Chapter III
The Impact of Multilevel Computer Self–Efficacy on Effectiveness of Computer Training

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ABSTRACT

Identifying factors affecting effectiveness of computer training remains a key issue in information systems (IS) research and practice. To this end, the current study builds upon IS and training literatures to develop and test a research model to examine the impact of multilevel computer self-efficacy (CSE) on effectiveness of computer training. The model distinguishes between general and application-specific CSE and posits that both levels of CSE will have positive effects on perceived ease of use, near-transfer learning, and far-transfer learning of computer skills and a negative effect on computer anxiety. The results of a field experiment conducted to empirically test the model revealed that general CSE had positive effects on far-transfer learning and perceived ease of use, whereas application-specific CSE demonstrated positive effects on near-transfer learning and perceived ease of use. The results also showed that general and application-specific CSE had negative effects on computer anxiety. This study provides better insights into the relationships between the two levels of CSE and computer training outcomes and offers valuable research and practical implications.

INTRODUCTION

In the current era of increased proliferation of computer technologies at all managerial levels and functional areas, individuals must possess adequate computing skills to enable them to do their jobs effectively. Moreover, changing computer technologies continue to alter the way

individuals perform their work tasks, requiring employees to learn new computing skills and learn how to apply their new knowledge to their jobs (Tai, 2006). As a result, most organizations are faced with an incessant challenge to provide effective computer training to enable employees to learn the necessary skills and knowledge needed for effective use of computer systems. Thus, computer training remains a critical issue in information systems (IS) research and practice that deserves further examination and better understanding.

Much research attention has been given to computer training over the past few years (e.g., Davis & Bostrom, 1993; Harrison & Rainer, 1992; Johnson & Marakas, 2000; Lu, Yu, & Liu, 2003; Simon & Werner, 1996; Yi & Davis, 2001, 2001; Tai, 2006). Most of this research activity has focused on identifying factors that contribute to (or hamper) trainees' ability to learn and master the skills presented in training (e.g., Agarwal, Sambamurthy, & Stair, 2000; Bostrom, Olfman, & Sein, 1990; Simon et al., 1996; Yi & Davis, 2003). This line of research has shown that computer self-efficacy (CSE), one's confidence in his/her computing skills, represents a significant determinant of learning performance and other outcomes associated with computer training (Agarwal et al., 2000; Compeau & Higgins, 1995; Gist, Schwoerer, & Rosen, 1989; Johnson & Marakas, 2000; Yi & Davis, 2003).

However, a review of past studies concerning CSE and computer training reveals two significant voids. First, most prior studies have evaluated computer learning performance in general terms, without distinguishing between near-transfer and far-transfer learning (Haskell, 2001). Since the type of learning that a trainee accomplishes in training affects the extent to which he/she can apply and extend the newly learned skills (Cormier & Hagman, 1987) and transfer of learning knowledge represents a key objective of training (Holladay & Quiñones, 2003), it is important to understand factors that influence

each type of learning in order to enhance training transfer. Moreover, in addition to learning, effective training should lead to improvements in trainees' reactions (Kirkpatrick, 1959). Hence, it is important to assess reactions as an outcome in computer training (Tai, 2006).

Second, although CSE is a multilevel construct that operates at a general and application level (Agarwal et al., 2000; Johnson & Marakas, 2000; Marakas, Yi, & Johnson, 1998; Yi & Davis, 2003), most previous studies have focused on CSE as a general and system-independent construct. To date, very little research has examined the generality of CSE beliefs or the impact of application CSE on computer training outcomes.

Although general and application CSE represent similar concepts, there are genuine differences between the two constructs. While CSE at the general level is considered a trait-oriented efficacy (applicable to a variety computing tasks and achievements), CSE at the application level is considered a state-oriented efficacy (applicable to specific tasks and situations within the same computing domain) (Hsu & Chiu, 2004). Furthermore, the evaluation of CSE at the general and application level is more closely aligned with the generality dimension of self-efficacy which suggests that self-efficacy operates at general and task-specific levels (Bandura, 1986; Gist, 1987). Finally, this distinction allows the assessments of application CSE to exclude evaluations of cross-domain and distant skills necessary to perform a given computing task. For instance, using a spreadsheet application to prepare a financial forecast requires knowledge of forecasting and financial concepts and (Marakas et al., 1998).

The current study attempts to fill the aforementioned limitations. Thus, it attempts to provide better insights into the relationships among CSE beliefs (general and application-specific) and key computer training outcomes. Thus, the study proposes and empirically tests a research model that comprises the following variables: general CSE, application CSE, perceived ease

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