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Is more discussion about levels of analysis really necessary? When is such discussion sufficient?

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Abstract

This article begins by showing why most of the recommendations made in the three previous articles about the original GLOBE study are necessary given the authors' viable and insightful theoretical interests. It then demonstrates that the recommendations made in these articles, although necessary to follow, are not sufficient to allow the authors to conclude what they want to say. This article reveals what is missing, and why, and then adds several more recommendations. All of these recommendations are summarized with a checklist that itemizes what a researcher interested in a multiple levels of analysis theory needs to consider when focusing on bivariate correlations or multiple regression. This checklist is used to show which items are and are not included in the original article by Dickson [Dickson, M.W. (2006-this issue). Systematic variation in organizationally-shared cognitive prototypes of effective leadership based on organizational form. *The Leadership Quarterly* 17, 487−505]. The design of the GLOBE study is then examined, with the conclusion that it satisfies all of the items in the checklist. These same issues arise regardless of whether one prefers η^2, ICC(1), ICC(2), r_{wg}, or multi-level modeling (for example, structural equation modeling or hierarchical linear modeling) to analyze multi-level data such as that represented by the GLOBE study.
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1. Introduction

After reading the articles by Dickson, Resick and Hanges (2006-this issue), Peterson & Castro (2006-this issue), and Hanges & Dickson (2006-this issue), we were struck not so much by the differences between these authors' perspectives, as by the potential complementary nature of the authors' views and recommendations. Thus, the first part of our article focuses on the similarities among the prior three articles and develops a set of theoretical and empirical requirements necessary to address the multi-level theoretical and empirical issues raised by the GLOBE study. We then ask, Are these requirements, taken together, sufficient to address the theoretical questions of interest to all the authors? To evaluate their sufficiency, we introduce mainstream, well-known, multi-level information that has been available for more than 50 years. This information both adds to and informs the multi-level theory of the authors. In addition, this information, which shows the relationship among all the authors' ideas, allows for different theoretical positions to be

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tested using data from the GLOBE study and similarly well-designed multi-level studies. The same logic can also be applied to measurement. Based on this material, we present an analytic checklist for use by researchers who are doing multi-level studies similar to the GLOBE study. Finally, we show the compatibility of this approach to a variety of other approaches to multi-level research.

2. Theoretical necessities

Clearly, the starting point for any approach to multi-level issues and research must be theory. In the three GLOBE-related articles, we find three very different multi-level views, which are described next and summarized in Table 1.

2.1. Emergent view

One view, introduced by Peterson & Castro (2006-this issue), is an *emergent view*. This view has a long history. In a classic article, Glick (1985) argued that some concepts refer only to higher aggregate levels and do not apply at lower levels of analysis. To state this concept more formally, this view asserts that the organizational level is relevant and that the individual level is not relevant. In a sense, it suggests that one can look at the organic-mechanistic variable as a characteristic of an organization. Likewise, one can say that the leadership variables of interest also reflect organization-wide variables. Peterson & Castro (2006-this issue) suggest various variables that might operate in this way (for example, measures of institutional characteristics).

The empirical consequences of this theoretical view are straightforward. The general idea is that measures at lower levels of analysis are erroneous. Instead, the group averages (in this case, the averages of the responses in each organization) best represent the true score of this type of variable. Hanges & Dickson (2006-this issue) raise questions about this approach, because Peterson and Castro (2006-this issue) argue that in cross-cultural research of this type there is no need to measure agreement at the individual level. In the emergent view, individual-level scores contain too much error to be able to evaluate them. The point is that the emergent view represented in the cross-cultural work described by Peterson & Castro (2006-this issue) differs greatly from the view used by Hanges & Dickson (2006-this issue).

2.2. Cross-level view

The second view is known as the *cross-level view*; Hanges & Dickson (2006-this issue) prefer the term *composition approach*. Dickson et al. (2006-this issue) as well as Hanges & Dickson (2006-this issue) partially anchor their view in the classic work of Schneider (1987). The idea in this approach is that organizations tend to attract, select, and retain individuals who are similar to one another. This practice produces an organization that contains individuals who are similar. As a result, the individuals in the organization come to perceive variables in the same way. For example, in the GLOBE case, individuals in the same organization had similar perceptions about whether the organization was mechanistic or organic and about leadership. Thus, although differences arise between organizations, these differences are viewed as reflections of similarities that occur within each organization.

Table 1
Characteristics of three multi-level models in the GLOBE study

	Emergent (Peterson & Castro, 2006-this issue)	Cross-level composition (Dickson et al., 2006-this issue)	Individual level specific (all authors)
Relevance of levels			
Organizational	Relevant	Relevant	Not relevant
Individual	Not relevant	Relevant	Relevant
Key scores	Group averages	Group averages and individual scores	Individual scores
Theoretical view	Organizational and cultural variables are not individual-level variables	Organizations are composed of similar individuals	Individuals can respond independently of organizations
Historical basis and controversy	Glick (1985)	Schneider (1987)	James, Demaree, & Wolf (1984)
Example	Institutional characteristics	Norms	Individual personality