Chapter 10

General and Specific Computer Self-Efficacy: An Empirical Comparison of their Strength in Predicting General and Specific Outcomes

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ABSTRACT

Computer self-efficacy is known to operate at multiple levels, from application-specific sub-domains like spreadsheets to a judgment of ability for the entire computing domain (general computer self-efficacy-GCSE). Conventional wisdom and many recent studies contend that the level of self-efficacy (specific to general) should match the level of its related constructs to maximize predictive power (Bandura, 1997; Chen, et al., 2001; Pajares, 1996). This thinking claims, for example, that GCSE should be used with a general attitude like computer anxiety (and vice versa). This study examines whether such a limitation is theoretically and empirically sound, given that SE judgments generalize across domains. Results indicate any self-efficacy judgment (specific or general) significantly relates to both general and domain-specific constructs. These results suggest that an individual’s cognitive processing of ability level is multi-faceted; that is, every SE judgment consists of general and specific components. The implication is that CSE is simultaneously generalizable and formative in nature. The results also suggest that the relationship between general and specific CSE is mediated by one’s ability level in the specific domain.

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INTRODUCTION

The exploration of the relationship between the individual and computers by researchers and practitioners has evolved into a significant stream of knowledge and research concerning the individual and his/her perceptions, beliefs and capabilities concerning technology. The reference discipline for much of this work rests in social and cognitive psychology, where the basic premise is that an individual behaves in a predictable way that is a function of environmental and/or cognitive factors. One influential model was Bandura’s (1986) Social Cognitive Theory, which explained human behavior in terms of a continuous reciprocal interaction between cognitive, behavioral, and environmental determinants. This “triadic reciprocity” suggests that behavior is depends on and is determined by both environmental and cognitive factors (p. 23). The most prominent of the cognitive factors is self-efficacy (SE), which is an individual’s perception of his/her ability to successfully carry out a task or activity. Self-efficacy is not just an ability perception; it provides a generative mechanism that orchestrates the motivation and effort required to complete the task. It helps determine which activities are attempted, the effort in pursuing that activity, and persistence when encountering obstacles (Bandura, 1986; 1997; Gist & Mitchell, 1992). Self-efficacy also applies to computing behavior. Computer self-efficacy, defined as an individual’s judgment of computing capability, is a significant influence on attitudes toward technology (Harrison & Rainer, 1992) and performance (Agarwal, Sambamurthy, & Stair, 2000).

Self-efficacy has been shown to operate at multiple levels; for example, an individual can make judgments of ability for specific applications (such as database or spreadsheet self-efficacy and labeled AS-CSE for application specific CSE) or a judgment of ability for the entire computing domain, labeled general computer self-efficacy, or GCSE (Marakas, Yi, & Johnson, 1998). These levels, frequently labeled as specific or general CSE, have been operationalized and used in numerous studies, with varying degrees of success.

Although extant studies confirm a linkage between self-efficacy and various computing behaviors, there is relatively little research which empirically examines the distinctions between general and specific self-efficacy and in particular, their predictive validity. Which level of self-efficacy, for example, should be used in a given study? Research maintains that the level of self-efficacy (specific to general) should match the level of the study outcomes (Ajzen, 1991; Pajares, 1996). Chen, Gully, and Eden (2001) refer to this as “specificity matching” and maintain that matching levels is crucial for predictive power (p. 64).

Although this approach makes intuitive sense, there have been several studies in information technology (IT) where cross-leveling (using different levels for self-efficacy and outcomes) relationships have been significant. For example, GCSE (using the instrument of Compeau & Higgins, 1995a), had a significant relationship with spreadsheet ease of use (Agarwal et al., 2000), affect and anxiety (Compeau, Higgins, & Huff, 1999), and word processing/spreadsheet declarative knowledge (Compeau & Higgins, 1995b).

We contend that the reason for these findings is due to the nature of self-efficacy judgments and the way specific and general judgments interact. The relationship between specific and general self-efficacy has been largely unexplored. Although it is generally accepted that one of the three dimensions of self-efficacy, the generality dimension, is the degree to which a SE judgment applies to other domains (Bandura, 1997; Gist & Mitchell, 1992), we believe that the way this operates in individuals is primarily through the relationship between general and specific self-efficacy. But how these influences occur and their impact on the way an individual perceives his ability in any domain has not been empirically examined.
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