change is made in one part of the system, each adjoining system is also affected, changing the whole system. By concentrating only on a single-level study, researchers ignore the surrounding environment, the effect that the individual has on the group and the organization / school. Alternatively, changes at the organization / school level also affect the team and the individual levels. To better understand the complex nature of hierarchical systems Kozlowski and Klein (2000) proposed that researchers utilize "approaches that are more integrative, that cut across multiple levels, and that seek to understand phenomena from a combination of perspectives" (p. 77).

In theoretical and applied research, the level of analysis is typically ill defined (Kozlowski & Klein, 2000). Literature often contains errors when individual-level data is incorrectly applied to team, organization, or school levels (Kozlowski & Klein, 2000). Some common errors in organizational and school research include misspecification errors, such as:

- Blind aggregation of individual-level measures to represent unit-level constructs,
- Use of unit-level measures to infer lower-level relations (the well-known problems of aggregation bias and ecological fallacies);and
- Use of informants who lack unique knowledge or experience to assess unit-level construct (Kozlowski & Klein, 2000).

This chapter explores some of the key components involved with developing multilevel models. Considerations to the different levels of analysis and the selection of constructs for each level of analysis, including any potential interactions, are discussed. Steps to avoid producing misspecification errors will be presented along with some specific examples from current literature. This chapter addresses the call to researchers, from Kozlowski and Klein (2000), in which the trend toward single-level models "need to be broken" (p. 77), promoting the utilization of multilevel research methods. In conclusion, readers will be better able to build multilevel models and build correctly specified models for their research endeavors. This chapter primarily focuses on building multilevel models conceptually as well as providing guidelines for writing and evaluating theoretical articles. Readers will also be provided with a clearer understanding of when to use single-level models and when to consider multilevel models.

THE RESEARCH CYCLE

Good theorizing is something that all of the social sciences are in need of. (Swedberg, 2012, p. 34)

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