

# Psychometric Properties of DASS-21 and Predictive Model of Negative Affectivities in Individuals with Different Pain Conditions

Joao Maroco

*Received: 14 December 2019 Accepted: 4 January 2020 Published: 15 January 2020*

## Abstract

The aims of this cross-sectional study were i) to evaluate the psychometric properties of the Depression Anxiety and Stress Scale (DASS-21) in adults with different temporal conditions of pain; ii) to compare the Depression, Anxiety and Stress subscale scores in different individuals; iii) to estimate the prevalence of negative affectivity; and iv) to elaborate a predictive model considering aspects related to the development of negative affectivity. A total of 1,150 individuals (mean age: 38.6, SD = 10.8 years; 78.9

## Index terms—

## 1 Introduction

egative affectivity is a tendency of a person to experience negative emotions [1], which may manifest as a state or trait, i.e., be temporary with varying intensities over time or a personal disposition. This is a complex construct that includes negative emotions such as, for example, stress, anxiety, and depression. Research on stress, anxiety, and depression has received significant attention because of the increased prevalence of these conditions and their impact on people's lives.

Although some overlap exist, stress, anxiety, and depression are distinct conditions. According to Lovibond and Lovibond [2], stress is defined as a persistent state of over-excitement that reflects as a constant difficulty in meeting and coping with everyday difficulties and challenges. Anxiety involves the anticipation of negative events that normally, but not exclusively, are of a psychological nature. Still, anxiety is an adaptive state or a psychological disorder and what determines the difference between these occurrences is the severity of this condition and the duration of this state [3]. Depression, in turn, is a psychopathology with complex etiology that involves several symptoms such as feelings of distress, hopelessness, devaluation of life, self-deprecation, disinterest, reduced motivation, and inertia. Stress and anxiety can have positive valence when they occur as an adaptive/physiological reaction or negative valence when they trigger psychological disorders as a result of ineffective coping strategies [5].

The measurement of stress, anxiety, and depression is a challenge for which several instruments have been proposed. The Depression, Anxiety and Stress Scale (DASS) is an interesting screening tool because it simultaneously evaluates the three negative affectivity conditions and can be used in both clinical and research contexts [2]. The theoretical construction of this instrument was based on the tripartite model of anxiety and depression proposed by Clark and Watson [6], which seeks the maximum differentiation between N evaluate the psychometric properties of the Depression Anxiety and Stress Scale (DASS-21) in adults with different temporal conditions of pain; ii) to compare the Depression, Anxiety and Stress subscale scores in different individuals; iii) to estimate the prevalence of negative affectivity; and iv) to elaborate a predictive model considering aspects related to the development of negative affectivity. A total of 1,150 individuals (mean age: 38.6, SD = 10.8 years; 78.9% women) participated. The fit of the model of DASS-21 to the data was estimated by confirmatory strategy. The Depression, Anxiety and Stress mean scores of participants with different temporal conditions of pain were compared. The association between Depression, Anxiety and Stress and the presence or absence of pain was assessed by the chi-square test and odds ratio (OR). A multiple logistic regression model was developed

# 1 INTRODUCTION

---

to estimate the probability of negative affectivity in the sample. The model of DASS-21 presented adequate fit to the data ( $\chi^2/df = 6.24$ ; CFI = 0.98; TLI = 0.98; RMSEA = 0.067).

Convergent validity (AVE = 0.57-0.74) and reliability ( $\alpha$  and CR = 0.90-0.95) were also adequate. The mean scores of negative affectivity were higher among individuals with pain regardless of pain type (F Welch = 14.92-19.11;  $p < 0.001$ ).

Having pain increased the risk of negative affectivity (OR = 2.43-2.90). Having religion was a protective factor for the occurrence of Depression (OR = 0.57) and Anxiety (OR=0.60). The presence of chronic disease, pain, insomnia, and high economic level were risk factors for Depression (OR = 1.50-2.46) and Anxiety (OR = 1.71-3.95). For the occurrence of Stress, only the presence of pain and insomnia were significant risk factors (OR = 1.96-2.70). In conclusion, individual characteristics and pain are relevant factors for experiencing negative affectivity and should be considered in studies and clinical management.

the two conditions by separating specific characteristics and grouping shared symptoms. The Tripartite Model of Anxiety and Depression helps explain the comorbidity between anxious and depressive symptoms and disorders. This model divides the symptoms of anxiety and depression which helps explain common and distinct aspects of depression and anxiety. The tripartite model consists of general distress, physiological hyperarousal (specific anxiety), and anhedonia (specific depression), and a model with diagnosis of mixed anxiety-depression was proposed. The DASS allows the assessment of anxiety and depression prevalence and the risk of their occurrence. Thus, it can be used to identify these conditions in a population as well as develop preventive and curative measures.

Events and characteristics associated with negative affectivity include pain and chronic illness, insomnia, and individual characteristics (such as sex, age, religion / spirituality, work activity and economic level). Pain is a stressful condition that can trigger a cascade of psychophysiological processes and elicit emotional reactions.

Pain-related anxiety and depression have often been reported in patients with chronic pain and may contribute to negative outcomes of pain conditions such as overestimation of pain intensity, lower chance of symptom regression, greater functional impairment in physical and social aspects [77] [78][9]. Likewise, individuals with chronic diseases may also present concomitant depression and anxiety, since chronic diseases may limit the person's actions and engagement in gratifying activities [710], favoring his or her isolation [711]. However, the evaluation of negative affectivities in individuals without chronic pain condition is still scarce. Thus, studies that investigate the influence of different pain conditions on these affectivities may be relevant for clinical management.

With regard to insomnia, this can be defined as difficulty in initiating or maintaining sleep [712]. Studies report evidence of a bidirectional relationship between insomnia and anxiety and depression, i.e., insomnia may be the cause or consequence of these emotional states [712, 773]. Thus, the evaluation of insomnia in the context of depression and anxiety is important, since it can negatively influence a person's life; insomnia could be used as a marker for anxiety and depression [712].

Regarding demographic characteristics, the literature has pointed out that different characteristics influence the occurrence of negative affectivities. However, some seem to be more commonly addressed as gender, religion and economic level of individuals. Sex has a significant impact in depression, anxiety, and stress, with women having, in general, higher scores than men [14, 775]. According to Iqbal et al. [14], this is due in part to women expressing their emotions more easily than men. For some authors [716] [717] [718] this fact refers to the socio-cultural repertoire that influences the interpretation of the perception of emotional representations that are often supported by sexual stereotypes where men are attributed strength and endurance and women emotion and affection. Thus, Fernández and Vergara [19] emphasize that the greatest expression of women's emotional experience is related to socio-cultural and interpersonal behaviors that, in turn, reinforce the ideologies and justifications for existence of different behaviors manifested by men and women.

In addition, studies have reported an inverse relationship between age and negative affectivity, with younger individuals experiencing more negative emotions, which decline with advancing age [720, 771]. Although older people are more prone to present compromised health and persistent pain conditions, according to Wood et al. [22], their lower negative affectivity may be related to less exposure to workrelated stressors and dealing with pain differently from younger individuals, generally accepting painful conditions as a part of the aging process. Another aspect is that younger people usually have a smaller set of coping strategies than older people [23].

The reported association between religion/spirituality and negative affectivity [24][25][26] is based on religious people having positive coping strategies for difficult experiences, as they undergo psychological adaptations more easily, increasing their resilience and reducing feelings of depression, anxiety, and stress. Thus, religion can act as a protective factor for negative affectivity [26].

The role of social factors, such as work activity and economic level, in negative affectivities have also been highlighted [22],[27][28][29]. Work activities have been seen as a dual factor [28]: positive, for being the source of subsistence, and negative, for often being a source of stress that can affect mental health [22]. These approaches reflect the psychosocial conception of work, in which affectivity, the social role of work, and the physical aspects of the activity are considered together [28]. The difficulty in dealing emotionally with workrelated stressors may favor negative feelings and trigger disabling illnesses, including mental health problems. In addition, some studies indicate an inverse association between the economic level and depression and stress [29][30][31]. According to Adler et al. [29], a high purchasing power reduces the risk of facing economic problems, which can reduce the risk of negative affectivity.

---

Thus, studies that seek to identify aspects related to stress, anxiety, and depression in samples with different characteristics (e.g. different pain conditions) are relevant for providing evidence that can be accounted for and incorporated into clinical practice. These studies may lead to a more integrated, individualized, and decisive evaluation of emotional conditions, preventing or maintaining patients' mental health.

This study was carried out with the objective of i) evaluating the psychometric properties of the Depression, Anxiety and Stress Scale (DASS-21) in adults with different pain types (no pain, acute pain, chronic recurring pain, and chronic continuous pain), ii) comparing the scores of depression, anxiety, and stress among groups, iii) estimating the prevalence of negative affectivity, and iv) elaborating a predictive model taking into account aspects relevant to the occurrence of depression, anxiety, and stress in the sample.

## II.

### 3 Methods

#### 4 a) Study design and sampling

The study presented a cross-sectional design with a non-probabilistic sampling (for convenience). Adults (age ≥ 18) seeking dental care at clinics (Radiology, Periodontics, Restorative Dentistry, Emergency, Endodontics, Prosthetics, Temporomandibular Dysfunction, Oral Medicine, and Surgery) of the School of Dentistry of Araraquara, from 2015 to 2016, were invited to participate. The establishment of the target population (dental patients) was based on the fact that it was composed of individuals with different painful conditions and without pain, which was necessary to compose the subsamples of the present study. The option of working with dental patients was based on the researchers' access to the clinics of the School of Dentistry of Araraquara. Only individuals aged 18 or over and who agreed to participating in the study were included; individuals who sought care at the special patients' clinics were excluded.

The minimum sample size was estimated using the proposal by Kim [32], which considers the degrees of freedom of the model (df), the significance level (α) and the power analysis. Considering that DASS-21 presents df = 186 and using α = 5% and power = 80%, the minimum sample size estimated was 116 subjects. To calculate the sample size, we used the software IBM SPSS Statistics 22 (IBM Corp., Armonk, N.Y., USA).

Because the study establishes a sample of individuals with four different pain conditions (no pain, acute pain, chronic recurring pain, and chronic continuous pain), the minimum sample size was considered for each one of these groups.

#### 5 b) Measuring instrument

Participants were classified into groups according to the pain condition. It should be clarified that, although the participants were dental patients, pain investigation was performed considering any painful event not limited to dental issues (dental pain = 37.4%; headache = 16.7%; orofacial musculoskeletal = 1.6%; bodily musculoskeletal = 37.2%; bodily other pain = 7.1%). For this, the proposal from the International Association for the Study of Pain (IASP) was considered [33,34]. Individuals were first asked about the presence or lack of pain in the last 24 hours. Those who reported no pain in the prior 24 hours were included in the "no pain" group. Individuals who reported pain were also asked regarding the time of pain onset. If the pain onset occurred less than 3 months ago, the individual was included in the "acute pain" group. If the individuals reported pain onset equal to or greater than 3 months, they were asked about the temporal pattern of pain (crises/episodes or continuous). Those who reported recurrent pain were included in the "chronic recurring pain" group and those who reported continuous pain were included in the "chronic continuous pain" group. Demographic characteristics were collected using a questionnaire.

Negative affectivity was measured with the DASS-21. The DASS-21, proposed by Lovibond and Lovibond [22], has a three-factor structure (items: Depression: 3, 5, 10, 13, 16, 17, 21; Anxiety: 2, 4, 7, 9, 15, 19, 20; Stress: 1, 6, 11, 12, 14, 18) and items responses in a 4-point Likert scale ranging from 0 to 3. Also, the fit to the sample of a second order-hierarchical model (SOHM) with the "negative affectivity" factor was tested to broaden the possibilities of using the instrument to track negative affectivities as suggested by Lovibond and Lovibond [22]. Currently, there are three Portuguese versions of the DASS-21, two for Portugal [35,36] and one for Brazil [37]. Thus, before using the instrument, a single Portuguese version was developed following the spelling agreement established among the Portuguese-speaking countries in 2009 so that the instrument could be more widely used. After obtaining a consensus among the authors of the study, the new version was back translated to the original English version and the equivalence between the versions was verified. A team of Psychology and Psychometrics specialists (2 Brazilians and 2 Portuguese) individually and independently evaluated and confirmed the semantic, idiomatic, cultural and conceptual equivalence of the new version with the original version. The new version was compatible with Vignola and Tucci proposal [37], with minor changes (S1 Table 1).

#### 6 c) Sample characterization

A total of 1,167 individuals agreed to participate in the study. Of these, 1,150 answered all DASS-21 items (no pain: n = 336, acute pain: n = 389, chronic recurring pain: n = 247, and chronic continuous pain: n = 178). It

should be clarified that the 17 subjects who did not answer the scale completely only did not fill 1 item. In order to fit the models to the sample, only the fully answered instruments were used, but for the other analyzes the missing data were imputed by the regression method using SPSS 22.0 (SPSS An IBM Company, Chicago, IL).

The mean age of participants ( $n = 1,167$ ) was 38.6 (SD = 10.8) years. The majority of the participants were women ( $n = 921$ , 78.9%), reported working ( $n = ??$  presents characterization of the total sample and according to the groups. It is important to clarify that in order to identify the presence / absence of chronic disease and insomnia, the individuals were asked whether this condition existed or not, so that these variables were self-reported.

## 7 Table 1: Sample characterization

## 8 III. Psychometric Properties Analysis a) Construct validity

The construct validity of DASS-21 model to the data was assessed using the factorial and convergent validities [38,39]. The factorial validity was estimated using a confirmatory strategy (Confirmatory Factor Analysis -CFA) to verify the fit of the theoretical structure to the data. For this, both the first-order three-factor model and the second-order hierarchical model (SOHM) were tested (Fig 1). The Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimation method was applied. The choice of this estimator was related to the fact that it is the most appropriate for categorical data [40]. The goodness-of-fit indices used were the ratio of chi-square to degrees of freedom ( $\chi^2/df$ ), the comparative fit index (CFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The factor loadings of the items (?) were also considered. The fit of the model was considered adequate when  $\chi^2/df < 2.00$ , CFI and TLI  $> 0.90$ , and RMSEA  $< 0.10$  [39,41].

The invariance between the samples was estimated by multigroup analysis. The CFI difference ( $\Delta CFI$ ) was used for factor loadings (?) and thresholds (t). Invariance was assumed when absolute value of  $\Delta CFI$  was less than 0.01 [42].

The analyses were conducted using the MPLUS software (version 7.2, Muthén & Muthén, Los Angeles, USA). The convergent validity of each factor was estimated from the Average Variance Extracted (AVE) [39,43]. Value of AVE  $> 0.50$  was considered adequate [43].

### IV.

## 9 Reliability

The reliability was estimated using the composite reliability (CR) and the ordinal alpha coefficient (?) [39]. Values of CR and  $> 0.70$  were considered adequate [39].

## 10 a) Comparison of Depression, Anxiety and Stress scores between groups

After evaluating the psychometric properties of the DASS-21 for different samples (total sample and groups), the mean scores of Depression, Anxiety and Stress were compared between the individuals with different temporal conditions of pain (no pain, acute pain, chronic recurring pain, and chronic continuous pain). The assumptions of normality (Skewness: 0.84-1.98, Kurtosis: 0.04-5.01; reference values:  $Sk < 3$  e  $Ku < 7$  [39]) and homoscedasticity were tested and the data were considered heteroscedastic (Levene's test: 3.473-11.588;  $p < 0.001$ ) and therefore, the variances are unequal. Thus, Welch's ANOVA was used to compare the scores between the groups. Multiple comparisons were made using the Games-Howell post-hoc test. The significance level was 5%. The statistical analyses were performed in the IBM SPSS Statistics 22 (IBM Corp., Armonk, N.Y., USA).

## 11 b) Prevalence of Negative Affectivity

The distribution of individuals according to the negative affectivities (Depression, Anxiety and Stress) considering the classification of severity (normal, mild, moderate, severe and extremely severe) recommended by Lovibond and Lovibond [??2] was presented. The prevalence of negative affectivity was calculated per point (p) and by 95% confidence interval (95% CI). The association between Depression, Anxiety and Stress and the presence/absence of pain was estimated using the chi-square test. The odds ratio (OR) was calculated to verify the chance of an individual with pain presenting Depression, Anxiety, Stress in relation individuals without pain. Therefore, negative affectivities were dichotomized considering their presence when severity was classified as mild, moderate, severe or extremely severe (classification recommended by Lovibond and Lovibond [??2]). The distribution of the individuals according to the presence of the different negative affectivity components (Depression, Anxiety and Stress) considering the number of these components present for each group was also calculated. The statistical analyses were performed in the IBM SPSS Statistics 22 (IBM Corp., Armonk, N.Y., USA).

## 12 c) Predictive Model

A multiple binary logistic regression model was elaborated to estimate the probability of occurrence of Depression, Anxiety, Stress and Negative Affectivity in the total sample excluding participants with missing data in the demographic questionnaire ( $n = 1,082$ ) and according to the variables of interest (reference class: female, worker,

---

having religion, high economic level, presence of chronic disease, presence of pain in the last 24 hours, having insomnia). The backward stepwise was used to elaborate the model. The statistical analyses were performed in the IBM SPSS Statistics 22 (IBM Corp., Armonk, N.Y., USA).

## 13 d) Procedures and Ethical Aspects

Individuals agreed and signed the informed consent form to participate in the study. A face-to-face interview was conducted by a single interviewer. The interviews were carried out in a reserved space in the waiting room of the participating clinics.

The study was approved by the Research Ethics Committee of the São Paulo State University (Unesp), School of Dentistry, Araraquara (CAAE Registry No.: 14986014.0000.5416).

We clarify that the design and presentation of the results of this study followed the guideline for reporting observational studies -STROBE ([www.equator-network.org](http://www.equator-network.org)).

V.

## 14 Results

### 15 a) Psychometric properties analysis

Table ?? shows the indicators of fit of the Depression, Anxiety and Stress Scale model (DASS-21) to the data of a sample of adult individuals without pain and with different temporal conditions of pain. The first-and second-order models of DASS-21 presented good fit to the data pointing to adequate factorial validity in all samples. It was also observed that the convergent validity and reliability of the DASS factors were adequate. Still, a high explained variance of the Depression and Stress factors of the scale is observed.

### 16 b) Comparison of Depression, Anxiety and Stress scores between groups

### 17 c) Prevalence of negative affectivity

Table ?? shows the distribution of individuals according to the negative affectivity (Depression, Anxiety and Stress) considering the classification of severity. It is noted that the presence of pain significantly increases the chance of an individual having negative affectivities.

### 18 d) Predictive model

The multiple logistic regression model elaborated to estimate the probability of occurrence of Depression, Anxiety, Stress and Negative Affectivity in the total sample ( $n = 1,167$ ) is shown in Table 5. Having religion was a protective factor for the occurrence of Depression and Anxiety while the presence of chronic illness, pain, insomnia and high economic level were risk factors. These were also significant risk factors for the occurrence of negative affectivity in general. Only the presence of pain and insomnia were significant risk factors for the occurrence of stress.

## 19 Discussion

The present study confirmed the validity and reliability of the DASS-21 model for assessing negative affectivity in adults with different temporal conditions of pain characteristics and without pain. People who reported pain had higher scores of depression, anxiety, and stress and increased likelihood of presenting negative affectivity.

Negative affectivity evaluation based on the assessment of stress, anxiety, and depression has been performed in normative [31,35,37,44][45][46] and clinical samples of various characteristics, including in patients with chronic diseases, insomnia, and chronic pain [2,22,47], which are conditions that can trigger and favor negative affectivity [7, 10-12, 48, 49]. The use of DASS allows the simultaneous assessment of stress, anxiety, and depression in both susceptible and non-susceptible populations. However, to obtain valid and reliable evaluations, the psychometric properties of the instrument should be estimated for each population to be studied, since these properties refer to the data and not to the instrument itself [39]. Thus, the present study verified the psychometric properties of the DASS in people with different temporal conditions of pain, and confirmed the validity and reliability of the data, without modifying the instrument. Sardá et al. [47] investigated and confirmed the item-scale correlations and the reliability of the DASS depression subscale in a sample of Brazilians with chronic pain. However, the authors did not present results for validity.

The lack of a significant difference between the mean scores of depression, anxiety, and stress among people with different pain types is controversial [7, 22]. A longitudinal study [7] conducted with adults without preestablished depression and anxiety found no relationship between the pain pattern and these conditions corroborating the results of the present study. Turk and Monarch [50] support that pain is a multidimensional experience and many aspects may affect how pain is perceived and impacts a person's life. Therefore, the presence of pain alone, regardless of its pattern, might be a triggering factor for negative emotions or experiences. On the other hand, Gerrits et al [28] report that in people with diagnosed depression and anxiety disorders, pain

duration might aggravate these disorders and, therefore, individuals with chronic pain can be more susceptible to depression and anxiety. Thus, negative affectivity assessment should be considered for all individuals with pain, regardless of their pattern.

Our results indicated a clear overlap of symptoms of depression, anxiety, and stress (i.e. presentation of more than one condition simultaneously) that exceeded the prevalence of each condition alone in individuals with and without pain (Fig 2). Stress, anxiety and depression are conditions difficult to discriminate completely [??2], which favors their concomitant occurrence. The results are in agreement with Lovibond and Lovibond [??2] who emphasize that despite the conceptual differences between these symptoms, there is a great similarity between them. Therefore, the investigation of negative affectivity, as a general concept that encompasses the mixed symptoms of these three conditions, is advised by several authors [??6,35,36,44]. The higher prevalence of negative affectivity among individuals with pain indicates that pain is positively correlated to stress, anxiety, and depression [51]. This result is consistent with the multidimensional theory of pain, which explains that pain has physical, social, cognitive, and affective components, and may be considered a biopsychosocial experience [50]. These components may affect how an individual perceives pain itself, which, in turn, can trigger psychophysiological processes that potentiate stressful situations, intensifying the perception of pain and increasing negative affectivity [50]. Our results indicated that the presence of pain is a relevant characteristic that should be investigated, since it may favor the development negative affectivity, which was similar to the study by Gerrits et al. [??7] and Magni et al. [??15].

The inverse relationship found between having religious beliefs and the occurrence of depression and anxiety has been reported also by other authors [25,26]. Individuals with religious or spiritual beliefs and cognitions may present positive coping strategies to face the demands and challenges encountered in life [24], leading to less negative affectivity. Thus, religious beliefs can provide the individual with the perception of the meaning and purpose of life itself [25], positively influencing his mental health, especially with regard to psychological well-being [26].

In the present study, high economic level was a risk factor for both depression and anxiety as well as negative affectivity in general. Similar studies found controversial results [29,30,52], as in the studies by Adler et al. [29] and Gallo and Matthews [52], in which symptoms of depression and anxiety were more prevalent in low-income individuals. Bayram and Bilgel [30] also found an inverse relationship between depression and stress scores assessed by DASS and family economic situation of university students in Turkey. Our results might indicate that individuals of higher economic level are more exposed to demands related to negative emotions or have less cognitive / emotional skills to deal with stressors [29] than people of lower socioeconomic level. In addition, the differences between our findings and those of other studies might be related to the different demographic and cultural characteristics of the samples.

Another relevant finding regarding increased risk of depression and anxiety was the presence of chronic disease, which is in agreement with previous studies [??10, ??1,53]. Chronic diseases can be self-limiting, compromising actions and engagement in daily activities [??10], favoring social isolation [??11], and increasing the chance of developing negative affectivity. Moreover, the positive and significant association between insomnia and emotional states observed in the present study seems to be in agreement with the literature [??12, ??3,48,49]. For some authors [??12, ??3], insomnia can both precede and follow depression and anxiety disorders. In a neurobiological perspective, insomnia can lead to changes in the regulation of neural circuits involved in the wake cycle, since cerebral regions related to affectivity and sleep can interact [48], which may influence the individual's emotional reactivity. In addition, stress is one of the psychological effects associated with insomnia [49]. Thus, individuals with difficulty initiating or maintaining sleep may be more susceptible to negative affectivity either through biological or psychological pathways, which may result in the development of mood / anxiety disorders, largely affecting mental health.

Another important outcome of this study was the creation of a regression model of factors associated with negative affectivity. Several studies indicate that individual, demographic, and clinical characteristics may help understand stress, anxiety, and depression manifestations [??7, 10-13, 15, 21, 22, 24-26, 29]. The detection of negative affectivity and associated factors can provide useful information for planning individual and collective management strategies, with the primary objective of preventing mental health disorders.

The present study has limitations such as the cross sectional design, which does not allow causeeffect inference, and the non-probability sampling, which may affect the generalization of results. However, a large sample size was used to obtain more similar estimates to the values of the population. In addition, this was a screening study aimed to at identifying the occurrence probability of symptoms of mental disorders in adult individuals with different temporal conditions of pain, which we considered the major contribution of the present work. The results of this study provide information for the elaboration of strategies that favor a more integrated and decisive clinical practice, aiming at the prevention and maintenance of mental health.

## 20 VII.

## 21 Conclusions

The DASS-21 presented adequate validity and reliability for use in adults with different temporal conditions of pain and without pain. Individuals reporting pain have higher scores for the Depression, Anxiety, and Stress

subscales. Individual characteristics and pain are factors related to negative affectivity that should be taken into account in clinical or research settings.

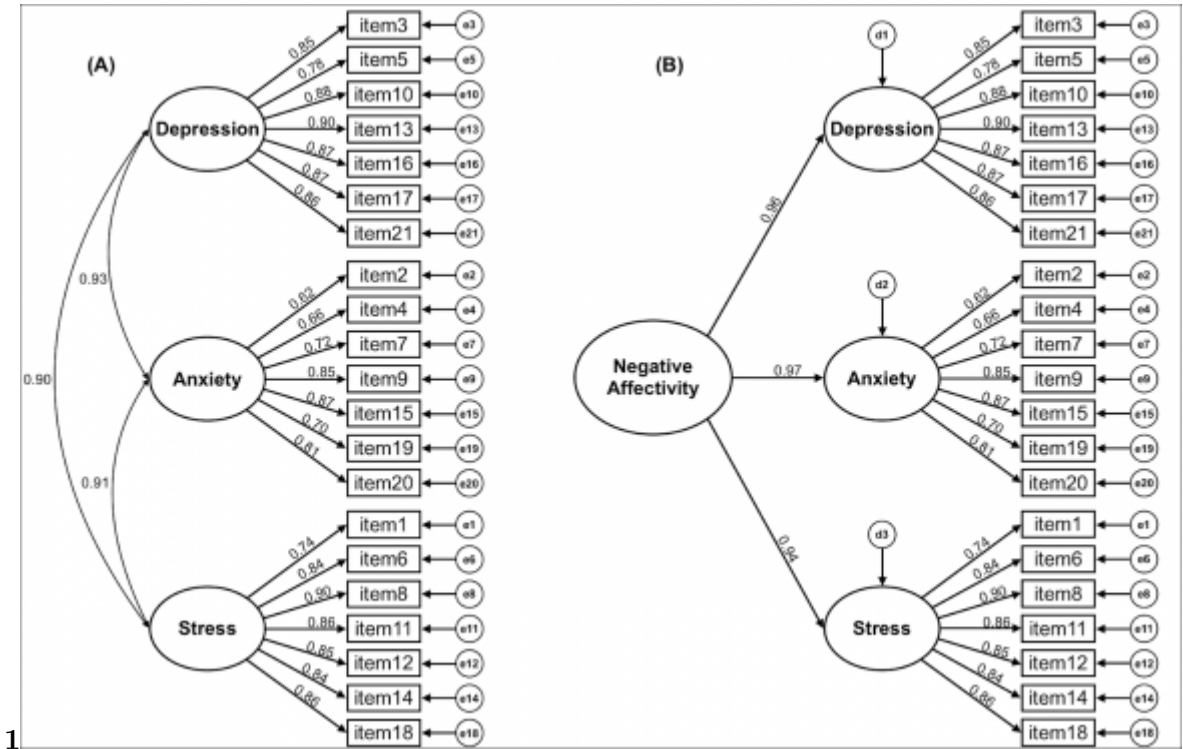


Figure 1: Fig 1 :

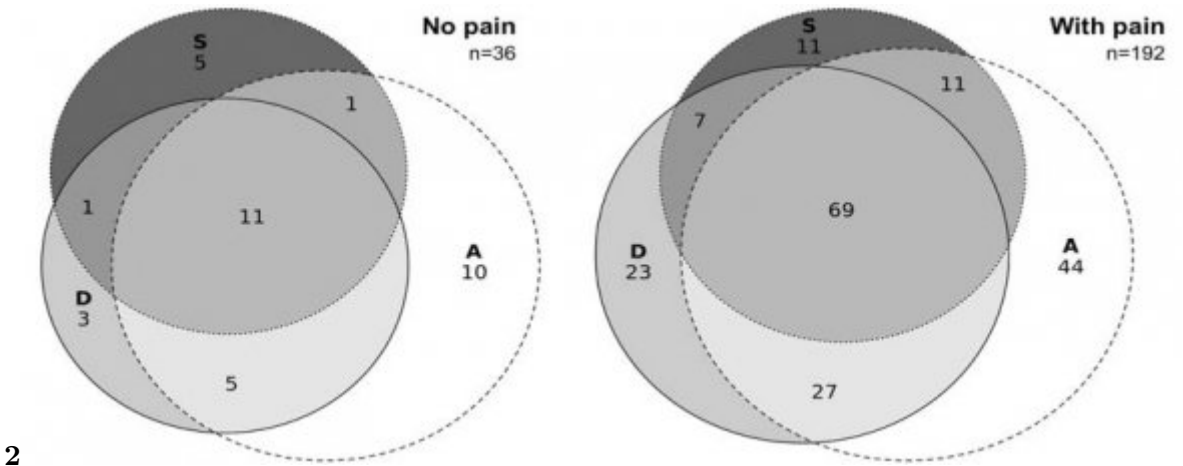


Figure 2: Table 2 :

Figure 3:

p<0.001), Anxiety (F Welch =15.72; p<0.001) and Stress

(F	Confirmatory	Factor	Analysis	3.82	3.82	2.68	2.31	6.24	2.13	2.82	3.82	2.68
/df	0.98	0.98	0.97	0.97	0.97	0.97	0.97	0.98	0.98	0.97	0.97	0.97
CFI	0.98	0.98	0.97	0.97	0.97	0.97	0.96	0.98	0.98	0.97	0.97	0.97
TLI	0.067[0.06458[0.05068[0.06181[0.075-0.083[0.074086[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-	0.067[0.06458[0.05068[0.06181[0.075-
RM-	0.071]	0.066]	0.075]	0.088]	0.091]	0.097]	0.097]	0.071]	0.066]	0.075]	0.088]	0.091]
SEA[CI90%	0.91-	0.88-	0.89-	0.90-	0.90-	0.85-	-	-	-	-	-0.54-	-0.55-
r	0.93	0.93	0.90	0.93	0.94	0.91	0.57-	0.57-	0.58-	0.74	0.76	0.76
AVE	0.57-	0.57-	0.58-	0.54-	0.55-	0.57-	0.74	0.73	0.73	0.89-	0.89-	0.89-
?	0.74	0.73	0.73	0.74	0.76	0.76	0.90-	0.89-	0.90-	0.95	0.95	0.95
CR	0.90-	0.89-	0.90-	0.89-	0.89-	0.89-	0.95	0.95	0.94	0.89-	0.89-	0.89-
	0.95	0.95	0.94	0.95	0.95	0.95	0.90-	0.90-	0.90-	0.95	0.95	0.96
	0.90-	0.90-	0.90-	0.89-	0.89-	0.90-	0.95	0.95	0.95			
	0.95	0.95	0.95	0.95	0.96	0.96						
Sample	Total	No	Acute pain	Chronic pain	Chronic pain	Chronic pain	Chronic pain	No	Acute pain	Chronic pain	Chronic pain	Chronic pain
n ?	1,150	pain	389	(recur-	247	178	# 1,150	pain	389	(re-	247	247
s 2	0.62-	336	0.64-	ring +	0.64-	0.56-	? 0.94-	336	0.94-	cur-	0.94-	0.94-
(D/A/590	0.59-	0.91	0.91	contin-	0.90	0.94	0.97	0.95-	0.95	ring +	0.98	0.98
	0.72/0.38/0.055	0.65/0.41/0.53	0.77/0.42/0.68	0.31/0.526	0.98	0.58	0.74			tinu-	0.74	0.74
		0.81/0.34/0.63	425	0.58-						ous)		
			0.92							425		
			0.72/0.34/0.50							0.93-		
										0.97		
										0.66		

Figure 4:

3

Sample	Mean score $\pm$ standard deviation			n
	Depression*	Anxiety*	Stress*	
No pain	2.89 $\pm$ 3.71 a	2.67 $\pm$ 3.30 a	5.13 $\pm$ 4.49 a	342
Acute pain	4.49 $\pm$ 5.03 b	3.83 $\pm$ 4.36 b	6.76 $\pm$ 5.18 b	390
Chronic recurring pain	4.98 $\pm$ 5.32 b	4.40 $\pm$ 4.37 b	7.52 $\pm$ 5.43 b	253
Chronic continuous pain	5.53 $\pm$ 5.39 b	4.74 $\pm$ 4.68 b	7.33 $\pm$ 5.56 b	182
Total	4.29 $\pm$ 4.90	3.75 $\pm$ 4.20	6.54 $\pm$ 5.19	1,167

\*Welch's ANOVA (p<0.001); a,b different letters indicate significant statistical difference (Games-Howell post hoc test)

Figure 5: Table 3 :



5

Refined Model #	—	—	-	0.457	0.889	0.925	0.640	-	—	—	-	0.497	0.641	1.353	0.678	-	—	—	
SE*	3.172	-	-	0.521	0.193	0.268	0.193	0.216	2.968	-	-	0.564	0.183	0.238	0.183	0.205	3.086	-	-
?	0.362			0.261	5.630	11.002	2.918	7.680	0.335			0.250	7.369	7.253	54.656	0.980	0.260		
2	76.809			4.002	0.018	0.001	<0.001	0.003	78.596			5.072	0.007	0.007	<0.001	0.001	141.347		
p	<0.001			0.045	1.580	2.433	2.522	1.897	<0.001			0.024	1.645	1.899	3.871	1.969	<0.001		
OR	-			0.594	[1.083]	1.439	1.727	1.242	-			0.569	[1.148]	1.191	[2.704]	1.319	-		
[CI95%]				[0.350	0.304]	1.115	3.682	2.897]				[0.342	0.355]	3.028	5.542	2.940]			
				0.990]								0.929]							
Completed Depression	Age	Work	Relig	Chron	Healthless	Friend	Loneliness	Stress	Age	Work	Relig	Chron	Healthless	Friend	Loneliness	Stress	Age	Work	Relig
Model In-	-	0.000	-	0.408	0.901	0.886	0.596	In-	-	-	-	-	0.537	0.659	1.373	0.664	In-	0.256	-
de- ter-	0.406	0.000	0.376	5.580	2.000	2.690	1.960	2.177	0.129	0.010	0.250	5.130	1.900	2.390	1.860	2.067	0.260	0.010	0.256
pen- cept	0.280	0.000	0.216	2.674	1.151	1.183	0.384	1.522	0.250	0.000	0.206	2.557	9.627	5.895	4.213	0.417	0.946	0.010	0.256
dent -	2.040	0.994	0.774	3.590	0.042	0.001	<0.001	0.006	0.265	0.710	0.514	0.040	0.005	0.006	<0.001	0.001	0.332	2.294	1.151
?	2.742	0.153	0.000	0.070	0.037	1.503	2.462	2.425	1.816	2.377	0.607	0.190	0.210	0.044	1.710	1.934	3.946	1.943	2.724
SE*	0.494	0.660	0.982	6.890	5.573	[1.016]	1.452	1.651	1.180	0.462	0.870	9.988	7.770	5.598	[1.178]	1.210	2.738	1.298	0.543
?	30.80	[0.385]	0.181	[8.450]	3.332	2.225	4.174	3.563	2.780	2.644	0.538	9.970	5.103	3.483	3.091	5.686	2.909	25.174	11.960
2	<0.001	0.161]	1.046]	0.966]					<0.001	0.436]	0.006]	1.603]	0.987]				<0.001	1.005]	2.294]
p	-								-								-		
OR																			
[CI95%]																			
Vari-																			
able																			
Vari-																			
able																			

[Note: \*SE: standard error #model elaborated using only the statistically significant variables (p<0.05)]

Figure 6: Table 5 :



337 [] , 10.1002/jclp.20049. <http://doi.org/10.1002/jclp.20049> 61 p. .

338 [] , 10.1007/s00127-008-0345-x. <http://dx.doi.org/10.1007/s00127-008-0345-x> 43 p. .

339 [] , 10.1590/1413-82712016210302. <http://dx.doi.org/10.1590/1413-82712016210302> 21 p. .

340 [Baron and Psychology ()] , R Baron , Psychology . 1997. México: Allyn & Bacon. (3rd edition ed)

341 [Anastasi et al. ()] , A Anastasi , S Urbina , Testing . 1997. Indiana: Prentice-Hall. 721. (7th ed. Crawfordsille)

342 [Disorders ()] , Affective Disorders . 10.1016/j.jad.2014.07.020. <http://doi.org/10.1016/j.jad.2014.07.020> 2014. 168 p. .

343 [1= applied to me to some degree, or some of the time (sometimes), 2= applied to me to a considerable degree, or a good part of

344 '1= applied to me to some degree, or some of the time (sometimes), 2= applied to me to a considerable

345 degree, or a good part of time (very often), 3= applied to me very much'. #Response categories: 0= did not

346 apply to me at all (never), (or most of the time (almost always)

347 [?Portuguese version was developed in the present study following the spelling agreement established among the Portuguesespeak

348 ?Portuguese version was developed in the present study following the spelling agreement established among

349 the Portuguesespeaking countries, 2009.

350 [Vignola and Tucci ()] 'Adaptation and validation of the Depression, Anxiety and Stress Scale (DASS) to

351 Brazilian Portuguese'. Rcb Vignola , A M Tucci . 10.1016/j.jad.2013.10.031. <http://dx.doi.org/10.1016/j.jad.2013.10.031> *Journal of Affective Disorders* 2014. 155 p. .

352 [Apóstolo et al. ()] *Adaptação para a Língua Portuguesa da Depression, Anxiety and Stress Scale (DASS)*, Jla

353 Apóstolo , A C Mendes , Z A Azeredo . 10.1590/S0104-11692006000600006. <http://dx.doi.org/10.1590/S0104-11692006000600006> 2006. 14. (Revista Latino-am Enfermagem)

354 [Marôco] *Análise de equações estruturais*, J Marôco . (2ª ed. Lisboa: ReportNumber; 2014. 389 p)

355 [Association AP. Manual Diagnóstico e Estatístico de Transtornos Mentais (DSM-5). Artmed ()] *Association*

356 *AP. Manual Diagnóstico e Estatístico de Transtornos Mentais (DSM-5). Artmed*, editor2014.

357 [Khoynezhad et al. ()] 'Basic Religious Beliefs and Personality Traits'. G Khoynezhad , A R Rajaei , A

358 Sarvarazemy . *Iranian J Psychiatry* 2012. 7 (2) p. .

359 [Martinez-Lavin (2007)] 'Biology and therapy of fibromyalgia. Stress, the stress response system, and fibromyal-

360 gia'. M Martinez-Lavin . 10.1186/ar2146. 17626613. PMC2206360. *Arthritis Res Ther* 2007. 2007/07/14. 9

361 (4) .

362 [Neckelmann et al. ()] 'Chronic insomnia as a risk factor for developing anxiety and depression'. D Neckelmann

363 , A Mykletun , A A Dahl . *Sleep* 2007. 30 (7) p. .

364 [Magni et al. ()] 'Chronic musculoskeletal pain and depressive symptoms in the general population. An analysis

365 of the 1st National Health and Nutrition Examination Survey data'. G Magni , C Caldieron , S Rigatti-Luchini

366 , H Merskey . 10.1016/0304-3959(90)90027-B. [https://doi.org/10.1016/0304-3959\(90\)90027-B](https://doi.org/10.1016/0304-3959(90)90027-B)

367 *Pain* 1990. 43 p. .

368 [Miller and Cano ()] 'Comorbid Chronic Pain and Depression: Who Is at risk?'. L R Miller , A Cano .

369 10.1016/j.pain.2008.12.007. <http://dx.doi.org/10.1016/j.pain.2008.12.007> *The Journal of Pain*

370 2009. 10 (6) p. .

371 [Pais-Ribeiro et al. ()] 'Contribuição para o estudo da adaptação portuguesa das escalas de Ansiedade'. J L Pais-

372 Ribeiro , A Honrado , I Leal . *Saúde & Doenças* 2004. 5 (1) p. . Depressão e Stress (EADS) de 21 itens de

373 Lovibond e Lovibond. Psicologia

374 [Shamsuddin et al. ()] 'Correlates of depression, anxiety and stress among Malaysian university students'. K

375 Shamsuddin , F Fadzil , Wsw Ismail , S A Shah , K Omar , N A Muhammad . 10.1016/j.ajp.2013.01.014.

376 <http://dx.doi.org/10.1016/j.ajp.2013.01.014> *Asian Journal of Psychiatry* 2013. 6 p. .

377 [Denollet et al. (ed.) ()] J Negative Denollet , Affectivity . *Encyclopedia of Behavioral Medicine*, M D Gellman,

378 J R Turner (ed.) (New York; New York) 2013. Springer.

379 [Patias et al. ()] 'Depression Anxiety and Stress Scale (DASS-21) -Short Form: Adaptação e Validação para

380 Adolescentes Brasileiros'. N D Patias , W L Machado , D R Bandeira , D D Dell'agio . *Psico-USF* 2016.

381 [Diagnostic and statistical manual of mental disorders ()] *Diagnostic and statistical manual of mental disorders*,

382 2013. Arlington, VA: American Psychiatric Publishing. (5th Edition ed.)

383 [Formiga ()] 'Diferença de gênero nos antecedentes das emoções de raiva, alegria e tristeza'. N S Formiga . *RCE*

384 *PSI* 2006. 4 (6) .

385 [Nieto et al. ()] 'Differences in coping strategies between young and older adults: the role of executive functions'.

386 M Nieto , D Romero , Ros L Zabala , C Martínez , M Ricarte , JJ . 10.1177/0091415018822040.

387 <http://dx.doi.org/10.1177/0091415018822040> *The International Journal of Aging and Human*

388 *Development* 2019. 0 (0) p. .

- [Askari et al. ()] ‘Dual burden of chronic physical diseases and anxiety/mood disorders among São Paulo Megacity Mental Health Survey Sample’. M S Askari , L H Andrade , A C Filho , C M Silveira , E Siu , Y Wang . 10.1016/j.jad.2017.05.027. <http://dx.doi.org/10.1016/j.jad.2017.05.027> *Brazil. Journal of Affective Disorders* 2017. 220 p. .
- [Paéz et al. ()] ‘Esquema de si, Representação social y Estereotipo sexual’. D Paéz , B Torres , A Echebarria . *Processos Psicossociales Ba?icos*, G Musitu (ed.) (essos Psicossociales Ba?icos Barcelona: PPU) 1990. p. .
- [Faro and Pereira ()] ‘Estresse, atribuição de causalidade e valência emocional: revisão da literatura’. A Faro , M E Pereira . script=sci\_arttext&pid=S1809-52672012 0002 00007&lng=pt. <http://pepsic.bvsalud.org/scielo.php> *Arq Bras Psicol* 2012. 64 (2) p. .
- [Eu estava consciente do funcionamento/batimento do meu coração na ausência de esforço físico (ex. sensação de aumento da frequência cardíaca, (disritmia cardíaca)] *Eu estava consciente do funcionamento/batimento do meu coração na ausência de esforço físico (ex. sensação de aumento da frequência cardíaca, (disritmia cardíaca)*
- [Cheung and Rensvold ()] ‘Evaluating goodness-of-fit indexes for testing measurement invariance’. G W Cheung , R B Rensvold . *Structural Equation Modeling* 2002. 9 p. .
- [Fornell and Larcker ()] ‘Evaluating Structural Equation Models with Unobservable Variables and Measurement Error’. C Fornell , D F Larcker . 10.2307/3151312?uid=3737664&uid=2&uid=4&sid=21103223270061. <http://dx.doi.org/10.2307/3151312?uid=3737664&uid=2&uid=4&sid=21103223270061> *J Marketing Res* 1981. 18 (1) p. .
- [Sakellari et al. ()] ‘Exploring Religiosity, Self-Esteem, Stress and Depression Among Students of a Cypriot University’. E Sakellari , M Psychogiou , A Georgiou , M Papanidi , V Vlachou , D Sapountzi-Krepia . 10.1007/s10943-017-0410-4. <https://doi.org/10.1007/s10943-017-0410-4> *Journal of Religion and Health* 2018. 57 p. .
- [Vasconcelos-Raposo et al. ()] ‘Factor Structure and Reliability of the Depression, Anxiety and Stress Scales in a Large Portuguese Community Sample’. J Vasconcelos-Raposo , H M Fernandes , C M Teixeira . 10.1017/sjp.2013.15. <http://dx.doi.org/10.1017/sjp.2013.15> *Spanish Journal of Psychology* 2013. 16 (10) p. .
- [Fui intolerante com as coisas que me impediam de continuar o que eu estava fazendo] *Fui intolerante com as coisas que me impediam de continuar o que eu estava fazendo,*
- [Druss et al. ()] ‘Health and disability costs of depressive illness in a major U.S. corporation’. B G Druss , R A Rosenheck , W H Sledge . 10.1176/appi.ajp.157.8.1274. <http://doi.org/10.1176/appi.ajp.157.8.1274> *Am J Psychiatry* 2000. 157 (8) p. .
- [I felt down-hearted and blue 13. Senti-me desanimado e deprimido] *I felt down-hearted and blue 13. Senti-me desanimado e deprimido,*
- [I felt I was close to panic 15. Senti que ia entrar em pânico] *I felt I was close to panic 15. Senti que ia entrar em pânico,*
- [I felt I wasn’t worth much as a person 17. Senti que não tinha muito valor como pessoa] *I felt I wasn’t worth much as a person 17. Senti que não tinha muito valor como pessoa,*
- [I felt scared without any good reason 20. Senti medo sem ter uma boa razão] *I felt scared without any good reason 20. Senti medo sem ter uma boa razão,*
- [I felt that I had nothing to look forward to 10. Senti que não tinha nada a esperar do futuro] *I felt that I had nothing to look forward to 10. Senti que não tinha nada a esperar do futuro,*
- [I felt that I was rather touchy 18. Senti que estava irritado] *I felt that I was rather touchy 18. Senti que estava irritado,*
- [I felt that life was meaningless 21. Senti que a vida não tinha sentido] *I felt that life was meaningless 21. Senti que a vida não tinha sentido,*
- [I found it difficult to relax 12. Tive dificuldade em relaxar] *I found it difficult to relax 12. Tive dificuldade em relaxar,*
- [I found it difficult to work up the initiative to do things 5. Tive dificuldade em tomar iniciativa para fazer as coisas] *I found it difficult to work up the initiative to do things 5. Tive dificuldade em tomar iniciativa para fazer as coisas,*
- [I found it hard to wind down 1. Tive dificuldade em me acalmar] *I found it hard to wind down 1. Tive dificuldade em me acalmar,*
- [I found myself getting agitated 11. Senti que estava agitado] *I found myself getting agitated 11. Senti que estava agitado,*
- [I tended to over-react to situations 6. Tive a tendência de reagir de forma exagerada a situações] *I tended to over-react to situations 6. Tive a tendência de reagir de forma exagerada a situações,*

448 [I was aware of dryness of my mouth 2. Estava consciente que minha boca estava seca] *I was aware of dryness*  
449 *of my mouth 2. Estava consciente que minha boca estava seca,*

450 [I was unable to become enthusiastic about anything 16. Não consegui me entusiasmar com nada] *I was unable*  
451 *to become enthusiastic about anything 16. Não consegui me entusiasmar com nada,*

452 [Gerrits et al. ()] 'Impact of pain on the course of depressive and anxiety disorders'. Mmjg Gerrits , N Vogelzangs  
453 , P Van Oppen , Hwj Van Marwijk , H Van Der Horst , Bwj Penninx . 10.1016/j.pain.2011.11.001.  
454 <http://dx.doi.org/10.1016/j.pain.2011.11.001> *Pain* 2012. 153 p. .

455 [Baglioni et al. ()] 'Insomnia as a predictor of depression: A meta-analytic evaluation of longitudinal epidemi-  
456 ological studies'. C Baglioni , G Battagliese , B Feige , K Spiegelhalter , C Nissen , U Voderholzer .  
457 <http://dx.doi.org/j.jad.2011.01.011> *Journal of Affective Disorders* 2011. 135 p. .

458 [Mason and Harvey] 'Insomnia before and after treatment for anxiety and depression'. E C Mason , A G Harvey  
459 . *Journal*

460 [International Association for the Study of Pain (IASP) Pain ()] 'International Association for the Study of Pain  
461 (IASP)'. *Pain* 1979. 6 p. . (Pain terms: a list with definitions and notes on usage)

462 [International Association for the Study of Pain IASP. Classification of chronic pain: description of chronic pain syndromes and d  
463 *International Association for the Study of Pain IASP. Classification of chronic pain: description of chronic*  
464 *pain syndromes and definitions of pain terms*, 1994. Seattle: IASP Press.

465 [Fernández and Vergara ()] 'La dimensio? de masculinidad-feminidad y los antecedentes, las reacciones mentales  
466 y los mecanismos de autocontrol emocional'. I Fernández , A I Vergara . *Revista de Psicología Social* 1998. 2  
467 (13) p. .

468 [Kessler et al. ()] 'Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National  
469 Comorbidity Survey Replication'. R C Kessler , P B Berglund , O Demler , Jin R Merikangas , K R Walters ,  
470 EE . 10.1001/archpsyc.62.6.593. <http://doi.org/10.1001/archpsyc.62.6.593> *Arch Gen Psychiatry*  
471 2005. 62 p. .

472 [Lovibond and Lovibond] 'Manual for the Depression'. S H Lovibond , P F Lovibond . [http://www2.psy.](http://www2.psy.unsw.edu.au/dass/)  
473 [unsw.edu.au/dass/](http://www2.psy.unsw.edu.au/dass/) *Stress Scales Australia*,

474 [Lovibond and Lovibond ()] 'Manual for the Depression'. S H Lovibond , P F Lovibond . [http://www2.psy.](http://www2.psy.unsw.edu.au/dass/)  
475 [unsw.edu.au/dass/](http://www2.psy.unsw.edu.au/dass/) *Stress Scales Australia*, 1995. (updated 10/11/2014; cited 2017 13/09)

476 [McWilliams et al. ()] 'Mood and anxiety disorders associated with chronic pain: an examination in a nationally  
477 representative sample'. L A McWilliams , B J Cox , M W Enns . S0304-3959(03)00301-4. [http://dx.doi.](http://dx.doi.org/10.1016/)  
478 [org/10.1016/](http://dx.doi.org/10.1016/) *Pain* 2003. 106 (1-2) p. .

479 [Muthén and Muthén ()] *Mplus: Statistical analysis with latent variables user's guide 6.0*, L K Muthén , B O  
480 Muthén . 2010. Los Angeles, California: Muthén & Muthén.

481 [Goesling et al. ()] 'Pain and Depression: An Integrative Review of Neurobiological and Psychological Factors'.  
482 J Goesling , D J Clauw , A L Hassett . 10.1007/s11920-013-0421-0. [https://doi.org/10.1007/](https://doi.org/10.1007/s11920-013-0421-0)  
483 [s11920-013-0421-0](https://doi.org/10.1007/s11920-013-0421-0) *Curr Psychiatry Rep* 2013. 15 p. 421.

484 [Parecia não conseguir ter nenhum sentimento positivo] *Parecia não conseguir ter nenhum sentimento positivo,*  
485 [Preocupe-me com situações em que eu pudesse entrar em pânico e parecesse ridículo (a)] *Preocupe-me com*  
486 *situações em que eu pudesse entrar em pânico e parecesse ridículo (a),*

487 [Kline] *Principles and practice of structural equation modeling*, R B Kline . New York: The Guilford Press.

488 [Turk and Monarch (ed.) ()] *Psychological Approaches to Pain Management -A Practitioner's Handbook. 3*, D C  
489 Turk , E S Monarch . Turk DC, Gatchel RJ (ed.) 2018. New York: The Guildford Press. (Biopsychosocial  
490 Perspective on Chronic Pain)

491 [Sinclair et al. ()] *Psychometric evaluation and normative data for the Depression, Anxiety, and Stress Scales-*  
492 *21 (DASS-21) in a nonclinical sample of U.S. adults. Evaluation & the Health Professions*, S J Sinclair  
493 , C J Siefert , J M Slavin-Mulford , M B Stein , M Renna , M A Blais . 10.1177/0163278711424282.  
494 <http://doi.org/10.1177/0163278711424282> 2012. 35 p. .

495 [Sardá et al. ()] 'Psychometric properties of the DASS-Depression scale among a Brazilian population with  
496 chronic pain'. J Sardá Jr , M K Nicholas , Cam Pimenta , A Asghari . 10.1016/j.jpsychores.2007.05.015.  
497 <http://doi.org/10.1016/j.jpsychores.2007.05.015> *Journal of Psychosomatic Research* 2008. 64  
498 p. .

499 [Ano ()] 'Religious Coping and Psychological Adjustment to Stress: A Meta-Analysis'. G G Ano , EB V . *Journal*  
500 *of Clinical Psychology* 2005.

501 [Senti dificuldade em respirar (ex. respiração excessivamente rápida, falta de ar na ausência de esforço físico)]  
502 *Senti dificuldade em respirar (ex. respiração excessivamente rápida, falta de ar na ausência de esforço físico,*  
503 [Senti que estava geralmente muito nervoso] *Senti que estava geralmente muito nervoso,*

- 504 [Senti tremores (ex. nas mãos)] *Senti tremores (ex. nas mãos)*,  
 505 [Adler et al. ()] ‘Socioeconomic status and health: The challenge of the gradient’. N E Adler , T Boyce , M A  
 506 Chesney , S Cohen , S Folkman , R L Kahn . 10.1037/0003-066X.49.1.15. [http://dx.doi.org/10.1037/](http://dx.doi.org/10.1037/0003-066X.49.1.15)  
 507 **0003-066X.49.1.15** *American Psychologist* 1994. 49 (1) p. .
- 508 [Iqbal et al. ()] ‘Stress, anxiety & depression among medical undergraduate students & their socio-demographic  
 509 correlates’. S Iqbal , S Gupta , E Venkatarao . *Indian J Med Res* 2015. 141 p. .
- 510 [Johnson et al. ()] ‘The association of insomnia with anxiety disorders and depression: Exploration of the  
 511 direction of risk’. E O Johnson , T Roth , N Breslau . 10.1016/j.jpsychires.2006.07.008. [http://dx.doi.](http://dx.doi.org/10.1016/j.jpsychires.2006.07.008)  
 512 **org/10.1016/j.jpsychires.2006.07.008** *Journal of Psychiatric Research* 2006. 40 p. .
- 513 [Crawford and Henry ()] ‘The Depression Anxiety Stress Scales (DASS): Normative data and latent structure in  
 514 a large non-clinical sample’. J R Crawford , J D Henry . 10.1348/014466503321903544. [http://doi.org/](http://doi.org/10.1348/014466503321903544)  
 515 **10.1348/014466503321903544** *British Journal of Clinical Psychology* 2003. 42 p. .
- 516 [Bayram and Bilgel ()] ‘The prevalence and sociodemographic correlations of depression, anxiety and stress  
 517 among a group of university students’. N Bayram , N Bilgel . *Soc Psychiatry Psychiatr Epidemiol* 2008.
- 518 [Kim ()] ‘The relation among fit indexes, power and sample size in structural equation modeling’. K H  
 519 Kim . 10.1207/s15328007sem1203\_2. [http://dx.doi.org/10.1207/s15328007sem1203\\_2](http://dx.doi.org/10.1207/s15328007sem1203_2) *Struct Equ*  
 520 *Modeling* 2005. 12 (3) p. .
- 521 [Wood et al. ()] ‘The Utility of the Short Version of the Depression Anxiety Stress Scales (DASS-21) in Elderly  
 522 Patients with Persistent Pain: Does Age Make a Difference?’. B M Wood , M K Nicholas , F Blyth , A Asghari ,  
 523 S Gibson . 10.1111/j.1526-4637.2010.01005.x. <http://doi.org/10.1111/j.1526-4637.2010.01005.x>  
 524 *Pain Medicine* 2010. 11 p. .
- 525 [Cavalheiro and Tolfo ()] ‘Trabalho e depressão: um estudo com profissionais afastados do ambiente laboral’. G  
 526 Cavalheiro , S R Tolfo . *Psico-USF* 2011. 16 (2) p. .
- 527 [Clark and Watson ()] ‘Tripartite model of anxiety and depression: psychometric evidence and taxonomic  
 528 implication’. L A Clark , D Watson . 10.1037/0021-843X.100.3.316. [http://dx.doi.org/10.1037/](http://dx.doi.org/10.1037/0021-843X.100.3.316)  
 529 **0021-843X.100.3.316** *J Abnorm Psychol* 1991. 100 (3) p. .
- 530 [Gallo and Matthews ()] ‘Understanding the Association Between Socioeconomic Status and Physical Health:  
 531 Do Negative Emotions Play a Role?’. L C Gallo , K A Matthews . 10.1037/0033-2909.129.1.10. [http://](http://dx.doi.org/10.1037/0033-2909.129.1.10)  
 532 **dx.doi.org/10.1037/0033-2909.129.1.10** *Psychological Bulletin* 2003. 129 (1) p. .
- 533 [Gerrits et al. ()] ‘Van der Horst H. Pain and the onset of depressive and anxiety disorders’. Mmjg Gerrits , P Van  
 534 Oppen , Hwj Van Marwijk , Bwjh Penninx . 10.1016//j.pain. <http://dx.doi.org/10.1016//j.pain>  
 535 *Pain* 2014. 155 p. .