Equivalence of Computerized and Conventional Versions of the Beck Depression Inventory-II (BDI-II)

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This study examined the equivalence of the conventional and computerized versions of the Beck Depression Inventory-II (BDI-II), taking into account that computer aversion may negatively impact computer-administered BDI-II scores by elevating them. Participants were 180 psychology undergraduate students from a medium-sized midwestern university. Participants were divided into four experimental groups. Each group was administered the BDI-II twice in various combinations (conventional only, computerized only, conventional and computerized and vice versa). All participants completed measures of computer aversion and computer experience. Participants who received both versions of the BDI-II were also asked to specify their preference for method of administration. Independent samples t-test results indicated that the computerized and paper-and-pencil versions of the BDI-II may be considered equivalent in terms of measurement validity. Implications for future research are discussed.

It has long been thought that computers may benefit psychological assessment (Smith, 1963). According to Brown (1984), advancements over the years in computerized technology have implications for the assessment of psychological problems. Currently, computers are “ubiquitous, affordable machines” (Olson-Buchanan & Drasgow, 1999, p. 1) that are easily available to the clinician, and the application of computers to psychological testing has been described as extensive (Johnson, 1984), permanent (Butcher, 1987), and increasing (Tseng, Macleod, & Wright, 1997). Computers have been integrated into psychological assessment to the extent that many popular and frequently used paper-and-pencil instruments have been adapted into a computerized format. However, it is not a simple matter to adapt a paper-and-pencil measure into a computerized version. One must take into account whether the two forms (conventional and computerized) are equivalent.

When one is referring to equivalency between paper-and-pencil and computerized versions of the same test, one is essentially asking whether the instruments represent alternate forms of the test in question (Harrell, Honaker, Hetu, & Oberwager, 1987). Kubinger, Formann, and Farkas (1991) noted that, no matter how fine the adaptation, unanticipated consequences may complicate an instrument’s items. According to the American Psychological Association’s (1986) Guidelines for Computer-Based Tests and Interpretations, equivalence between paper-and-pencil and computerized tests may be determined if “(a) the rank orders of scores of individuals tested in alternative

modes closely approximate each other, and (b) the means, dispersions, and shapes of
the score distributions are approximately the same, or have been made approximately
the same by rescaling the scores from the computer mode” (p. 18). An example of a
question relating to equivalence would be whether a computerized adaptation of a
conventional depression instrument somehow introduces a new construct (e.g., com-
puter aversion) to the assessment process. That is, the equivalence in this example is
one of construct validity. The importance of construct validity with regard to equiva-
lence has been noted by others (e.g., King & Miles, 1995; Neuman & Baydoun, 1998;
Turban, Sanders, Francis, & Osburn, 1989).

George, Lankford, and Wilson (1992) and Dimock and Cormier (1991) noted that
the failure to account for individual differences (e.g., computer anxiety) across modali-
ties may be a significant factor in understanding mean differences. Gardner, Discenza,
and Dukes (1993) astutely pointed out that computer anxiety plays a major role with
regard to individuals who are resistant to using computers. In their review of the
literature relating to the construct of computer anxiety, Meier and Lambert (1991)
found a number of terms used to describe this construct, including “phobia” and
“anxiety.” These authors suggested that the term “aversion” should be used when
describing this construct so that it is not confused with severe psychological conditions
that warrant clinical attention. Thus, in the present study, computer aversion is the
term used to reference the construct of computer anxiety.

Many instruments are available for the assessment of computer aversion. Those
interested in a comprehensive review are encouraged to peruse LaLomia and Sidowski
(1993). These authors provided an in-depth analysis of every computer aversion scale
available at the time of their study. LaLomia and Sidowski noted that, of the instru-
m ents examined, only the Computer Aversion Scale (CAVS; Meier, 1985, 1988)
appeared to be grounded in theory, namely, social learning theory.

Dimock and Cormier (1991) noted that individuals who lack experience with com-
puters, or who are otherwise not familiar with them, will have greater feelings of
anxiety when working with a computer than their computer-familiar counterparts.
Further, an increase in anxiety could negatively impact a person’s performance when
being assessed through a computerized format. Nurius (1990) noted that there is a lack
of research concerning differences in response patterns as a consequence of anxiety or
limited computer familiarity. Brown (1984) pointed out that individuals experiencing
symptoms of depression may encounter difficulties with computers. The idea that
computer anxiety may hinder a computerized assessment has been noted by others
(Ford, Vitelli, & Stuckless, 1996; George et al., 1992; Tseng et al., 1997).

There are many equivalence studies across a wide variety of areas (e.g., personality
assessment, intelligence assessment) available in the literature. One area receiving
increasing attention in the literature relates to the equivalence of instruments of nega-
tive affect. In their review of the literature, Schulenberg and Yutrzenka (1999) con-
cluded that there is a strong argument for the use of computerized adaptations of
paper-and-pencil instruments; however, clinicians must be wary because of the com-
plexity of the equivalence issue, particularly as it relates to instruments of negative
affect. There are many paper-and-pencil instruments of negative affect available to the