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Research report

Adaptation and validation of the depression, anxiety and stress scale (DASS) to Brazilian Portuguese

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ABSTRACT

Background: Depression and anxiety have been associated with a range of symptoms that often overlap. Depression, Anxiety and Stress Scale-21 (DASS-21) is a single instrument to assess symptoms of depression, anxiety and stress. This study aimed to adapt and validate the DASS-21 for use in the Brazilian Portuguese language.
Methods: The DASS-21 has been adapted following the translation–back translation methodology from English to Portuguese. 242 subjects completed the following assessments: the DASS-21, the Beck Depression Index (BDI), Beck Anxiety Index (BAI) and the Inventory of Stress Symptoms of Lipp (ISSL).
Results: The Kaiser–Meyer–Olkin (KMO) result was .949, indicating that the adequacy of the model was high. Cronbach's alpha was .92 for the depression, .90 for the stress, and .86 for the anxiety, indicating a good internal consistency for each subscale. The correlations between DASS scale and BDI scale, BAI scale and ISSL inventory were strong. The factorial analysis and distribution of factors among the subscales indicated that the structure of three distinct factors is adequate.
Limitations: Older subjects over 65 years of age were not largely represented in this sample. A study specific to this elderly population should be conducted. Another limitation of the study was education level. The impact of low education in its applicability should be considered.
Conclusions: The findings support the validity of the Brazilian Portuguese version of the DASS-21 and add to the evidence of the DASS-21 quality and ability to assess emotional states separately, eliminating the use of different instruments to assess these states.

1. Introduction

The diagnosis of depression or anxiety is associated with a range of symptoms and organic diseases that often overlap (Clark and Watson, 1991; den Hollander-Gijsman et al., 2012). In addiction, stress has been demonstrated to be a risk factor for the development of anxiety and depression, affecting quality of life and hampering productivity (Kehne, 2007; Kehne and Cain, 2010).

Anxiety and depression may be described as different points on the same "continuum", different manifestations of the same pathology, different syndromes associated with other mood disorders, distinct phenomena which may develop from one to the other over a period of time, or as different pathologies (Clark and Watson, 1991).

Clark and Watson (1991) proposed the Tripartite Model of Anxiety and Depression that considers the following factors: negative affect (NA), which is present in both anxiety and depression; reduced positive affect (PA), which is common in depression; and physiological hyperactivation (FH), which is common in anxiety. Issues associated with mood and affective disorders often encompass the aspect of subjective wellbeing (or lack thereof), such as anxiety and depression. In this sense, affectivity is related to wellbeing, psychological distress and suffering that may or may not be experienced by the individual (Clark and Watson, 1991).

The conceptual basis of the Depression, Anxiety, and Stress Scale (DASS) was based on the tripartite model of anxiety and depression. This model proposes that the disorder of affect (and its subtypes) is a continuum between depression, anxiety and stress. Depression is characterized by low positive affect, hopelessness, low self-esteem and low encouragement. Anxiety is associated with physiological hyperstimulation and stress resulting from persistent tension, irritability and a low threshold for frustration or disruption (Apóstolo, 2010). Thus, depression, anxiety and stress have common features, including negative affect, emotional distress and physiological changes in the hypothalamic-pituitary-adrenal axis (HPA) (Mello et al., 2007).

Although there are many definitions of stress, the concept of stress has conventionally been defined as an emotional experience accompanied by biochemical, physiological, cognitive and behavioral aspects. Originally, the concept of stress arose from the

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observation that different types of physical or psychological conditions threatened homeostasis and initiated a cascade of physiological reactions, known as the "general adaptation syndrome" (Selye, 1936).

The present study examined the four phases of stress that were defined by Lipp (2005) and were expanded from a three phases model developed by Selye (1936). The stress phases proposed by Lipp (2005) include alertness, resistance, exhaustion and near-exhaustion. This model defines stress as "a complex reaction and overall body components involving physical, psychological, mental and hormonal aspects, which develops in stages or phases".

For the DASS, stress is defined as an emotional state that varies according to an individual evaluation of the situations experienced as a threat, harm or challenge. The DASS requires an assessment of demand and a secondary assessment of coping, with the symptoms and emotions serving as the main concept organizer of the stressful experience as it includes stress and coping strategies (Apóstolo et al., 2006).

Depression is an emotional and mental disorder that has a very complex etiology, despite having well-defined symptoms. The etiology of depression includes genetic, biological and environmental factors. The environment factors model focuses on "the emergence of depressive symptoms" (Stroud et al., 2008).

According to the conception of the DASS, depression is an emotional disorder, but has no specific emotion. Depression may be associated with a range of emotions, such as anxiety, anger, guilt and shame. Depression is usually trigged by unfavorable living conditions and may result from the experience of a great loss or from feelings of hopeless or that life is not worth living (Apóstolo et al., 2006).

Anxiety is a vague and unpleasant feeling of fear or apprehension that may be characterized by a tension or discomfort derived from the anticipation of danger (Graeff, 2007). Anxiety is associated with the perception of certain environmental contexts (places, people, activities, etc.) that are compared to previous experiences (memory) and that activate specific brain systems with adaptive functions (Gray, 1987). In this sense, anxiety may be considered as an emotion that is related to a "behavior risk evaluation" (Graeff, 2007).

Lovibond and Lovibond (2004) developed the DASS as a single instrument to assess symptoms of depression and anxiety in an interactive and empirically oriented process. The authors also identified a third factor defined as stress. Their research is based on the tripartite model of anxiety and depression. The DASS was conceptualized in the form of a 42 items assessment consisting of three subscales with 14-items each. The items refer to symptoms experienced by the subject in the previous week and use a Likert scale ranging from 0 ("does not apply to me at all") to 4 ("most of the time applies to me"). Although the full version (DASS-42) provides data on specific symptoms of each emotional state assessed, the authors claim that the reduced version of the instrument (DASS-21) has the same structure as the full version but only requires half the time to complete the investigation of symptoms (Lovibond and Lovibond, 2004).

DASS-21 has already been translated to Portuguese from Portugal (Apóstolo et al., 2006). However, Brazilian Portuguese is slightly different from that spoken in Portugal. Furthermore, the sociocultural context of Brazil is quite different from that present in Portugal. This study aimed to adapt and validate the DASS-21 for use in the Portuguese language spoken in Brazil.

2. Method

The present study aimed to measure the properties and psychometric equivalence of the DASS-21 in a Brazilian sociocultural context. The instrument's validity was defined by its ability to demonstrate that it measures the indicators it is intended to measure, in this case, emotional state disorders.

2.1. Participants

The study included patients and caregivers in an outpatient setting in the city of Santo André/São Paulo, Brazil. Data were collected from November 2011 to May 2012. Inclusion criteria included an age between 18 and 75 years and frequent visits to the clinic.

2.2. Procedures

The DASS-21 original English version was sent to a bilingual teacher (English – Portuguese) for translation to Portuguese (version 1, V1). V1 was given to a teacher of Portuguese language for semantic adjustments and idiosyncratic differences (version 2, V2). Together with the researcher and other mental health care professionals, V2 was compared to the final Portuguese version tested in Portugal. Analysis of content, meaning and adaptations were made to the Portuguese language used in Brazil to ensure an understanding of the content (Beaton et al., 2000). The scale was then translated back to the original language (English). In this sense, the goal was to minimize semantic interpretations and misunderstandings, to ensure the best possible adaptation to the Brazilian culture.

A pre-test was conducted with a sample of six subjects during an outpatient medical visit, which revealed no difficulties in understanding the content of the statements. The scale was later applied to a pilot group ($N=48$) with similar characteristics to the final sample. The assessment was answered pertinently, thereby demonstrating the subjects had a comprehension and understanding of the propositions.

A back or reverse translation of the scale from Brazilian Portuguese to the original form written in Australian English was performed. This back translation was performed by a native teacher of the English language without prior knowledge of the original scale.

2.3. Subjects

Participants were invited to participate in the study during the period in which they visited an outpatient clinic for consultations and examinations. The subjects completed the following assessments: the DASS 21, the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI) and the Inventory of Stress Symptoms of Lipp (ISSL). The completion of all four instruments lasted 30 min on average.

2.4. Instruments

To validate the DASS, other previously validated instruments were included in the assessment: the BDI for depression (Beck et al., 1961; Gomes-Oliveira et al., 2012; Gorenstein and Andrade, 1996; Gorenstein et al., 1999;), the BAI for anxiety (Beck et al., 1988; Gorenstein and Andrade, 1996) and ISSL for stress (Lipp, 2005). Beck instruments were used in the construction of the full version DASS that consists of 42 items. There is no instrument in the literature that is comparable to the DASS stress subscale. This subscale has affinities with measures of negative affect and was originally compared to scales that measure risk for coronary heart disease (Lovibond and Lovibond, 2004). The emphasis in these previous studies was to evaluate certain traits or symptoms, not the emotional state itself (Lovibond and Lovibond, 2004). The stress subscale was compared to a developed and validated Brazilian instrument known as the