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The Computer Aversion, Attitudes, and Familiarity Index (CAAFI): A validity study

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Abstract

This study's purpose was to provide additional psychometric data on the Computer Aversion, Attitudes, and Familiarity Index (CAAFI). The CAAFI is comprised of 40 items, yielding a total score and four factor scores with 10 items each (one familiarity, one attitudes, two aversion). The measure was administered to a sample of undergraduate psychology students ($N = 293$) along with the Computer Understanding and Experience Scale, the Computer Attitude Scale, and the Computer Aversion Scale. The factor structure of the CAAFI was supported via confirmatory factor analytic procedures and analysis of internal consistency reliability coefficients. In relation to the other measures of computer-related constructs, the strongest validity support was found for the CAAFI total score and Factors 1 (computer familiarity) and 3 (computer aversion-discomfort), followed by Factor 2 (computer attitudes). With regard to Factor 4 (computer aversion-fear), given the results of the analyses the decision was made to remove these items from the CAAFI in order to enhance the measure's psychometric properties and practical utility.

Keywords: Computer anxiety; Computer attitudes; Computer aversion; Computer experience; Computer familiarity; Confirmatory factor analysis; Psychological assessment

1. Introduction

The purpose of this study was to replicate and expand on previous research that culminated in the development of the Computer Aversion, Attitudes, and Familiarity Index

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(CAAFI; Schulenberg, 2002; Schulenberg, Yutrzenka, & Gohm, 2006). Research on computer aversion (or anxiety), attitudes toward computers, and experience with computers continues to proliferate, and there is a large number of individual measures designed to assess these constructs, each of which possesses variable psychometric properties. Furthermore, over the decades researchers have developed measures based on various definitions of each construct (see Garland & Noyes, 2008; LaLomia & Sidowski, 1991, 1993; Shaft, Sharfman, & Wu, 2004 for examples). Researchers typically utilize different measures when studying these constructs, so comparisons across studies becomes increasingly difficult due to the influence of subtle differences in the measures selected (Chua, Chen, & Wong, 1999; Garland & Noyes, 2008; Laguna & Babcock, 1997; Schulenberg et al., 2006).

To maximize our understanding of the relationship between technology and human behavior, and to integrate the various research findings, it is important that the measures used be few in number and psychometrically sound (Rosen & Maguire, 1990; Schulenberg et al., 2006). Major motivations behind the development of the CAAFI included the need for a single measure to assess several key computer-related constructs, as well as the intent to advance the literature behind these constructs and synthesize research in this area (Schulenberg et al., 2006). With regard to operationally defining the constructs of interest, after a review of the literature (e.g., Heinssen, Glass, & Knight, 1987; Meier, 1988; see also Schulenberg, 2002 and Schulenberg et al., 2006), computer aversion (sometimes referred to as computer anxiety) was defined as a negative affective state (discomfort or apprehension) relating to computer technology. Attitudes toward computers is a concept that is more cognitive in scope, as opposed to affective, and was defined as positive or negative thoughts that people have about computers in terms of their utility and their societal roles (Heinssen et al., 1987; Schulenberg, 2002; Schulenberg et al., 2006). Computer experience, or familiarity, was noted to relate to one's knowledge of computers based on indirect and direct computer exposure (Potosky & Bobko, 1998; Schulenberg 2002; Schulenberg et al., 2006). Because these constructs are potentially related to whether and how people interact with computer technology in a variety of contexts (e.g., clinical, educational) (Chua et al., 1999; Mcilroy, Sadler, & Boojawon, 2007; Palaigeorgiou, Siozos, Konstantakis, & Tsoukalas, 2005; Schulenberg & Yutrzenka, 1999,2004; Teo, 2007, 2008) it is imperative to have a reliable and valid means of assessing them.

The development of the CAAFI involved item generation with the aid of 14 consultants, pilot testing with graduate ($N = 9$) and undergraduate students ($N = 20$), and exploratory and confirmatory factor analyses with two college student samples ($N = 854$, $N = 400$). Items were positively and negatively worded (some items necessitate reverse scoring) such that when items measuring a construct are summed, higher positive scores suggest less computer aversion, more favorable computer-related attitudes, and greater familiarity. The CAAFI uses a 7-point Likert-type response format that ranges from –3 (absolutely false) to 3 (absolutely true). Zero represents a neutral response toward a particular item. Items were integrated into a 164-item developmental form, with the items organized by section. Computer aversion items were listed first, followed by the attitudes toward computers items and the computer familiarity items. The CAAFI was then administered to the two samples of college students, both of which were obtained from medium-sized universities (one located in the Midwest and one located in the South). Schulenberg (2002) and Schulenberg et al. (2006) provided details on the initial development of the CAAFI and the subsequent exploratory and confirmatory factor analyses.