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MEDIATING ANXIETY & PERCEIVED EASE OF USE

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Anxiety

Use of technology often has unpleasant side effects, which may include strong, negative emotional states that arise during interaction with computers. Frustration, confusion, anger, anxiety and similar emotional states can affect not only the interaction itself , but also productivity, learning, social relationships, and overall well- being. There are a number of related definitions explaining as to what is anxiety. Leso and peck (1992) define computer anxiety as a feeling of being fearful or apprehensive when using or considering the use of a computer. Evidently, factors such as who first have introduced the person to the computer technology (Rosen and Weil 1995, and Bronsnan, 1998a,b) past failure or successes with hardware or software; and the current tasks being attempted including the new computer applications. These researchers have attempted to predict those who will experience computer anxiety by identif ying factors that correlate with its occurrence. Frequently, such factors as age, gender, ethnicity, previous computer experience, mathematics anxiety, se lf-efficacy, learning styles, and computer attitude are posited as a factor influencing the computer anxiety (Ayersman & Reed, 1995; Reed and Ayersman, 1996; Igbar ia & Chakrabarti, 1990).

There are three types of anxieties: trait, state, and concept-specific. Trait anxiety is defined as a general pervasive anxiety that is experienced by a person over the entire range of life experience. People who exhibit trait anxiety are chronically anxious and constantly under tension regardless of their situation. This anxiety is frequently used as a construct for personality, learning theory, and psychopathology. Trait anxiety defines a personality characteristic and may be inherited (Howard, 1986). State anxiety is when a person experiences anxiety that fluctuates over time, and arises to a responsive situation. State anxiety is related to a person's learning background. A person may have experienced some anxiety in a situation and that anxiety is transferred to a similar situation. Concept-specific anxiety is a transitory-neurotic type of anxiety. Concept-specific anxiety is the range between the trait and state anxieties. It is an anxiety that is associated with a specific situation. Therefore, computer anxiety is a concept-specific anxiety because it is a feeling that is associated with a person's interaction with computers (Oetting, 1983). In fact, Howard (1986) defines computer anxiety as the tendency of a person to experience a level of uneasiness over his or her impending use of a computer.

In Information systems study, anxiety has been viewed as a personality variable that influences system use (Agarwal, 2000). A number of IS studies are consistent with the view that the relationship between anxiety and behavior is mediated by the personal beliefs (Schlenker and

Leary, 1982;) and anxiety is incorporated as an antecedent to the beliefs of usefulness and ease of use (e.g., Igbaria, 1993; Venkatesh, 2000). It is interesting to note that classical view of anxiety is it mediates the relationship between beliefs and behavior (Spielberger, 1972). Thus, anxiety can be viewed as a result of the beliefs an individual has, rather than as an antecedent to them. For example, an individual who has a belief that she will be embarrassed by delivering a speech has speech anxiety (commonly called stage fright); as a result of the anxiety, she refuses to give speeches. The belief leads to the fear (i.e., anxiety), which leads to the behavior (i.e., avoidance).

Igbaria and Parasuraman (1989), apply these theories to the computer anxiety and defines it to be "the tendency of individuals to be uneasy, apprehensive, or fearful about current or future use of computers". A number of studies have provided evidence supporting a direct relationship between computer anxiety and computer use (Brosnan, 1999; Chau et al., 1999; Howard and Mendelow, 1991; Igbaria et al., 1996; Scott and Rockwell, 1997; Todman and Monaghan, 1994; Weil et al., 1990). The computer anxiety research clearly shows that a highly computer anxious individual will be at a significant disadvantage compared to his/her peers. One example of such an environment is an online learning offered by almost all higher learning institutions.

Anxiety & Perceived Ease of Use

Prior research has shown that past experience is a determinant of behavior (Ajzen & Fishbein, 1980). In general, TAM identifies the relationships between PEU, PU, ATT, and behavioral intentions (BI) towards a target system (Davis et al., 1989). In the context of the present study, perceived ease of use (PEU) refers to the degree to which the user expects the target system to be free from effort (Davis et al.1989). Enhanced course performance implies that the student can obtain a better grade by using the learning tool (Igbara and Tan, 1997). Students' perception of enhanced performance affects attitudes. In other words, students that

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perceive the system to be useful, develop better attitudes towards the learning tool as reported by previous studies (Adams, 1993 and Pedersen and Nysveen, 2003). Specifically we make the following hypothesis (H1) related to anxiety and PEU, shown in figure 1.

H1: Computer experience will have an effect on students' perceived ease of use of online learning system.

Fig: Effect of Computer Anxiety on PEU

In his seminal articles (1977,1978,1981,1982, 1986,1988) , Bandura clarifies the construct often used to explain one's ability to judge how well one can execute with one's given skill to achieve desired goa l. Self-efficacy was initially defined as an individual's belief about their ability to successfully execute behavior required to produce a desired outcome (Bandura, 1977). This was further refined in his 1986 article where Bandura highlighted the importance of distinguishing between component skills and the ability to perform actions. To this end, further clarification was offered by other researchers emphasizing that the self-efficacy is a person's belief in their capability to perform specific tasks and it consists of three dimensions : Magnitude, Strength and Generality: (A) Magnitude – the level of task difficulty an individual believes that he or she can attain, (B) Strength – the confidence one has in attaining a particular level of difficulty and (C) Generality – the degree to which the expectation is generalized across situations. Researchers have shown that it is important to capture both the magnitude and strength dimensions when measuring se lf-efficacy (Lee and Bobko, 1994). Therefore, the concept of self-efficacy is context specific or the valuing of self through for specifically defined situations and highlights the importance of distinguishing between component skills and the ability to perform actions. Further studies by Bandura discussed the psychological construct of self-efficacy as a concept that referred "to beliefs in one's capabilities to mobilize the motivation, cognitive resources and courses of action needed to meet situational demands" (Bandura and Wood, 1989). From his observation of the results from various experiments, Bandura (1982) concluded that "perceived efficacy is often a better predictor of behavior in generalization tests than is past performance.

Behavior is raw data that must be cognitively appraised for its efficacy value."

Computer Anxiety and Self-efficacy

It would be particularly important to establish measurement equivalence for measures of psychological constructs that impact an individual's use of computers or performance on computer-based tasks. Two such variables are computer self-efficacy and computer anxiety. Anxiety has been argued to affect computer-based learning by affecting levels of self-efficacy. Self-efficacy emanates from social learning theory as indicated above. Self-efficacy is determined by levels of anxiety in addition to enactive and vicarious experience. Enactive experience refers to actual experience. In addition, vicarious information and verbal persuasion increase levels of self-efficacy. Reduced anxiety and increased experience only facilitate performance upon tasks indirectly by increasing levels of self-efficacy which, in turn, leads to improved performance (Bandura, 1977; 1986; Schunk, 1981). Meier (1985) confirmed that high levels of computer anxiety reduce levels of self-efficacy which in turn lowers computer-based performance attainment. Similarly, experience with computers also only improves subsequent computer performance if the experience leads to increased levels of self-efficacy (McInerney et al., 1994).

There is evidence to suggest, therefore, that the lack of a relationship between anxiety and computer performance is due to self-efficacy moderating this relationship (Torkzada & Koufteros, 1994, Saade and Kira, 2007). That is , anxiety predicts levels of self-efficacy, which in turn predict performance. The relationship between computer anxiety, self-efficacy and PEU is made particularly important by the increase in computer-based learning within every level of the educational system. The impact of computer anxiety upon learning is now of major concern within the education system (Brosnan, 1999; Rosen & Weil, 1995). In this study, computer anxiety, task self-efficacy, and PEU will be investigated. The aim is therefore to investigate the relationship between computer anxiety and computer-related perceived ease of use. Based on the above, we hypothesize the following:

H2: Computer self-efficacy significantly mediates the effect o f computer anxiety on perceived

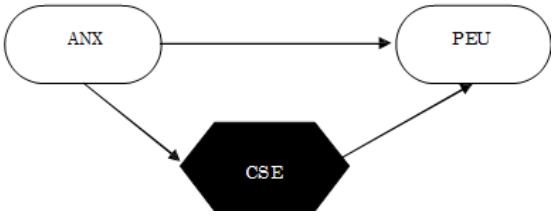

Fig: Mediation of computer self-efficacy on ANX-PEU

The Study

The study was conducted in an undergraduate online course setting spanning one year, using a LMS (developed in- house) as the target system. Throughout the year, students in an introductory management information systems and information technology course at a major university in Canada used the LMS to access course material, interact with class mates and to interact with professor. The LMS is web based and can be accessed using any web browser. The LMS monitored the students' activities by storing the date and time of login and access to the different components of the system.

The learning tool is made up of three components : (1) the front end which interacts with the user and provides access to the different learning, assessment and support tools , (2) the middle layer which stores and controls the learning process and interaction session and (3) the back end which includes the database. As an example, one of the learning tools is called EISEL (Saadé, 2003). The design of EISEL includes a limited number of questions for each chapter. For example, chapter 1 includes 38 questions while chapter 2 may include 112. Students are presented with a set of five questions at a time. After that the five questions are answered, the student can click on 'evaluate' and the system will s how the correct/wrong answer with a green/red button on the side of each question. The student can then click on 'next' to request another randomized set of questions. This design allows the repetition of the questions, combined with immediate feedback requiring the use of short-term memory, recognition, and recollection skills. A second attempt to answer a question reinforces the students' understanding of the question and of the concept at hand regardless of the outcome of the question the first time it was answered. Students are asked to do a minimum of 20 questions but encouraged to do as many as they feel necessary. Students are asked to develop their own strategies of use of this tool. Students are allowed to practice in groups and by referring to any resources and materials. The objective is more to have them involved in the processing of domain content rather than assessment.

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