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Computer Anxiety: "Trait" or "State"?

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Abstract

A recurring question in the study of computer anxiety is whether computer anxiety is a relatively stable personality trait or a mutable, temporary state. The two studies reported examined this question in two groups of first year psychology students. These students were requested to complete a computer anxiety test, a trait anxiety test, and a state anxiety test. Some groups were administered the tests in a pen and paper format, while others were tested using computerized tests. In the first study, a Dutch version of the Profile of Mood States (POMS) was used; in the second study, a Dutch adaptation of the State-Trait Anxiety Inventory (STAI). The data were analyzed using structural equation modeling. In both studies, computer anxiety turned out to be related more strongly to trait anxiety than to state anxiety. In fact, there was no relationship between computer anxiety and state anxiety in the pen and paper format. In the computerized versions however, computer anxiety and state anxiety were related, suggesting that state anxiety in situations involving a computer is caused by pre-existing computer anxiety.
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1. Introduction

The DSM IV of the American Psychiatric Association[1] describes anxiety as a mood state in which a subject experiences fear, apprehension, nervousness, worry, tension.

Well-known anxiety disorders include fear of appearing in public, fear of closed spaces, or constant fear of close others being hurt. In everyday life, anxiety functions as a warning signal for often unspecified pending danger and serves as a prime for developing an adequate coping response. When anxiety becomes abnormally intense and/or prolonged, it may assume a pathological form, resulting in repressed thoughts, negative conditioned responses, counterproductive thought patterns, poor coping strategies, and increased sympathetic tone of the autonomic nervous system (Craig, Brown, & Baum, 2000). Nowadays, computer anxiety can be added to a list of common anxiety disorders. It can be defined as a feeling of fear and apprehension felt by individuals when using computers or even considering the use of a computer (Simonson, Maurer, Montag Torardi, & Whitaker, 1987). Computer anxiety should be viewed as a potentially serious affliction, as it satisfies the defining aspects of fear as set out in the DSM IV.

Extensive study of computer anxiety over the past three decades has shown that it is a not a simple one-dimensional phenomenon. Most scales used to measure computer anxiety cover various factors, such as lack of confidence in learning to use a computer, aversion of computers, avoidance of computers (Loyd & Gressard, 1984), anxiety aroused by computer-related behaviors, such as looking at computer printers and printouts (Marcoulides & Wang, 1990), or anticipatory anxiety caused by knowing that one has to use the computer (Brosnan, 1998). Summing up previous research, Beckers and Schmidt (2001) suggested that at least six dimensions are involved in the construct of computer anxiety: Computer illiteracy, lack of self-efficacy, heightened physical arousal, feelings of dislike, and two sets of beliefs about the role of computers in every-day life.

Validity studies have demonstrated that computer anxiety, while a robust phenomenon, is not clearly defined (LaLomia & Sidowski, 1993). An important issue that remains to be settled is whether computer anxiety is to be considered predominantly a temporary state, emerging while being confronted with a computer, or whether it is a stable trait of an individual, which is part of a broader anxiety disorder (Harrington, McElroy, & Morrow, 1990). This distinction has an important bearing on the treatment of computer anxiety. By definition, a temporary anxiety will subside, and special training or mere exposure to computers may reduce this type of anxiety. A trait-like anxiety will be more difficult to treat as the source of the anxiety is more deep-seated.

Several authors consider computer anxiety as a state anxiety, which is linked exclusively to the actual or symbolic presence of a computer (Bohlin & Hunt, 1995; Laguna & Babcock, 1997; Rosen & Maguire, 1990; Simonson et al., 1987). These authors emphasize that computer anxiety is open to modification by means of training, social support, and/or better software (e.g., Rosen, Sears, & Weil, 1993; Yaghi & Bentley Abu Saba, 1998). However, there is some support for the hypothesis that highly anxious computer users do not benefit from such treatment, which suggests that their anxiety has deeper roots (Rosen, Sears, & Weil, 1987). Endler, Parker, Bagby, and Cox (1991) propose that a specific dimension of trait anxiety (such as fear to be socially evaluated) interacts with a congruent situational threat: The subject perceives the situation in which he or she has to work with a computer as a situation in which he or she might be socially evaluated. Therefore, subjects who are highly trait anxious, experience a higher state anxiety in the presence of a computer than subjects who do not suffer high levels of anxiety. In this account, computer anxiety is an aspect of a more general trait, which is manifested only in the (anticipated) presence of a computer. When trait anxiety and situational stressor are not congruent, there will be no relation between trait and state anxiety. Deane, Heinssen, Barrelle, Saliba,