The relationship of instrumental and expressive traits with computer anxiety

Nikos Bozionelos *

Department of Human Resource Management, University of Strathclyde, 50 Richmond Street, Glasgow G1 1XU, UK

Abstract

The relationship of instrumental and expressive traits with computer anxiety was investigated in a sample of 230 individuals who were university students. The instrumentality model was supported. Scores on instrumentality made significant contributions to the variance in scores on computer anxiety, after the effects of age, sex and computer experience were removed. Neither scores on expressiveness nor the Instrumentality×Expressiveness interaction term were significantly associated with scores on computer anxiety. A model that suggests a mediating role of instrumental traits in the relationship between computer experience and computer anxiety was evaluated and gained tentative support. The investigation expanded the literature on the relationship of instrumental and expressive traits with psychological well-being to the domain of well-being in the context of interaction with computer-based systems. The limitations of the study are considered and suggestions for future research are made. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

The computer anxiety construct was introduced by Powers, Cummings and Talbott (1973). Powers et al. (1973) utilised physiological measures to assess the levels of anxiety during a task that involved the use of a computer. Since then, research on computer anxiety has accumulated, employing predominantly self-report paper-and-pencil instruments (e.g. Heinssen, Glass & Knight, 1987; Loyd & Gressard, 1984; Maurer, 1983; Raub, 1981; Rosen, Sears & Weil, 1987) to assess it. Maurer, in a simple, yet concise, definition described computer anxiety as the degree of

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* Tel.: +44-141-548-4466; fax: +44-141-552-3581.

E-mail address: n.bozionelos@strath.ac.uk

fear and apprehension felt by individuals when they consider the utilisation of, or actually use, computer technology.

Computer anxiety exerts negative effects on the utilisation of computer-based technology and on performance on computer-related tasks (Brosnan, 1998, 1999; Edler, Gardner & Ruth, 1987; Heinssen et al., 1987; Mahar, Henderson & Deane, 1997; Rosen & Weil, 1995). It affects substantial proportions of population groups (e.g. Anthony, Clarke & Anderson, 2000; Bozionelos, 1996; Edler et al., 1987; Gardner, Render, Ruth & Ross, 1985; Gardner, Young & Ruth, 1989; Henderson, Deane, Barrelle & Mahar, 1995; Rosen & Weil). Further, the prevalence of computer anxiety does not appear to be dropping despite the increasing proliferation of computer-based technology in society and the workplace (e.g. Bozionelos; Mahar et al.).

1.1. Computer anxiety and well-being

Computer anxiety refers to psychological well-being when interacting with computer-based technology. Associations between scores on computer anxiety and scores on measures of state anxiety have been reported (e.g. Heinssen et al., 1987; Mahar et al., 1997; Maurer & Simonson, 1984). These measures were taken immediately before or immediately after engaging in a computer-related task. Further, significant relationships between computer anxiety scores and scores on self-report measures of symptoms of physiological discomfort (e.g. sweaty palms, queasy stomach) have been reported (Heinssen et al.; Rosen et al., 1987).

It appears, however, that computer anxiety is related to psychological well-being in a more general way. Its effects are not limited to the time of the actual, anticipated or imagined, interaction with computer-based technology. Relationships between scores on computer anxiety and scores on measures of trait anxiety have been reported in a number of occasions (Deane, Henderson, Barrelle, Saliba & Mahar, 1995; Harrington, 1988; Heinssen et al., 1987; Igbaria & Parasuraman, 1989; Kernan & Howard, 1990; Maurer, 1983; Maurer & Simonson, 1984). Further, relationships between scores on computer anxiety and scores on measures of general psychological or physiological distress have also been reported (Henderson et al., 1995; Hudiburg, 1990). However, in a cautionary note, Henderson et al. correctly stressed that identification of such relationships does not constitute evidence for a causality link between computer anxiety and psychological well-being.

Nevertheless, Rosen and his colleagues (Rosen, Sears & Weil, 1993; Weil, Rosen & Sears, 1987) reported results strongly implicative of a causality relationship between computer anxiety and general psychological well-being.

Rosen et al. (1993) assessed the "computerphobia reduction program" (Rosen et al., 1987; Weil et al., 1987). This programme was developed in order to provide treatment to individuals who demonstrate negative cognitions, emotions and attitudes about computer-based technology. Treatment was based on purely psychological techniques (e.g. systematic desensitisation). The programme was highly successful (Rosen et al., 1993). In particular, a dramatic decrease in computer anxiety scores was identified in the post-treatment measurement; and this benefit of the programme (i.e. reduction in computer anxiety scores) persisted in the six-month follow-up (Rosen et al., 1993). Along with the computerphobia scales, Rosen et al. (1993) administered to their participants checklists that were general measures of anxiety and of negative cognitions. Highly significant reductions in scores on both checklists in the post-treatment in comparison to