The Effect of Individual Differences on Computer Attitudes: An Empirical Study

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INTRODUCTION

It has become apparent that computer competency is necessary not only for citizens to function efficiently on a personal level in our society, but to develop, advance and succeed in their professional lives. End-user computing has emerged as a significant issue affecting organizations. As Torkzadeh and Angulo (1992) caution, “the success of this end-user computing is dependent on the user’s acceptance and commitment” (p. 99).

Unfortunately, despite the increasing use of computers in schools, homes, and workplaces across the United States, research continues to report high levels of anxiety, resistance and poor attitudes toward computers among students in higher education who are preparing for professional careers as well as those employees already well established in the workplace. In 1993 researchers Rosen and Weil estimated that technophobia afflicted as many as one-third of the 14 million college students in the country (DeLoughry, 1993). A study supported by Dell Computers concluded that 55% of Americans suffer from some degree of technophobia (Williams, 1994). Ostrowski, Gardner, and Morawi (1986) conducted a study to determine the extent of end-user attitude problems; more than 50% of the respondents indicated observing computer attitude problems, with anxiety occurring most often. A meta-analysis of computerphobia research led Rosen and Maguire (1990) to conclude that one fourth to one third of all people–college students, businesspeople, and the general public–may be classified as “computerphobic.” They also indicate that an additional segment of the population is uncomfortable with computers and will avoid them whenever possible.

A variety of terms are used in the literature to describe the negative attitudes associated with computers - computer anxiety, cyberphobia, computerphobia, or technophobia are a few most often used. Jay (1981), one of the first to use the term “computerphobia,” provided the following definition: “(a) resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about computers” (p. 47).

Although research has established that stress and anxiety reduce an individual’s ability to perform effectively (Elder, Gardner, and Ruth, 1987; Torkzadeh and Angulo, 1992), and computer anxiety, in particular, has been found to be predictive of whether technology is used and how technology is used (Scott and Rockwell, 1997), Rosen and Weil (DeLoughry, 1993) report, “few in higher education and elsewhere in society treat technophobia as a problem worthy of their attention” (p. A25). They say that too many people are under the illusion that computer anxiety will disappear if the world is flooded with technology. Also, Torkzadeh and Angulo (1992) emphasize “computer anxiety is not a transitory problem that will disappear as the current generation of
students, who are gaining computer exposure at an early age, move in to the workforce. The computer training and exposure that young people receive in most high schools and colleges is inadequate since the current proliferation of computers will demand more – not less – computer literacy. The increasing demand for strategic use of computer applications will require even more comprehensive and continuous training programmes” (p. 104).

Computer anxiety has implications for instruction and training, both in educational environments and in the workplace (Dyck, Gee, and Smither, 1998). Harrison and Rainer (1992) explain that organizations need to understand how individual differences relate to computer skill given the growth of end-user computing. As stated by Loyd and Gressard (1984a), “positive attitudes increase the prospect for achievement in any academic endeavor, and negative attitudes make achievement of competency less likely; empirical study of the relationships among these attitudes will help us clarify the character and significance of computer attitudes among students” (p. 68). Maurer and Simonson (1993, 94) recommend additional research be conducted most specifically to determine personality variables that may relate to computer anxiety. Ayersman (1996) also encourages further study of computer anxiety so that more effective methods can be developed for reducing its detrimental effects.

Given a better understanding of factors that may affect computer attitude, educators and trainers may be able to identify high-risk learners and to introduce appropriate interventions that may help students and end-users improve their attitudes toward computers and realize their full potential in the classroom and on the job. This study was conducted to examine relationships between computer attitude and experience and computer attitude and various personality, demographic, and educational variables.

**REVIEW OF LITERATURE**

Since the early 1980s, researchers have been studying the computer attitude phenomenon by searching for factors that may predict computer attitudes. Studies conducted across most academic disciplines and at all educational levels, as well as in the workplace, have focused primarily on relationships between computer attitude and prior computer experience, gender, and age.

**Computer Experience**

A number of studies have examined the effect of formal computer instruction on attitudes towards computers with attitude measures administered pre- and posttreatment. Results appear to indicate that formal instruction can improve computer attitudes, albeit in varying degrees. During a 10-week investigation, Pope-Davis and Vispoel (1993) measured computer attitudes of undergraduates and graduates. One group received microcomputer training while the control group received no training. Results showed that the students who received the computer training were less anxious, more confident, and more interested in using computers than students in the control group. While the training group reported significant positive changes in their attitudes during the course, the control group did not.

During a semester-long introductory college class on computers in education, Maurer and Simonson (1993-94) found significant decreases in the students’ anxiety levels. Interestingly, this decrease was most pronounced for those students having less computer experience prior to the study. Ayersman (1996) also reported significant decreases in computer anxiety in undergraduate students during a 15-hour computer course and again during a 45-hour computer experience. Another study also found that a one-semester college course in computer science improved students’ attitudes towards computers (Shashaani, 1997). However, Jones and Wall (1989-90) reported only a small reduction in computer anxiety as a result of a semester course on computers in society.

A number of investigations have focused on the association between previous computer usage and computer attitude, but the results have been mixed. Upon measuring computer attitudes of college students enrolled in a required computer information systems course, Marcoulides, (1988) concluded that computer anxiety is still present regardless of prior computer experience. In fact, two studies reported that even experienced computer users already in the workplace report symptoms of computer anxiety when they are confronted with learning new computer applications (Ostrowski, Gardner, and Motawi, 1986; Elder, Gardner, and Ruth, 1987).

Using Loyd and Gressard’s (1984a) Computer Attitude Scale (CAS), Pope-Davis and Twing (1991) found no significant relationship between computer experience and computer attitudes among 207 college students in an introductory computer skills course. Additionally, in separate studies of secondary students, Shashaani (1994) and Woodrow (1994) both reported that computer ownership was not related to computer attitudes.

Other studies, however, report that attitudes toward computers were related to computer experience (Ayersman, 1996; Busch, 1995; Koothag, 1989; Levine and Donitsa-Schmidt, 1998; Loyd and Gressard, 1984a; Shashaani, 1997; Woodrow, 1994) and computer ownership (Houle, 1996; Levine and Gordon, 1989; Levine and Donitsa-Schmidt, 1998; Ogletree and Williams, 1990; Shashaani, 1997). Houle (1996) also found computer experience at a job to be an important discriminate of computer attitudes and anxiety. As a result of their meta-analysis of 81 studies, Rosen and Maguire (1990) believe that while computer experience alone does not cure computerphobia, past experience is related given that those who are highly anxious will go to great lengths to avoid computers. In a review of the computer anxiety literature, Maurer (1994) concluded that amount of computer experience seems to have the clearest relationship to computer