Computer Self-Efficacy: A Meta-Analysis

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ABSTRACT

Computer self-efficacy (CSE) has been a popular and important construct in information systems research for more than two decades. Although CSE researchers have conducted extensive qualitative reviews, quantitative analyses are lacking for studies of the relationships between CSE and variables of interest. This study provides such a quantitative analysis. The authors meta-analyze 102 empirical CSE studies that reported 232 usable statistical relationships between CSE and seven correlates. Their main meta-analysis demonstrates that CSE is significantly correlated in the theoretically predicted direction with each of the seven correlates. They also quantitatively assess five study characteristics as potential moderators of the CSE-correlate relationships. The moderator analysis reveals complex patterns and indicates that more research is needed to investigate possible moderating effects.

Keywords: Behavior, Behavioral Intention, Computer Anxiety, Computer Attitude, Computer Self-Efficacy (CSE), Computer Skill, Meta-Analysis, Perceived Ease of Use, Perceived Usefulness

INTRODUCTION

Because the computer self-efficacy (CSE) construct plays a central explanatory role in several information technology theories/frameworks, CSE has become an important construct for information systems researchers (Compeau, Gravill, Haggerty, & Kelley, 2006; Marakas, Johnson, & Clay, 2007). CSE is defined as "an individual’s perception of efficacy in performing specific computer-related tasks within the domain of general computing" (Marakas, Yi, & Johnson, 1998, p. 128). CSE is based in the broader construct of self-efficacy (Bandura, 1986, 1997), a key concept in social cognitive theory that is relevant in many research settings (Multon, Brown, & Lent, 1991; Stajkovic & Luthans, 1998). Like self-efficacy, CSE reflects individuals’ beliefs in their abilities to organize and execute the courses of action needed to complete specific tasks successfully in given contexts, such as in tasks involving computers (Compeau et al., 2006).

Consistent with self-efficacy research findings in other organizational settings (Stajkovic & Luthans, 1998), research in the information
systems (IS) context has regularly found CSE to be significantly associated with a wide range of cognitive, attitudinal, and behavioral outcomes of interest to researchers, educators, trainers, and employers (Compeau et al., 2006; Marakas et al., 1998). For instance, researchers have consistently reported that CSE is significantly correlated with perceptions about computers: whether individuals see computers as being useful (e.g., Thompson, Compeau, & Higgins, 2006) and easy to use (e.g., Hasan, 2006a). CSE also is related to users’ attitudes toward computers (e.g., Compeau, Higgins, & Huff, 1999), intentions to use computers (e.g., Klein, 2007), actual computer use (e.g., Ball & Levy, 2008), computer skills (e.g., Marakas et al., 2007), and computer anxiety (e.g., Johnson & Marakas, 2000; Thatcher, Zimmer, Gundlach, & McKnight, 2008).

Accordingly, Marakas et al. (1998) and Compeau et al. (2006) performed thorough qualitative reviews of the existing CSE literature and documented CSE’s influence on the acceptance and use of information technology across a wide range of settings and technologies. However, the growing body of empirical evidence on the relationship between CSE and various constructs has been ambiguous. In their qualitative reviews, those authors expressed concerns about construct definition, construct measurement, and several other study characteristics and potential moderators. Noting the lack of consistency across various studies and the emerging importance of the CSE construct, both reviewers called for additional investigation into CSE’s role in human-computer interactions.

Although those reviews of the literature on CSE are extensive and informative, they are qualitative. In their initial review, Marakas et al. (1998) proposed that although a number of IS studies have investigated the CSE construct, the research had not yet approached the depth of investigation into self-efficacy found in other domains. They observed that the existing body of research did not “lend itself to any meaningful, meta-analytic approach based upon combining results and effect sizes from multiple studies” (1998, p. 141).

Our more recent review of the CSE literature suggests that empirical work on the relevance of the CSE construct has been growing. Numerous studies have used a wide variety of settings, participants, and measures to explore the construct. Inspired by Marakas et al.’s (1998) and Compeau et al.’s (2006) excellent qualitative reviews and the growing volume of CSE research, we believe the current body of research is now sufficient for a meta-analysis.

The purpose of this paper is twofold. We first quantitatively cumulate previous research findings regarding CSE’s relationship to seven correlates and offer a true population estimate of the strength and generalizability of these relationships. Second, past research (Campeau et al., 2006; Marakas et al., 1998, 2007) indicates that study characteristics might moderate CSE-correlate relationships, so we investigate the moderating role of type of participants, research context, and type of CSE measures.

Broadly, a meta-analytic review can serve two critical purposes for informing empirical work on CSE: theory testing and theory building (Aguinis, Dalton, Bosco, Pierce, & Dalton, 2011; Hunter & Schmidt, 2004). Meta-analysis’s first and most obvious objective is to test theories. A carefully conducted meta-analytic review provides a true estimate of relationship strengths. In addition, the estimated population variance can provide information about the generalizability of the true population estimate of the strength of a relationship. Non-generalizable findings imply the need for theory building.

For our meta-analysis to be useful, it must consider the current state of CSE research in the field of information systems. At the theoretical level, CSE has been investigated as a part of several theoretical frameworks, most notably the technology acceptance model (Venkatesh & Davis, 1996). Furthermore, researchers have studied both causes and consequences of CSE. Traditionally, a meta-analysis does not involve accumulating empirical evidence on causal relationships. Instead, it focuses on correlations. For example, one of the most widely used meta-analytic approaches is Hunter and Schmidt’s (2004) technique based on correlations (Aguinis...
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