12-31-1996

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THE MULTILEVEL CONSTRUCT OF COMPUTER SELF-EFFICACY: AN EMPIRICAL INVESTIGATION AT THE GENERAL AND TASK-SPECIFIC LEVELS

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As corporations invest millions on information systems (IS), one major area of concern is their effective utilization. Researchers have responded to this concern by identifying various mechanisms through which an individual's willingness to accept and use IS may be manipulated or predicted (DeLone and McLean 1992). Social Learning Theory (Bandura 1986) suggests one such mechanism is *computer self-efficacy* (CSE), an individual judgment of one's capability to use a computer (Compeau and Higgins 1995).

Despite the increased interest in the relationship between CSE and other variables, results have often been equivocal or contradictory. We believe these equivocalities may be due, in part, to a lack of parallelism between the measurement of CSE and the performance measure, a lack of effective isolation of the construct, or both. Some studies have measured task-specific CSE (SCSE) within a general computer domain (GCSE) and then attempted to determine its relationship to a specific computer task. Others have developed measures of CSE that do not demonstrate strong divergence from other related constructs. Following Mone (1994), we believe that the more closely related conceptually the predictor is to the criterion, the more powerful and accurate it will be.

The purpose of this study is to empirically validate the proposed theoretical model that describes how SCSE and GCSE are interrelated and how they serve as cognitive mechanisms to impact individual task performance in both a specific and general computing domain (Figure 1). In addition, we develop a measure of GCSE and several highly focused measures of SCSE that demonstrate strong divergent validity in the presence of related constructs and represent the characteristics suggested by Bandura and others with regard to effective measurement of self-efficacy.

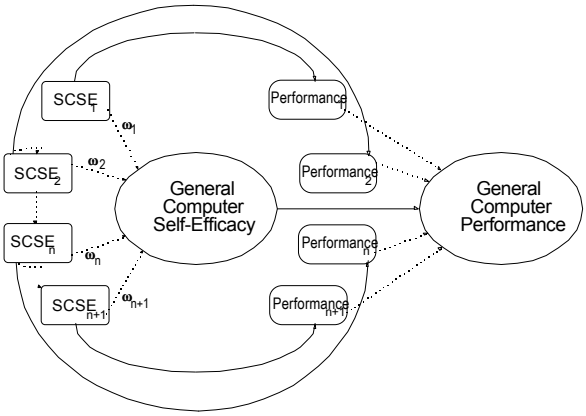

Figure 1. Model of General Computer Self-Efficacy

The model explains why two individuals can have the same level of GCSE when their SCSEs are different in an application-specific computer domain or why two individuals can have different levels of GCSE while having similar levels of SCSE at the task level. From this, we expect an increase in GCSE as an individual gains experience with different computer applications. We also expect an increasing initial level of SCSE for future application-specific tasks over time. Furthermore,

the model suggests that particularized measures of SCSE will surpass general measures of GCSE in explanatory and predictive power for specific performance as suggested by Bandura but not for general computing performance. This implies that SCSE may be a more cost effective and powerful mechanism to impact a user's specific computer performance whereas GCSE may be a less malleable but more enduring mechanism over time.

The model provides for the advancement of several propositions from which a variety of testable hypotheses are derived.

> ***P1:*** *CSE is a multi-level construct operating at both the task-specific and general domain levels.*
>
> ***P2****: GCSE is a function of an individual's combined SCSE.*
>
> ***P3****: Each instance of change in SCSE makes a unique, non-linear, contribution to the change in GCSE; that is, the contribution to change in GCSE will be the change in SCSE weighted by some set of antecedent and/or consequent factors associated with the original estimate of SCSE by the individual.*
>
> ***P4****: Over time, GCSE will become a useful predictor of future performance at the task-specific level and will become highly correlated with future pre- and post-test measures of SCSE.*

A controlled field experiment using a repeated-measures design was conducted. Subjects were students taking an undergraduate introduction to computer applications course (n=300). Measures of GCSE and SCSE were taken during lab sessions held on Friday of each week.

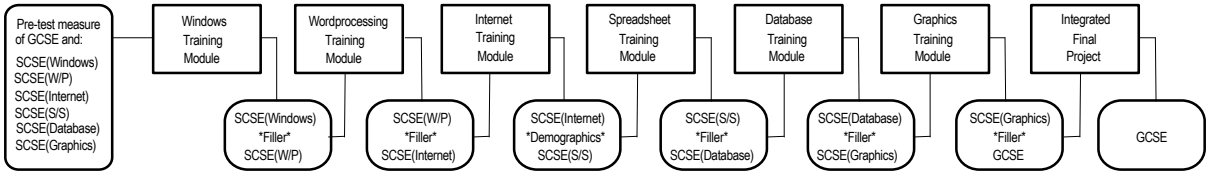

Figure 2. Experimental Flow

Measures of SCSE and GCSE included both magnitude and strength assessments using the approach suggested by Bandura and by and Bobko (1994). The content of all instruments was iteratively tested and validated. In addition, the measures used in this study were also compared to other measures of both CSE and related constructs. The instruments demonstrated high divergent validity from related constructs as well as from other measures of CSE. Further, several measures of CSE demonstrated low divergent validity from other related constructs. From this, it appears that prior measures of CSE have not completely isolated the construct of interest as well as the measures developed and used herein. Demographics reflecting the wide variety of antecedent and consequent factors associated with the estimation of self-efficacy (Gist and Mitchell 1992) were collected and employed as either covariate or control variables during the data analysis to control for the effects of such factors in the comparison of SCSE and GCSE estimations within and across subjects. Performance was measured for each specific task by three independent judges using a structured scoring method designed to be comparable across tasks. Data analysis will include both ANOVA/ANCOVA and structural equation modeling.

Currently, instrument validation has been completed and data collection has begun. Initial results of the tests of hypotheses as well as factor analyses performed during instrument validation will be presented.

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