Chapter 14
The Role of Computer Attitudes in Enhancing Computer Competence in Training

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ABSTRACT

Computer competence is poorly conceptualized and inconsistently measured. This study clarifies computer competence and examines its relationship with anxiety, affect, and pessimism, along with self-efficacy and previous experience. Using a survey of 610 end users, the strengths of anxiety, affect (positive), pessimism, self-efficacy, and previous experience were compared for nine different competency measures in seven different domains, including word processing, email applications, spreadsheets, graphic programs, databases, web design, and overall computing. Results suggest that for most domains, affect and anxiety are significant predictors, as are self-efficacy and previous experience, but pessimism is not. In addition, competence in a domain was found to mediate the relationship between competence and its antecedents. These results suggest that organizations focus not only on skills training, but on ways to enhance computing attitudes during the training process.

INTRODUCTION

Computer competence is critical to organizations in that they rely on employees of all kinds who possess the skills necessary to carry out increasingly technical tasks. In many companies today, IT skills belong not to some cadre of technology experts, but to a majority of employees who are now technology end users (Downey, 2004). Technology provides an inherent strategic and synergistic capability that is necessary for most organizations merely to compete in today's mar-

ketplace. It is therefore essential for both organizations and researchers to understand the process by which employees gain these competencies as well as the factors which enable and enhance this learning process. Although the process of gaining IT skills, through education, training, or on the job learning, is relatively well documented, not all factors important in the acquisition of computer skills have been examined. Much of the previous research is situation based, that is, it examines the learning environment, method of instruction, and common individual factors such as previous experience as it relates to learning outcomes. For example, Compeau and Higgins (1995a) found that for spreadsheet applications, subjects who observed others perform the behavior outperformed subjects who only learned through lecture. Many studies examine factors important for enhancing learning outcomes, especially prior experience (Compeau & Higgins, 1995a; Guimaraes & Igbaria, 1997) and self-efficacy (Compeau & Higgins, 1995a, 1995b; Johnson & Marakas, 2000), though there are many others reported in the literature: age and education (Guimaraes & Igbaria, 1997), gender (Hoxmeier, Nie, & Purvis, 2000), health issues or ergonomics (Gattiker & Hlavka, 1992; McMurtrey, McGaughey, & Downey, 2008), and organizational support (Guimaraes & Igbaria, 1997), to name a few. However, there are additional factors which may contribute to successful learning that have been largely untested. In particular, the influence of computer attitudes on competence is largely unexplored. Attitudes toward computing have reported significance in *other* areas, including end user satisfaction (Aladwani, 2002), computer experience (Potosky & Bobko, 2001), IT implementation in small companies (Winston & Dologite, 2002), early adopters of IT (Burkhardt & Brass, 1990), computer confidence (Hoxmeier et al., 2000), and intention to use a computer or actual computer use (Chau, 2001; Compeau & Higgins, 1995b). But, to our knowledge, the link between attitudes and computer competence has not been tested.

As shall be presented, theory suggests that computer attitudes are important in competences, particularly in the training process (Ford & Noe, 1987; Gattiker & Hlavka, 1992; Noe, 1986). Indeed this makes intuitive sense because positive attitudes should provide additional motivation and perseverance during the learning process. In fact, the case must be made that the attitude/competence link even merits a study. We make the case for this study based on two factors, which we believe compels an investigation into the effect attitudes have on learning outcomes (and, in particular, competence).

First, in extant studies the effects of attitudes on learning outcomes has been inconsistent and even at times counter-theoretic. Although no study examined "competence" (see next section), some studies examined subsequent performance and found the relationship between attitudes and performance significant as expected (Jawahar & Elango, 2001; Nickell & Pinto, 1986; Webster & Martocchio, 1993). While this is hardly surprising, what is surprising is that other studies did not. In one study which examined the effect of five different attitudes on student performance (measured by the final grade in a computer class), only one of the five attitudes was significant (attitudes toward computing complexity). Attitudes toward computer productivity, computer health attitudes, computer interest, and attitudes toward computer consequences were not significant, leading to their assertion that "overly positive attitudes towards computers could actually hinder learning performance" (Gattiker & Hlavka, 1992, p. 99). Another study found computer anxiety (a well-researched attitude) was not significantly related to computer usage, computer satisfaction, or productivity (Guimaraes & Igbaria, 1997). The same study found that positive attitudes did have a significant relationship with the same outcomes. Other studies have found similarly puzzling find-

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