The Level Paradox of E-Collaboration: Dangers and Solutions

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ABSTRACT

Although e-collaboration phenomena are multilevel in nature, research to date has been conducted from an exclusively single-level focus. This has lead to the level paradox. The dangers of the level paradox are discussed, including the potential that apparent cumulative knowledge may actually be spurious. Solutions to the level paradox are proposed in the form of future opportunities of research from several mixed-level approaches, and the benefits and barriers to mixed-level research are discussed. The article ends with a discussion on the necessity of finding a balance between single-level and mixed-level research, as well as on the necessity of single-level studies explicitly specifying the levels of theory, measurement, and data in their research.

Keywords: Analysis, Bias, Communication Media, Cumulative Knowledge, Mixed-Level, Multilevel, Single-Level, Virtual Team

INTRODUCTION

In the foundational issue of the International Journal of e-Collaboration (IJeC), founder and editor-in-chief Ned Kock provided the following operational definition of e-collaboration: “collaboration using electronic technologies among different individuals to accomplish a common task” (Kock, 2005, p. i). Such a broad definition of e-collaboration entails a basic insight into the nature of collaboration that has been for the most part ignored: its multilevel nature. Within this definition we have different concepts that work together in a hierarchical system: the electronic technologies, different individuals, different environments, and a common task. Each of these elements is attached to a different hierarchical level and all together defines what e-collaboration is.

Such a hierarchy implies that e-collaboration includes phenomena at different levels and that the relation between higher and lower levels of the hierarchy should be theoretically specified and empirically examined. Despite this, we find that the vast majority of research in e-collaboration, especially quantitative research, entails single-level models; that is, models that specify relationships among constructs at one level of theory and analysis (Klein & Kozlowski, 2000).

The purpose of this essay is to draw attention to this level paradox of e-collaboration research. In doing so, the intention is not to criticize single-level research, as single-level
research has been an essential tool for establishing the legitimacy our field. What is worrisome, though, is the *almost exclusive focus* on single-level research. Such exclusive focus can lead to an incomplete view of the phenomenon of interest (Goodman, 2000) and an impression of cumulative knowledge that might be spurious. Thus, this article hopes to spark some debate and add an additional voice to those of other researchers who have drawn attention to issues of level in e-collaboration research (e.g., Gallivan & Benbunan-Fich, 2005; Walczuch & Watson, 2001).

The above definition of e-collaboration also shows that the e-collaboration field spans multiple disciplines, from technical issues to social aspects. As a result, I would like to point out that when I refer to ‘our field’ I mean the e-collaboration research that has been done from a social science perspective, including virtual team and communication media choice research, thus excluding technical research on e-collaboration technologies.

This article is organized as follows. First, I explain the level paradox of e-collaboration by describing the multilevel nature of e-collaboration phenomena and the almost exclusive focus on single-level research. Second, I outline the potential dangers of the level paradox for the e-collaboration field. Third, I propose some solutions to the e-collaboration paradox, identify opportunities for research, and explain the barriers and benefits of the proposed solutions. Finally, I end the article with a discussion of the appropriateness of single-level and mixed-level research as well as acknowledge the limitations of this article. The hope is that this paper will give researchers in our field ideas to contribute to a deeper understanding of e-collaboration, its antecedents, its consequences, as well as the different elements that constitute it.

**THE LEVEL PARADOX IN E-COLLABORATION RESEARCH**

The *level paradox* points to the mismatch between the multilevel nature of e-collaboration phenomena and the fact that most research on it is single-level. Before exposing this contradiction, it is important to define the terms that are going to guide the discussion. When we build theories we should specify which entities need to be considered and are involved in the explanation of the phenomenon of interest (Whetten, 1989). Such entities to which research wishes to generalize are the focal units or level of theory (Hitt, Beamish, Jackson, & Mathieu, 2007; Rousseau, 1985). According to Rousseau (1985), two types of levels exist for research on a focal unit: the level of measurement and the level of analysis. The level of measurement represents the unit to which the data are directly attached (Hitt et al., 2007; Rousseau, 1985). In contrast, the level of analysis “is the unit to which the data are assigned for hypothesis testing and statistical analysis” (Rousseau, 1985, p. 4).

**E-Collaboration is Intrinsically a Multilevel Phenomenon**

According to Kock (2005), e-collaboration has six main conceptual elements: the collaborative task, the e-collaboration technology, the individuals involved in the collaborative task, the mental schemas possessed by the individuals, and the physical and social environments surrounding the individuals. All these elements take place at different levels. For example, mental schemas belong to the individual level, while the collaborative task belongs to the group level. The other elements of e-collaboration also have important multilevel connotations. The physical and social surroundings of the e-collaboration phenomenon might be the same for some members in a collaborative task but not for others, creating an intermediate level between the collaborative task (at the group level) and the individuals engaged in it (individual level).

A key theoretical concept surrounding all these e-collaboration elements is the concept of technology use (Kock & Nosek, 2005). It has been shown how such use of technology belongs to multiple levels and represents a multilevel concept (Burton-Jones & Gallivan, 2007). The most common levels of technology use are the individual, the group, and the orga-
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