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The State–Trait Anxiety Inventory, Trait version: structure and content re-examined

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Abstract

Although the State–Trait Anxiety Inventory (STAI) is a popular measure of anxiety, some previous research suggests that the trait scale may assess depression, as well as anxiety. The factor structure of the trait items was initially examined using factor analytic procedures. Confirmatory factor analytic methods suggested that a hierarchical solution best fit the data, with one overall factor and two lower order factors. The lower order subscales created from this factor solution were examined in a sample of individuals diagnosed with an anxiety disorder. Overall, the results offered good support for the notion that the trait scale of the STAI assesses depression, as well as anxiety. One set of items appeared to assess anxiety and worry, whereas the other assessed sadness and self-deprecation. The two subscales correlated differentially with other measures of anxiety and depression in a manner that was consistent with their content. Finally, diagnostic groups and controls could be meaningfully distinguished on these subscales. Implications for the use of this measure are discussed. © 1998 Elsevier Science Ltd. All rights reserved.

1. Introduction

The State–Trait Anxiety Inventory (STAI) is one of the most long-standing and frequently used measures of anxiety, appearing in over 3000 studies (Spielberger, 1989). The scale has been translated into numerous languages and its overall factor structure has been examined in

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a variety of samples. These studies have often reported two factors (state anxiety and trait anxiety) and have shown that the two scales that measure these factors are sensitive to experimental manipulation in theoretically meaningful ways (Lazarus and Opton, 1966; Auerbach, 1973; Chapman and Cox, 1977). Moreover, the two scales appear to have high discriminant and convergent validity with other measures of anxiety and related constructs (Spielberger, 1983).

However, other important aspects of the structure of the STAI, beyond the state–trait distinction, have received less attention. It appears that more than two factors underlie the items of the scale and that a four factor solution may provide a parsimonious and meaningful representation of the data (Spielberger et al., 1980). These two additional factors were demarcated by items that have been labeled ‘state-anxiety *absent*’ and ‘trait-anxiety *absent*’ (Spielberger, 1983). The trait scale (STAI-T), in particular, was found to contain a larger proportion of ‘anxiety-absent’ items (Spielberger et al., 1980). Moreover, some of these items were replaced in the revised form of the inventory, suggesting that such items were less desirable than those that measured the presence of anxiety (Spielberger, 1983). Little is known about these ‘anxiety absent’ items or whether this factor is replicable in other samples. A direct examination of the ‘anxiety absent’ items could clarify whether they are best interpreted as anxiety-related or whether an alternative explanation for the structure of the trait scale is more plausible.

Further examination of the structure of the STAI seems particularly important in light of recent attempts to differentiate the constructs of anxiety and depression. Given that instruments assessing anxiety and depression tend to be highly correlated, with correlations ranging from 0.45 to 0.75, distinguishing between these two states has become an important focus of research (Beck and Steer, 1990; Lovibond and Lovibond, 1995a). Any instrument designed to measure anxiety or depression alone requires careful construction to avoid overlap with content based on the other construct (cf. Lovibond and Lovibond, 1995a).

Research on the structure of instruments used to assess anxiety and depression suggests that a hierarchical, tripartite model provides an excellent framework in which to conceptualize the constructs assessed by these measures (Clark and Watson, 1991; Steer et al., 1995; Joiner, 1996; Zinbarg and Barlow, 1996). Based on this model, anxiety and depression are viewed as having overlapping and distinct features. Whereas *negative affect* (e.g. distress, irritability, tension) seems to be a feature of both anxiety and depression, low levels of *positive affect* (e.g. happiness, confidence, enthusiasm) appear to be unique to depression and *physiological hyperarousal* (e.g. racing heart, sweating, etc.) appears to be primarily associated with anxiety (Clark and Watson, 1991). Ideally, a measure of anxiety should assess both the general factor corresponding to negative affect, as well as physiological arousal, which is more specific to anxiety. However, in order to minimize the measurement of depression, a measure of anxiety should not assess the presence of low positive affect.

The construction of the STAI, in both its original and revised forms, predated recent advances in the understanding of the relationship between anxiety and depression. Indeed, the items of the trait scale that represent the ‘anxiety-absent’ dimension may possibly reflect depression (i.e. low positive affect) rather than anxiety. Based on content, these items appear to assess high levels of dysphoric mood and harsh self-judgements, both of which are more typically associated with depression than anxiety (e.g. I wish I could be as happy as others

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