

## FROM THE EDITORS

### NEW WAYS OF SEEING: PITFALLS AND OPPORTUNITIES IN MULTILEVEL RESEARCH

Researchers once lamented the paucity of multi-level theory, models, and research in the literature (e.g., O'Reilly, 1990; Staw, 1984), but now management journals are replete with such studies. Around a decade ago, Hitt, Beamish, Jackson, and Mathieu (2007) noted that about a quarter of recent management publications were multilevel—undoubtedly, the trajectory remains positive. The proliferation may provide support for the adage that “the squeaky wheel gets the grease,” but it likely also reflects the field’s desire to develop more comprehensive, context-rich theory and findings. Moreover, the availability of “how to” volumes for developing multilevel theory and analyzing the associated data (e.g., Johns, 2001, 2006; Kozlowski & Klein, 2000), as well as the widespread availability of accessible statistical packages, contributes to the movement. The shift is both symbolic and substantive. The multilevel context—once treated as an unknown or messy source of error variance that needed to be controlled—is frequently at the heart of theorizing on a variety of topics. This is perhaps most evident in the teams literature (see Mathieu, Maynard, Rapp, & Gilson, 2008, for a review) where multilevel studies examine direct cross-level effects as well as contextual moderators that influence lower-level processes and outcomes (e.g., Yu & Zellmer-Bruhn, 2018).<sup>1</sup> But, the influence is apparent in other streams as well, including strategic human resource management (Ployhart, Weekley, & Ramsey, 2009), emotions (Scott, Barnes, & Wagner, 2012), social networks (Brass, Galaskiewicz, Greve, & Tsai, 2004), and many others.

Management researchers frequently import ideas from the basic disciplines of psychology, sociology, political science, anthropology, and economics. This fact is much to the chagrin of some (e.g., concerning a lack of distinct disciplinary foundation), but to the delight of others (e.g., in respect of multidisciplinary richness and alternative views) (see Shaw, Tangirala, Vissa, & Rodell, 2018). Regardless of opinion, multilevel research has played an important role in

helping management, as a field, to distance itself from foundational theories that existed originally at different levels within the basic disciplines (for an example, see Sparrowe, Liden, Wayne, & Kraimer, 2001). Moreover, management theorists are adept at taking constructs originating at one level—whether borrowed from a basic discipline or formulated in situ—and developing constitutive definitions and associated empirical evidence for examination at other levels (e.g., Knight, Menges, & Bruch, 2018; Yu & Zellmer-Bruhn, 2018). When executed effectively, multilevel research can further enhance the stature of management research among social science researchers, by generating insights about uniquely organizational phenomena that are central to our understanding of organizations. The resulting theories, constructs, and insights are unlikely to be generated by researchers in other disciplines who typically theorize and analyze at single levels (see also Heath & Sitkin, 2001). Managers, who have to deal with the general messiness of organizing across individuals, teams, and departments, may be particularly appreciative of research that helps them to think about the consequences of what they do at one level for outcomes at other levels.

Despite these success stories and opportunities, building theory across levels also presents challenges. It is certainly more complicated than single-level theory and, as a result, scholars conducting multilevel research must be attuned to a wider array of concerns. While we are certainly not the first, and are unlikely to be the last, to discuss this topic, our goal here is to summarize common pitfalls when it comes to theorizing across levels, as well as strategies for avoiding those pitfalls. Before describing the pitfalls and how to avoid them, though, we begin by briefly defining three aspects of conducting multilevel research.

#### MULTILEVEL ASPECTS IN ORGANIZATIONAL RESEARCH

Organizational scholars have attended to multi-level aspects in theorizing, measurement, and modeling. “Theorizing” is concerned with explaining

<sup>1</sup> We consider cross-level studies as a subset of multi-level studies.

*what causes what* and *why*. Multilevel theorizing involves identifying and explaining how factors at different levels affect outcome at a particular level. These factors could be drawn from a combination of lower-level, same-level, and/or higher-level constructs as that of the outcome. If the factors are at the same level as the outcome, it is a single-level theorization. But, if the level of at least one explanatory factor differs from that of the outcome, it is considered multilevel theorizing. While our focus is on multilevel theorizing, the impact and appropriateness of theory is intricately connected to the unique measurement and analysis issues inherent in multilevel research.

Multilevel “measurement” has typically dealt with how the properties of a higher-level unit are measured from the lower-level units (Chen, Mathieu, & Bliese, 2004; Kozlowski & Klein, 2000). The measures that reside at the construct level and are measured at the construct level are called “global unit properties” (e.g., team size, firm sales, etc.), and these do not constitute multilevel measurements. However, measures that reside at a construct level but are measured at the lower level are multilevel measurements, and have been labeled “emergent unit properties” by Kozlowski and Klein (2000). They proposed two forms of emergent unit properties: “compositional” and “compilation” models of aggregating the lower-level unit properties to the construct-level properties.

Multilevel “models” are estimated with techniques capable of partitioning the variance at multiple levels. Typically, the data consist of observations of multiple lower-level units that are nested in a higher-level unit. Because nested data violate the assumptions inherent in ordinary least squares regression, deriving inferences from these data requires special considerations. Accordingly, multilevel scholars have applied various multilevel modeling techniques such as hierarchical linear modeling, random coefficients regression, mixed effects modeling, mixed determinants modeling, random-effects or fixed-effects modeling, or multilevel regression modeling.

### COMMON PITFALLS AND OPPORTUNITIES

Multilevel research is prone to two broad types of pitfalls. We label these as “failures to surface assumptions” and “misalignment of different components in a study,” and elaborate on them below.

#### Failure to Surface Assumptions

While examining and acknowledging stated and unstated assumptions are quite important for research

in general, these endeavors takes an even more prominent position in multilevel research. Multilevel research is prone to issues arising from three forms of failure to acknowledge assumptions.

**Pitfall #1: Poorly chosen levels.** The first form of failure concerns the selection of levels to study. Organizational phenomena comprise several distinct levels. Examples of these levels include intra-individual, individual, team, project group, functional division, business unit, strategic business division, and organization, just to name a few. While some levels may be too proximal to one another to offer additional insights, some other levels may be too distant to one another to provide meaningful influence without consideration of intermediate levels. Gaps of this sort can stem from an inability to properly identify distinct levels or inadequate theorizing to explain fully why one level is expected to influence another. Alternatively, researchers may take inadequate steps in the logic chain to explain why the level of focus provides meaningful insight in what otherwise would be seen as too far removed from the focal level. Not properly identifying and/or motivating which levels to include in a study could make it less impactful at best and mere noise at worst.

To avoid this pitfall and find research opportunities, researchers should fully develop an overarching premise, grounded in theories from each level, to support multiple and unique levels of theory. For example, Joshi and Knight (2015) theorized about group deference at the dyadic level in contrast to research emphasizing deference as an individual-level construct. They unpacked concepts from status characteristics theory and demography to build a meaningful dyadic and asymmetric view of deference within teams. A clear overarching premise often requires full exploration and explication of logic in the “other” level—a level that may have been implied or inferred in prior work but has not been fully explicated. For example, Drazin, Glynn, and Kazanjian (1999) extended the notion of multilevel theorizing beyond lower-level units embedded in proximal higher-level units (e.g., individuals within teams) by offering theory about creativity considering large-scale, long-term, project-based contexts and time. They dissected assumptions about level within creativity research and applied a sensemaking perspective to highlight a partial inclusion approach to teams where individuals are simultaneously embedded in multiple teams.

**Pitfall #2: Lack of clear definitions for the level of constructs.** Multilevel research requires clear conceptual definitions—the articulation and justification

of the construct space and assumptions regarding the appropriate level for each construct. Yet, researchers often fail to do this. For example, “experience sampling methodology” is becoming increasingly popular. This is a methodology in which data are gathered from the same individuals at multiple points in time, which allows researchers to model within-person changes. Within-person changes are often also predicted to depend on between-person differences, resulting in a multilevel study (Curran & Bauer, 2011). A common pitfall in experience sampling methodology studies (and other types of research) is a failure to explicitly conceptualize and build theory regarding constructs that operate at the within-person (lower) versus the between-person (higher) level of analysis. Many times, reviewers are surprised when the Method section reveals the use of experience sampling methodology because the within versus between nature of each construct is not explicit in the theory and hypotheses.

To avoid this pitfall, researchers should clearly articulate the level at which each construct in a study is conceptualized. Many constructs can be conceptualized at different levels (e.g., within person, between person, between group, etc.). If conceptualized at the within-person level, it is important to justify why the construct of interest is indeed likely to fluctuate over time within the same person, and to specify the time period of likely fluctuation (e.g., does the construct vary daily, weekly, monthly, etc.?). Design considerations should then follow and show consistency with the conceptual approach. Likewise, if conceptualized at the between-person level, it is important to justify why the construct of interest is indeed likely to vary between persons. This becomes particularly relevant in research done within a single organization or unit. For example, it is important to justify why organizationally relevant constructs (e.g., engagement) are likely to be relatively stable within person, but are likely to vary meaningfully among members of the same organization. Finally, if a construct is conceptualized at the between-group level, it is important to justify why the construct is likely to vary between groups, as well as whether it is likely to be shared or also vary within units.

Notably, although it is important to explicitly state and justify the level at which constructs operate, constructs can be meaningfully and fruitfully operationalized at different levels of analysis in different studies. Nishii, Lepak, and Schneider’s (2008) study provides an example of making a theoretical contribution through conceptualizing a construct at

a new level of analysis. They argued that, whereas much of human resource management research focuses on practices at the organizational level of analysis, there is likely to be individual-level variation in reactions to those practices. On the one hand, it is intuitive to believe that, if an organization or work group has a given set of human resource management practices, all members should hold similar reactions to those practices. Yet, Nishii, Lepak, and Schneider (2008) convincingly theorized and found that, in fact, members of the same work groups/units/organizations form different perceptions of human resource management practices, which in turn have implications for organizational performance.

In summary, the decisions about the level of conceptualizations and operationalizations should be theory driven—at what conceptual level are constructs of interest likely to be relatively stable versus variable. This is a critical first step, as identifying the appropriate level at which to conceptualize constructs has implications for theoretical arguments regarding the relationships among them.

**Pitfall #3: Assuming homology.** The third pitfall involves theory integration from different levels. Multilevel studies nearly always require integration across theoretical levels. Theoretical logic for justifying relationships in this multilevel theorization may be drawn from theories that are developed in single-level studies. Drawing and applying logic directly from these theories with few restrictions may cause issues, as the underlying assumptions for these relationships may not hold across levels. Even when theories at different levels are homologous, the dynamics by which a construct at one level affects the outcome at the same level may be different from how it affects another outcome at a different level. Multilevel scholars could avoid this pitfall by being sensitive to or acknowledging the assumptions inherent in theorizing at each distinct level and explicitly reconciling the stated and unstated assumptions at each level. For example, Yu and Zellmer-Bruhn (2018) articulated well the different processes involved in the impact of team mindfulness on conflict at the team level and on social undermining at the individual level.

### Misalignment of Different Components in a Study

Given that organizational research can be multi-level with regard to three components—theory, measurement, and analytical method—misalignment among these components is another source of common pitfalls in multilevel research. Misalignment

can take at least three forms: (1) the levels of the theory and the measurement of constructs, (2) the level of the theory and the analytical methods used, or (3) the measurement of constructs and the analytical methods used may not be aligned. Aligning theory with both measurement and analytical methods is often more difficult than it appears, and these types of misalignments are especially common. We therefore elaborate on these pitfalls below.

**Pitfall #4: Misfit between theory and measurement of constructs.** A common pitfall is for studies to theorize about multilevel constructs and processes, but end up empirically employing constructs measured only for higher-level constructs. In essence, the theorization is multilevel but the constructs are measured at a single level. Additionally, aggregation of data from a lower level to measure a higher-level unit is also based on some underlying theory. For example, Chan (1998) provided a model of five different ways in which lower-level units should be aggregated, each of which implies different theoretical assumptions about the nature of the higher-level construct. It is not uncommon for multilevel researchers to employ these high-level measures without paying close attention to the match between their theorization and the theorization underlying their measures. If they are mismatched, the empirical testing of their theorization becomes invalid. Multilevel scholars should pay explicit attention to the basis of aggregation of a lower-level unit's data to a higher-level unit's measure to make sure that it matches their theorization. This aspect of matching also creates opportunities for enriching our understanding of phenomena.

**Pitfall #5: Misfit between theory and analytical methods.** Multilevel data requires analysis that accounts for the multilevel nature of the data. Some research may theorize relationships at a single level but end up using multilevel analytical methods. While this in itself may not result in inaccurate findings, this situation represents a missed opportunity for enriching our understanding by employing multilevel theorizing. Conversely, researchers may put forward multilevel theorizing in a timid or implicit fashion, fail to fully explicate the logic embedded in the theorizing, and then use a single-level analytical approach. For example, some studies that employ theorization of Coleman's boat model (Coleman, 1990), which posits that actions/events at one level lead to outcomes at that level via processes at a lower level, do not empirically explore those lower-level processes. Their empirical testing is

typically done at a single level with data collected and analyzed at the level of the outcome of interest. In these cases, researchers miss an opportunity to fully explore multilevel conceptual implications and affects due to methodological constraints.

## CONCLUSIONS

Multilevel approaches provide important and interesting opportunities to enrich our understanding of organizational phenomena, but they should be applied wisely. Some phenomena may be more parsimoniously explained with single-level theorizing and testing. High-quality research involves many tradeoffs and considerations—such as between parsimony and completeness, elegance and contextual richness, as well as many other cogitations. Multilevel lenses and techniques should be considered against tradeoffs. Perils and pitfalls should be weighed against the value gained from increased complexity of the study. The combination of the trendy tools and the appropriate data can be quite impressive. But, if a multilevel approach does not inform the domains in which the research is embedded, and if there is not a theoretically justified reason for the data structure and analyses, the researcher's efforts may be better spent on other aspects of developing the research. For example, daily diary studies (i.e., within- and between-person levels) can be very informative, but only when doing so helps answer a compelling conceptual problem or puzzle that is unique to the nesting, timing, or level of analysis issue.

Even with increased attention, multilevel theorizing is a critical and still underexplored way of seeing organizational problems. Our intention in outlining common pitfalls associated with such theorizing was twofold. First, it provides researchers with a handy reference list of issues to consider when conducting multilevel research. Researchers must recognize that effective multilevel theorizing should be born out of theoretically sound justifications and from some problem or puzzle that doing so helps solve or illuminate. Second, it provides scholars with a list of opportunities for future multilevel research. Every shortcoming we have identified here is an opportunity waiting to be explored to further our understanding of phenomena and to advance theory.

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## REFERENCES

- Brass, D. J., Galaskiewicz, J., Greve, H. R., & Tsai, W. 2004. Taking stock of networks and organizations: A multi-level perspective. *Academy of Management Journal*, 47: 795–817.
- Chan, D. 1998. Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *The Journal of Applied Psychology*, 83: 234–246.
- Chen, G., Mathieu, J. E., & Bliese, P. D. 2004. A framework for conducting multilevel construct validation. In F. J. Yammarino & F. Dansereau (Eds.), *Research in multilevel issues: Multilevel issues in organizational behavior and processes*, vol. 3: 273–303. Oxford, England: Elsevier.
- Coleman, J. S. 1990. *Foundations of social theory*. Cambridge, MA: Harvard University Press.
- Curran, P. J., & Bauer, D. J. 2011. The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual Review of Psychology*, 62: 583–619.
- Drazin, R., Glynn, M. A., & Kazanjian, R. K. 1999. Multi-level theorizing about creativity in organizations: A sensemaking perspective. *Academy of Management Review*, 24: 286–307.
- Heath, C., & Sitkin, S. B. 2001. Big-B versus Big-O: What is organizational about organizational behavior? *Journal of Organizational Behavior*, 22: 43–58.
- Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. 2007. Building theoretical and empirical bridges across levels: Multilevel research in management. *Academy of Management Journal*, 50: 1385–1399.
- Johns, G. 2001. In praise of context. *Journal of Organizational Behavior*, 22: 31–42.
- Johns, G. 2006. The essential impact of context on organizational behavior. *Academy of Management Review*, 31: 386–408.
- Joshi, A., & Knight, A. P. 2015. Who defers to whom and why? Dual pathways linking demographic differences and dyadic deference to team effectiveness. *Academy of Management Journal*, 58: 59–84.
- Knight, A. P., Menges, J. I., & Bruch, H. 2018. Organizational affective tone: A meso perspective on the origins and effects of consistent affect in organizations. *Academy of Management Journal*, 61: 191–219.
- Kozlowski, S. W. J., & Klein, K. J. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*: 3–90. San Francisco, CA: Jossey-Bass.
- Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. 2008. Team effectiveness 1997–2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, 34: 410–476.
- Nishii, L. H., Lepak, D. P., & Schneider, B. 2008. Employee attributions of the “why” of HR practices: Their effects on employee attitudes and behaviors and customer satisfaction. *Personnel Psychology*, 61: 503–545.
- O’Reilly, C. A. 1990. Organizational behavior: Where we’ve been, where we’re going. *Annual Review of Psychology*, 42: 427–458.
- Ployhart, R., Weekley, J., & Ramsey, J. 2009. The consequences of human resource stocks and flows: A longitudinal examination of unit service orientation and unit effectiveness. *Academy of Management Journal*, 52: 996–1015.
- Scott, B. A., Barnes, C. M., & Wagner, D. T. 2012. Chameleonic or consistent? A multilevel investigation of emotional labor variability and self-monitoring. *Academy of Management Journal*, 55: 905–926.
- Shaw, J. D., Tangirala, S., Vissa, B., & Rodell, J. B. 2018. New ways of seeing: Theory integration across disciplines. *Academy of Management Journal*, 61: 1–4.
- Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. 2001. Social networks and the performance of individuals and groups. *Academy of Management Journal*, 44: 316–325.
- Staw, B. M. 1984. Organizational behavior: A review and reformulation of the field’s outcome variables. *Annual Review of Psychology*, 35: 627–666.
- Yu, L., & Zellmer-Bruhn, M. 2018. Introducing team mindfulness and considering its safeguard role against conflict transformation and social undermining. *Academy of Management Journal*, 61: 324–347.