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Validation of a brief version of the dysfunctional beliefs and attitudes about sleep scale in Turkish sample

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Abstract

Previous researches have given strong evidence that sleep related cognitions play an important mediating role in exacerbating insomnia. The aim of the study was to assess psychometric properties of the Turkish version of the Dysfunctional Beliefs and Attitudes about Sleep Scale-16 (DBAS-16). There were total of 373 participants including 198 adults and 175 undergraduates in the sample. Inner consistency coefficient of the scale was 0.82. The RMSEA was 0.08, the CFI was 0.91, and the SRMR was 0.08. Significant correlations were obtained between the DBAS scores and other psychological variables. The brief Turkish version of the DBAS revealed adequate reliability and validity with its original four-factor structure.
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1. Introduction

Primary insomnia is relatively prevalent that one third of subjects were sufferers in normal population. Of the various psychological factors central to insomnia, dysfunctional cognitions have not received sufficient attention yet. Research indicates that sleep related cognitions may play greater role in mediating insomnia (Morin, Stone, Trinkle, Mercer, & Remsberg, 1993; Edinger, et al., 2000). Studies have also shown that amending these sleep related dysfunctional cognitions may promote sleep improvements (Espie, Inglis, Tessier, & Harvey, 2001; Morin, Blais, & Savard, 2002). Despite the increased interest about the importance of cognitive factors in the etiology of insomnia, the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS) is practically the only instrument to assess unrealistic beliefs, faulty expectations, and excessive worry in respect with sleep. The Dysfunctional Beliefs and Attitudes about Sleep Scale is one of these few instruments which were developed to evaluate such sleep related dysfunctional cognitions in therapy or for research purposes. The original long version of the instrument including 30 items was developed to evaluate sleep disruptive cognitions for research and treatment purposes (Morin, 1994). The brief version of the DBAS was developed later in order to ease using the instrument (Morin, Vallières, & Ivers, 2007). A four-factor structure in both long and short versions of the measure was confirmed in factor analyses. DBAS is composed of the Consequences, the Worry/Helplessness, the Expectations, and the Medication subscales.

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The aim of this study was to evaluate psychometric properties of the Turkish translation of 16-item brief version of the instrument.

2. Material and Method

2.1. Sample

Data were collected from 175 undergraduates and 198 adults. The sample consisted of 273 males and 100 females. Mean age of the participants was 27.58 with a standard deviation of 8.53.

2.2. Instruments

2.2.1. 2.1.1. Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-16)

The DBAS-16 is a shortened version of the original DBAS. It assesses the presence and level of dysfunctional sleep-related beliefs. The instrument contains 16 dysfunctional statements regarding sleep. Items are rated on a 10-point scale which ranges from 1 (strongly disagree) to 10 (strongly agree). High scoring on the DBAS-16 indicates more dysfunctional beliefs. The instrument has a good internal consistency ($\alpha = 0.77$) and temporal stability ($r=0.83$). The factor structure was similar with the 30-item original version of the DBAS (Morin, Vallières, & Ivers, 2007).

2.2.2. 2.1.2. Insomnia Severity Index (ISI)

The instrument which was developed by Morin (1993) is designed to screen insomnia and evaluate outcomes of treatment. The scale consists of 7 items rated on a five point Likert type scale. Items include the severity of sleep onset and maintenance difficulties, satisfaction with current sleep pattern, interference with daily functioning, appearance of impairment attributed to the sleep problem, and the degree of concerns about insomnia. The ISI has adequate reliability and validity in Turkish sample (Güleç, 2007).

2.2.3. 2.1.3. Beck Depression Inventory (BDI)

This is a 21-item self-report instrument developed to measure the severity of depression (Beck, Rush, Shaw, & Emery, 1979). Items are rated on a four point scale ranging from 0 to 3. Higher scores represent greater depression severity (range: 0–63), and minimal, mild, moderate and severe symptom severity ranges have been specified. Turkish translation of the instrument was done by Hisli (1989).

2.2.4. 2.1.4. Pittsburgh Sleep Quality Index (PSQI)

The PSQI was developed by Buysse et al. (1989) to measure sleep quality during the previous month in order to discriminate good and bad sleepers. The questionnaire has 19 items rated on a four-point scale ranging from 0 to 3. It is measured 7 components in the scale and composite scores are obtained by summation of these component scores. High scoring indicates poor sleep quality. Cronbach's alpha was 0.83 for the global score. Test retest reliability was $r=0.85$ at 28 days time interval. The measure has adequate psychometric properties in Turkish sample (Ağargün, Kara, & Anlar, 1996).

2.3. Procedure

Subjects were recruited from Ankara University and public schools. Researchers were touched with the undergraduates at Faculty of Educational Sciences and the adult participants in public schools randomly. Volunteers were administered the package of scales after taken an informed consent.

2.4. Statistical Analysis

Reliability of the instrument in Turkish population was evaluated by calculating Cronbach Alpha coefficient and two-week test retest correlation. Structural equation modeling with Satora-Bentler normality correction was used to evaluate construct validity whether the original four-factor structure was fit to the current data. Pearson correlations

of the instrument with other psychological constructs were calculated in order to assess concurrent validity. In the last step of the analyses, item statistics were obtained.

3. Results

Inner consistency within 16 items was 0.82. Alpha coefficients for the Consequences, the Worry/Helplessness, the Expectations, and the Medication subscales were 0.67, 0.66, 0.46, and 0.60, respectively. DBAS-16 was rated by 53 subjects on two occasions, 14 days apart. Test-retest reliability of these composite scores of the instrument was 0.83 over two weeks. Item-total scores correlations were performed in order to assess item discrimination. The item-total correlation coefficients of the items were higher than 0.30 up to 0.61 with an exclusion of two items, namely item 1 and item 10, item total correlations of which were less than 0.20.

Table 1. Descriptive statistic and Pearson correlations between psychological constructs

	1	2	3	4
1. Dysfunctional Beliefs and Attitudes about Sleep Scale-16	1			
2. Insomnia Severity Index	0.40 **	1		
3. Beck Depression Inventory	0.27 **	0.49 **	1	
4. Pittsburgh Sleep Quality Index	0.17 **	0.55 **	0.39 **	1
Mean (SD)	88.07 (23.19)	12.60 (5.72)	17.61 (10.28)	6.42 (3.26)
Cronbach's Alpha	0.82	0.79	0.89	0.67

**: p<.01

Concurrent validity was evaluated by calculating correlations of the instrument with the Pittsburgh Sleep Quality Index, the Insomnia Severity Index, and the Beck Depression Inventory. Structural equation analysis was performed to assess validity of the original factor structure among Turkish participants. As given in Table 1, significant correlations of DBAS-16 with psychological variables were calculated. Construct validity of the original four-factor structure in Turkish sample was tested by using structural equation modeling. Satora-Bentler normality correction was used in structural analysis. Having been added four error variances between items, the final model was obtained. They were error variances between items 7 and 12, 3 and 4, 10 and 11, 10 and 14 that were set free in the final model, respectively. Added parameters brought about significant model chi square chance. As the result of the analysis the following model fitness measures were calculated. In the final model, $\chi(94) = 242.65$ with a significance of $p<.05$ and $\chi/df= 2.6$; the RMSEA was 0.08, the CFI was 0.91, and the SRMR was 0.08.

4. Discussion

Despite previous empirical research gives evidence, the effectiveness of cognitive behavioral therapy in insomnia patients has yet to be in question. Accurate evaluation of therapeutic outcomes in patients with insomnia as well as research purposes considering sleep-disruptive cognitions should only be possible by using valid measures. In this study the aim was to evaluate psychometric properties of a widely used instrument on sleep-related cognition.

The findings obtained from normal population give evidence of the reliability and validity of the DBAS-16 among Turkish subjects. The instrument has adequate internal consistency and test retest stability. However, given the internal consistency coefficients of the subscales, from composite scores may be benefited. Original factor structure was suggested due to current theoretical assumptions related to insomnia. Data from Turkish population were fit to the original four factors structure that construct validity of the measure tested with structural modeling was adequate. Scores of the Beck Depression Inventory and the Pittsburgh Sleep Quality Index was positive and significant correlates of the DBAS-16 total scores. On the contrary, significant correlation coefficient between sleep-related cognitions and sleep quality was low. Results were acceptable for pointing out the concurrent validity of DBAS-16.

Sleep is a current problem in normal and clinical population (Aslan, et al., 2006). Factors underlying sleep problems have received more and more attention. Sleep-related cognitions and cognitive mechanisms that result in sleep impairment are likely to be more frequently focused issues by researchers. In this point of view, the DBAS-16

will provide a valid and reliable instrument for research purposes in Turkish population. Furthermore, the findings provided additional evidence for validity and reliability of DBAS in other languages. However, the study has some limitations one of which the sample was comprised of merely normal population and subjects with clinical disorders were not included. Second, the sample size was moderate. A replication study should be conducted, particularly in a clinical sample.

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