

The Depression Anxiety and Stress Scale (DASS): The study of Validity and Reliability

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Abstract

This study investigated the validity and reliability of the Turkish version of the Depression Anxiety Stress Scale (DASS). The sample of the study consisted of 590 university students, 121 English teachers and 136 emotionally disturbed individuals who sought treatment in various clinics and counseling centers. Factor loadings of the scale ranged from .39 to .88. Findings from discriminant validity showed that the DASS discriminates the normal and clinical population. Concurrent validity coefficients were found to be high (.87 and .84, respectively). Cronbach - internal consistency of the entire scale was .89. Item-total correlations ranged from .51 to .75. Test-retest and split-half reliability coefficient scores were .99 and .96 respectively. These results demonstrate that the DASS is a valid and reliable instrument.

Key Words

Depression, Anxiety, Stress, Validity, Reliability.

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Although there is an agreement that anxiety, depression, and stress are conceptually distinct constructs, a paucity of research exists to empirically support the distinction. Many would agree that anxiety, depression, and stress are forms of general affective distress. Distress, however, may be manifested in a number of different ways. Some may evidence negative affective distress by withdrawing or isolating; others may evidence more hyper-arousal and agitation symptoms. The question becomes to what extent we can differentiate between these three domains or “Are they better explained by one underlying common factor?” Findings from factor analytic studies suggest that there are three domains although they are moderately correlated with each other (Brown, Chorpita, Korotitsch, & Barlow, 1997; Dobson, 1985a; 1985b; Gotlib, 1984; Lovibond & Lovibond, 1995a; 1995b; Richter, Werner, Heerlein, Kraus, & Sauer, 1998).

The strong association has led investigators to assess whether these constructs are, in fact, discriminant mood states. Researchers have factor analyzed items from anxiety and depression questionnaires to assess their discriminant validity. Mendels, Weinstein, and Cochrane (1972) were one of the first to factor analyze items from depression and anxiety questionnaires. Self-rating measures included the Beck Depression Inventory, the Zung Self-Rating Scale, the Costello-Comrey Scales for Depression and Anxiety, the Minnesota Multiphasic Personality Inventory Depression Scale, and the Rosen Depression Scale. Findings indicated no evidence for two separate factors of anxiety and depression. A confirmatory factor analysis of the Beck Anxiety and Beck Depression Inventory items in depressed clients also suggested that a single factor of negative affectivity more accurately represented the questionnaire items (Enns, Cox, Parker, & Guertin, 1998). This result has also been found in patients suffering from chronic pain. Results of factor analysis suggested that anxiety and depression may be more structurally related to an underlying dimension of negative affectivity

(Nelson & Novy, 1997). A dimensional approach of general negative mood may be more useful given the inability to differentiate between these two constructs (Feldman, 1993).

The difficulty discriminating anxiety and depression items is not exclusive to clinical samples. Research studies with nonclinical samples have also failed to detect clear differences between these two constructs (Dobson, 1985b; Feldman, 1993; Gotlib, 1984). Gotlib (1984) factor analyzed seven different measures of general maladaptive functioning and found the items mostly loaded on one factor. This factor was labeled "general psychological distress".

Although many have found difficulties in discriminating between anxiety and depression in both clinical and nonclinical samples (Clark, Steer, & Beck, 1994; Enns et al., 1998; Feldman, 1993; Gotlib, 1984; Mendels et al., 1972; Nelson & Novy, 1997), others have found that anxiety and depression can reliably discriminated (Cox, Swinson, Kuch, & Reichman, 1993; Hewitt & Norton, 1993; Knight, Waal-Manning, & Godfrey, 1983). Some have suggested that difficulties differentiating between anxiety and depression are largely a function of the inadequate samples (Cox et al., 1993). They state most studies have utilized nonclinical samples (i.e., college students; Dobson, 1985b; Gotlib, 1984) or mixed psychiatric samples (Feldman, 1993; Hewitt & Norton, 1993; Mendels et al., 1972; Nelson & Novy, 1997). The use of nonclinical samples or samples not homogenous with respect to anxiety or depression may result in restricted variance. Differentiation between anxiety and depression may only be possible in samples where anxiety or depression are more pronounced resulting in greater variability in item scores (Cox et al., 1993).

The Depression Anxiety Stress Scale (DASS)

The DASS (Lovibond & Lovibond, 1995a) is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety, and stress. The DASS was constructed not me-

rely as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress. The DASS should thus meet the requirements of both researchers and scientist-professional clinicians.

The DASS is a 42-item self-report inventory and was developed to extend the understanding and differentiation of the most commonly reported difficulties; depression, anxiety and stress. Further, the intent was to identify the core features of each construct and delete any item overlaps that were associated with difficulties in differentiating the three constructs. The DASS has been normed both on 950 1st-year university students and with a clinical sample and found to have strong psychometric indices (Brown et al., 1997). An exploratory factor analysis has yielded a three-factor structure which is similar to those found with a nonclinical sample (Lovibond & Lovibond, 1995a, 1995b). Factor loadings ranged from .36 to .80 for the depression scale, .31 to .64 for the anxiety scale, and .40 to .76 for the stress scale. Correlation coefficients among the three factors were: Depression-anxiety = .38; anxiety-stress = .46 and depression-stress = .54. In the study of convergent validity, the DASS was found highly correlated with the Beck Depression and Beck Anxiety Inventories (.74 and .81 respectively).

. The total internal consistencies of the depression, anxiety, and stress scales were found fairly high (.96, .89, and .93 respectively). Test-retest reliability score of the scale was .48.

Although there are numerous self-report scales of depression, anxiety, and stress, the DASS is unique given that these three constructs are assessed by one scale. This is especially important given the push for faster delivery of services in both the medical and psychological fields. The usefulness, appropriateness, and meaningfulness of the results of this measure are only important to the extent it can provide an adequate assessment of these three doma-

ins and accurately differentiate between them. This scale can be used not only in clinical research but in research that aimed to assess student's general emotional states. Therefore the purpose of this research is to translate the DASS into Turkish and to investigate the psychometric properties of the Turkish version.

Method

Participants. The validity and reliability studies of DASS were conducted on four sample groups. The first group was 590 university students who were enrolled in different programs at Sakarya University in Turkey. These programs were Turkish language ($n=109$), counseling ($n=88$), pre-school education ($n=76$), computer education and instructional technologies ($n=95$), elementary school education ($n=107$), and social science education ($n=115$). Of the participants, 292 were females and 298 were males. The mean age of the participants was 20 years. The second group was 121 English teachers (56 females, 65 males) and mean age of this sample was 29. The third group that participated in this study was 136 normal and 136 emotionally disturbed people who suffered from depression, anxiety, and stress. The fourth group consisted of 157 university students (87 females, 70 males) from Sakarya University

The translation of the DASS. Primarily the DASS was translated into Turkish by five experts in English literature department. After that the items were back-translated into English. The consistency of the items between the Turkish and English versions of the scale was examined. Finally, these experts discussed the Turkish form and along with some corrections this scale was prepared to use. A pilot study was carried out before validity and reliability analyses on 13 graduate students who were fluent in English and. In addition, they were asked to express their views about the Turkish form. According to their views, some corrections were made. A study of language equivalence was executed and then the validity and reliability analyses of the scale were examined. In this study construct,

concurrent, content, and discriminant validities and test-retest, Cronbach alpha internal consistency, half-split reliabilities and item analysis of DASS were examined. This instrument is a 42-item self-report inventory and each item is rated on 4-Point Likert-type scale ranges from “0-always false” to “3-always true” to report respondents’ level of agreement with the 40 items. High scores indicate strong agreement. The DASS takes approximately fifteen minutes to complete.

Results

The findings of language equivalence indicated that correlation between the Turkish and English forms of the DASS was high (.99 ($p < .001$), for entire scale, .97 ($p < .001$) for depression, .98 ($p < .001$) for anxiety, and .97 ($p < .001$) for stress). The results of exploratory factor analysis demonstrated that the items loaded on three factors; depression, anxiety, and stress, similar to the original form. The amount of total variance explained by three factors was nearly 48%. Factor loadings ranged from .39 to .88 for depression, from .59 to .78 for anxiety, and from .56 to .82 for stress. Also the correlation coefficients between the scales were depression-anxiety $r = .83$, depression-stress $r = .79$, and anxiety-stress $r = .76$. For concurrent validity the relationships between the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI) and the Turkish form of the DASS were calculated. These results showed that the relationship between depression subscale of the DASS and BDI was .87 and the relationship between anxiety subscale of the DASS and BAI was .84. Finally clinical and non-clinical samples were compared for discriminant validity. Findings from this study showed that the DASS can discriminate the normal and clinical population. The internal consistencies of the DASS, using Cronbach alpha, for the entire scale was .89, and for depression, anxiety and stress were .90, .92, and .92 respectively. Findings also demonstrated that item-to-total correlations ranged from .51 to .75. Test-retest reliability scores

of the DASS over three-week period were .99 for entire scale and .98 for three subscales. Lastly the Spearman-Brown split-half reliability coefficient scores were .96 for entire scale and .95, .98, and .95 for subscales, respectively.

Discussion

The purpose of this study was to translate DASS into Turkish and to examine its psychometric properties. Overall findings demonstrated that this scale had acceptable and fairly high validity and reliability scores and that it may be used as an efficient instrument in order to assess emotional states of university students. So it can be said that DASS is a reliable and valid measure of the constructs it was intended to assess. Nevertheless, further studies that will use DASS are important for its measurement force.

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