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Investigating the measurement structure of the Turkish version of the Dysfunctional Attitudes Scale-9

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Abstract

The Turkish version of the *Dysfunctional Attitudes Scale-9* (DAS-9) items assesses an individual's level of endorsement of dysfunctional attitudes associated with depression. The purpose of this study was to evaluate factorial reliability and validity of the Turkish version of the DAS-9. Exploratory and confirmatory factor analyses and the MIMIC model were used to investigate the psychometric properties of the DAS-9. The exploratory factor analysis results indicated a two-factor structure: (a) personal/internal rigid thoughts, and (b) dysfunctional thoughts involving other people and the external world. Participants at a high risk for depression endorsed the factor scores significantly higher than participants at a lower risk. Overall, the results suggest that the scale is a reliable and valid measure that can be used by clinicians and researchers to measure level of dysfunctional attitudes.

Keywords Dysfunctional attitudes · Depression · Factor analysis · College students

Dysfunctional attitudes are closely associated with negative cognitive schemas (Goldberg et al. 2008). Schemas are one of the central tenets of cognitive therapy (Beck 1964, 1967). Beck defines schemas as cognitive structures that lead to the understanding and the evaluation of impinging stimuli (Beck 1964). These cognitive structures contain core assumptions and beliefs we have about others (Mann and Beech 2003). Cognitive schemas and their corresponding core beliefs give rise to intermediate beliefs, which include conditional rules, attitudes, and assumptions–through which people live their lives and respond to life challenges and stressors. For example, when a student has a core belief of "I am a failure," this belief might give rise to a negative attitude of "It would be terrible to get anything less than an 'A'. Then receiving a "D" might lead to some biased automatic thoughts about negative life outcomes such as "my life would be meaningless" (Wenzel 2012).

According to the hopelessness theory of depression, cognitions are an important determinant of behavior (Abramson et al. 1989). The expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur in combination with the sense that one cannot change the situation is sufficient to cause "hopelessness depression" (HD);this is characterized by sadness, suicidal ideation, low energy, apathy, psychomotor retardation, sleep disturbance, poor concentration, and negative cognitions (Lee et al. 2009). Specifically, Abramson et al. (1989) suggests that negative cognitions lead to three types of unhealthy inferences: (a) attributing negative life events are stable (persist over time) and global (affect all areas of life); (b) viewing negative events as likely to lead to other negative consequences; and (c) interpreting the negative outcome to mean that the person is unworthy or deficient. The tendency to attribute negative events to stable and global causes represents a cognitive vulnerability, which in the occurrence of negative life events, constitutes a risk to depression (Lewinsohn et al. 2001). There is strong evidence in the empirical literature that cognitive-diathesis interact with stress (e.g., negative life events) to cause depression. Conversely, in the absence of stressful life events, people with cognitive vulnerability are hypothesized to be at no increased risk of developing depression (Lewinsohn et al. 2001).

Entering college can be stressful for students from collectivist cultures such as Turkey (Eremsoy et al. 2005; Kaya et al.

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2015; Simons et al. 2002; Towbes & Cohen, 1996). Industrialization, globalization/westernization, and rapid economic growth are beginning to shift Turkey from a collectivist to more of an individualist culture. In college settings, Turkish students may be exposed to ideas and values that conflict with traditional family ideologies and religious values (Kaya et al. 2015). Such value conflicts, in addition to the adjustment difficulties typically associated with the transition to college life, can cause high levels of psychological stress. High levels of stress can trigger dysfunctional attitudes leading to depression (Olinger et al. 1987; Shapero et al. 2014). The challenges and stress associated with the transition of Turkish students into college suggest that professionals must be proactive in their approach to assist students adjusting to college life. Research efforts to develop and validate brief psychological instruments that can be used by health and mental health professionals to assess psychological stress, cognitive vulnerability for depression, depression, and help-seeking stigmas in the Turkish population are warranted.

Today in Turkey, there are several well-validated psychological instruments to assess help-seeking stigmas (Kaya et al. 2015), depression (Bilgel & Bayram 2010), and psychological stress (Kaya et al. 2017). However, there are very few scales, especially abbreviated measures to assess dysfunctional assumptions and personal rules that are validated for use by health and mental health professionals in Turkey (e.g., the *Depressive Attribution Style Questionnaire* [Aydın 1988]) and the *Attribution Style Questionnaire* [Hovardaoğlu 1986]). In the United States, Lewinsohn et al. (2001) developed and validated the *Dysfunctional Attitudes Scale* (DAS) to assess propensity to endorse dysfunctional attitudes emphasized in cognitive-diathesis theories. The DAS-9 is an abbreviated version of the 20-item DAS (Andrews et al. 1993). The DAS-9 has been found to strongly related to the 20-item version of the DAS ($r = .93$), has acceptable internal consistency reliability (Cronbach alpha = .74), and test-retest reliability ($r = .44$). Using the DAS-9 as a dysfunctional attitudes measure, Hankin (2009) found that dysfunctional attitudes were associated with stressful life events and depression in a large sample of adolescents.

There are several studies that investigated the validity and reliability of different Turkish versions of the DAS. Batmaz and Ozdel (2016) investigated the psychometric properties of the Turkish version of the *Dysfunctional Attitudes Scale* (DAS-A; Weissman 1979). They indicated that 24 of the 40 items on the original scale were eliminated because these items were not a good fit for the underlying dimensions in exploratory factor analysis (EFA). Confirmatory factor analysis (CFA) with the remaining 16 items resulted in two main factors were labeled as perfectionism/achievement and the need for approval/dependency. Şahin and Batıgün (2016) investigated the psychometric properties of a 17-item version of the DAS-A developed by Graaf et al. (2009), and they also found the perfectionism and dependency factors. However, a close examination of the items in the different version of the DAS reveals that each version included different items from the original DAS. Currently, no one has investigated an even shorter version of the *Dysfunctional Attitudes Scale* (DAS-9) in Turkey. An abbreviated version of the DAS could provide an efficient way to screen, plan, and provide mental health treatment for college students.

The purpose of the present study was fourfold: (a) to validate the measurement structure of the Turkish version of the DAS-9; (b) to provide health and mental health professionals a brief and psychometrically sound measure to assess dysfunctional attitudes in Turkish college students; (c) to provide researchers a valid instrument to conduct cross-cultural depression research to facilitate the development of effective cognitive-based depression treatment; and (d) to provide an outcome measure that can be used to evaluate the effectiveness of cognitive vulnerability reduction interventions in Turkey.

Method

Participants

Participants in this study comprised 235 (93 men and 142 women) Turkish college students. A convenience sample from two Turkish universities was obtained by recruiting volunteers. The participants completed a survey packet after informed consent was obtained to participate in the study through a secured website. The mean age of participants was 20.22 years with a standard deviation of 1.88. The sample was compromised of 57 freshmen (24%), 79 sophomores (34%), 49 juniors (21%), and 50 seniors (21%). Participants who were not Turkish citizens were excluded from the study.

Measurement

Dysfunctional Attitudes-9 (DAS-9) The DAS-9 (Beevers et al. 2007) is an abbreviated version of the *Dysfunctional Attitudes Scale* (DAS-A; Weissman 1979) developed to assess people's levels of endorsement of dysfunctional attitude—t houghts that are associated with depression (Andrews et al. 1993). The authors indicated the items in the scale specifically measure the tendency to think irrationally. In comparison to the longer versions, the DAS-9 was validated with older adolescents. However, due to the brevity of the scale, it is possible that the DAS-9 may not fully capture dysfunctional attitudes as it is intended. There are different versions of the DAS that are validated in Turkey including the an abbreviated Turkish version of the *Dysfunctional Attitudes Scale* (Batmaz and Ozdel 2016) and a shorter form of the DAS-A (Şahin and Batıgün (2016). The instrument used in this study consists

of 9-items (e.g., "I should be happy all the time"). Each item is rated on a 5-point Likert-type scale from totally disagree (1) to totally agree (5) (see Supplementary Information). Responses are summed over the 9-items to obtain a total score ranging from 9 to 45 with higher scores indicating higher dysfunctional attitudes. The DAS-9 was found to load highly on the general factors of the long form DAS. The correlation between the DAS-9 and the 20-item version of the original DAS was .93. A good test-retest reliability over an eight-week period was also found (Hamilton and Abramson 1983). The internal consistency reliability coefficient (Cronbach's alpha) of the DAS-9 for this study was .82.

The Patient Health Questionnaire-9 (PHQ-9) The PHQ-9 was developed by Kroenke et al. (2001) to assess depression and depression severity. The scale is composed of 9 depressive symptoms that are described in the Diagnostic and Statistical Manual of Mental Disorders-4th edition (DSM-IV; 2000) for depression. Each item probes the severity of patients` symptoms during the previous two weeks using a 4-point Likert-type rating scale with "0=not at all, 1=several days, 2=more than half the days, or 3=nearly every day." A score equal of greater than 15 is indicative of moderately severe depression. The internal consistency reliability (Cronbach's alpha) of the PHQ-9 was reported to range between .86 and .89 (Kroenke et al. 2001). The Turkish version of the PHQ-9 was reported to have very good diagnostic performance (Çorapçioglu and Özer 2004). The internal consistency reliability (Cronbach's alpha) of the PHQ-9 for this study was .84.

Generalized Anxiety Disorder Scale (GAD-7) The GAD-7 was developed by Spitzer et al. (2006) to assess General Anxiety Disorder. The scale is consisted of 7 items (e.g. "Feeling nervous, anxious, or on edge") with four response choices: not at all (0), several days (1), more than half the days (2), nearly every day (3). Scores of five, 10 and 15 indicates mild, moderate and severe anxiety respectively. A score of 10 sufficiently indicates symptoms consistent with general anxiety disorder, panic disorder, post-traumatic stress disorder, or social anxiety disorder. The test developers reported a Cronbach's alpha of .92 for the GAD-7 (Kroenke et al. 2007). The Turkish version of the GAD-7 was reported to be a reliable and valid instrument with a relatively high internal consistency reliability (Cronbach's alpha) of .85 (Konkan et al. 2013). Cronbach's alpha of the GAD-7 for this study was .89.

Perceived Stress Scale (PSS-10) The PSS-10 a brief measure of perceived stress assessing the extent to which situations in one's life are appraised as stressful. It consists of ten items such as "In the last month, how often have you felt that you were on top of things?" Each item is rated on a 5-point Likert-type scale from 0 (never) to 4 (very often). Responses are summed over the items with higher scores indicating higher perceived stress. Recently, Kaya et al. (2017) validated the PSS-10 with a sample of Turkish students and found two factorial structures of the PSS-10: stress related self-efficacy beliefs and stress related feelings of helplessness, with Cronbach's alpha estimates of .68 and .85 respectively.

The Satisfaction with Life Scale (SWLS) The SWLS was constructed by Diener et al. (1985) to measure life satisfaction in the general and geriatric populations. It consists of five items such as "In most ways my life is close to my ideal." Each item is rated on a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). Responses are summed over 7 items with total scores ranging from 5 to 35, with higher scores indicating higher levels of life satisfaction. Diener et al. (1985) reported a Cronbach's alpha of .87 for the SWLS. The Turkish version of the SWLS has been validated with different samples in Turkey with acceptable reliability (Cronbach's alpha) of .81 (Durak et al. 2010). The Cronbach's alpha of the SWLS for this study was .79.

Procedure

Upon approval from the Institutional Review Board of the affiliated universities, participants were recruited with the assistance of their course instructors. The participants were informed that participation was totally voluntary and no identifying information would be collected. Volunteer participants completed research questionnaires using the universities` computer labs through a secured website (i.e., www.surveymonkey.com).

Data Analysis

SPSS software version 24.0 was used for all analyses (IBM Corp 2016). Several guidelines were used to determine the appropriate sample size for the analyses. MacCallum et al. (1999) indicated that Gorsuch (1983) and Kline (1979) recommended that N should at least be 100 in factor analysis. However, Guilford (1954) suggested that N should be at least 200 and Catell (1978) claimed that N should be at least 250. However, some other researchers suggested to consider an *N:p* ratio to determine sample size and they indicated that this ratio should range from 3 to 10 (Catell 1978; Everitt 1975; Gorsuch 1983). Given that our sample size was 250 and we had a 9-item scale, the sample size of this study was deemed to be sufficient to conduct the statistical analyses.

The present study included two types of statistical analyses: descriptive statistics and factor analysis. Descriptive statistics including mean standard deviations, Pearson product-moment correlation, analysis of variance (ANOVA), and *t*-test were computed to provide an overall description of the sample. Factor analysis in this study included three steps. First, an exploratory factor analysis (EFA) using Maximum

Likelihood estimation with Promax rotation was conducted. The Kaiser–Guttman "Eigenvalues greater than one" criterion and,and Cattell's *scree* test were used to determine number of factors to be retained.

Second, a confirmatory factor analysis (CFA) with Weighted Least Squares (WLS) estimation with promax rotation was used to determine factorial structure of the DAS-9. WLS was chosen as an estimation method as it does not have a normality assumption (Kaplan 2000). To test the model fit, we used the Chi-Square goodness-of-fit test and several other fit indices. Chi-square goodness-of-fit assesses the magnitude of discrepancy between the sample and the fitted covariance. However, the Chi-square test is overly sensitive to studies with large sample sizes (Hu and Bentler 1995). Therefore, as recommended by SEM researchers Weston et al. 2008), we used several additional fit indices to test the model fit. We used χ^2/df ratio to correct the Chi-square goodness-of-fit for sample size, and the Comparative Fit Index (CFI) to compare the improvement of the fit of the researchers` model over a more restricted model. The following fit index cut values were recommended for an acceptable fit: a non-significant chi-square, a relative chi-square (χ^2/df) in the range of 3 to 1, and values greater than .95 for CFI. In addition, a root-mean-square error of approximation (RMSEA) which assessed error approximation of the model fit in the population with a 90% confidence interval was reported. A value of less than 0.05 isconsidered a close fit and values up to 0.08 were considered reasonable errors of approximation in the population (Byrne 2001; Hu and Bentler 1995; Kaplan 2009; Weston et al. 2008).

Third, to assess group differences on the measurement structure of the DAS-9, we used the multiple indicators, multiple causes (MIMIC) model. The MIMIC model is a special case of general structural equation modeling that estimates group differences on latent variables by regressing latent variables on the identified groups. Beta coefficients in the MIMIC model represent group mean differences rather than regression coefficients. No other special rules are required to conduct MIMIC models. We grouped participants who had one standard deviation above average PHQ-9 scores as the high-risk group and below average PHQ-9 scores as the low-risk group for depression. We also used gender as a grouping variable, men and women. In other words, we tested whether gender and risk for depression would have an influence on factorial structure for DAS-9 using the MIMIC model.

Results

Descriptive Information

The participants had a mean score of 29.95 ($SD = 7.90$) indicating overall the participants in this study experienced/reported low to moderate dysfunctional attitudes. The participants had a mean score of 7.40 ($SD = 5.44$) on the PHQ-9, and 26 of them received a score of equal or greater than 15 ($M = 3.83$, $SD = .54$) indicating a moderately severe depression score. On average the participants also received a score of 18.03 ($SD = 6.12$) on the PSS-10, and 5.92 ($SD = 4.82$) on the GAD-7 indicating moderate levels of stress and a mild level of anxiety. The participants also received a mean score of 4.34 ($SD = 1.29$) on the SWLS indicating a moderate level of life satisfaction.

Also the results indicated that there was a small but significant positive correlation between the participants` age and dysfunctional attitudes ($r = .20$, $p < .01$). There were no significant differences between male ($M = 2.50$, $SD = .81$) and female ($M = 2.58$, $SD = .92$) students` dysfunctional attitudes, $t(233) = -.697$, $p = .48$. A one-way ANOVA with Bonferrroni correction indicated students in their senior year had significantly higher levels of dysfunctional attitudes than freshman, sophomore, and junior students $F(3, 231) = 12.309$, $p < .01$.

Exploratory Factor Analysis

The Kaiser-Meyer-Olkin analysis resulted in a measure of sampling adequacy of .88 (> .50) indicating there was a meaningful correlation between variables. The Bartlett's test of sphericity $\chi^2 = 2019.32$, $df = 105$, $p < .001$ was significant, indicating the correlation matrix was not an identity matrix. Both measures indicated it was appropriate to perform an EFA. The EFA results indicated there were two-factors with eigenvalues greater than 1. Cattell's scree test had elbow at the third factor, indicating that the two-factor solution was explaining most of the variance in the variables. Using maximum interpretability a two-factor solution was retained. The two-factor solution explained 43% of variance in the variables. Means and standard deviations for each of the items on the DAS-9, factor loadings, eigenvalues, and percentage of variance explained by each factor are shown in Table 1.

Confirmatory Factor Analysis

A one-factor and two-factor inter-correlated models of DAS-9 was tested using the WLS mean and standard deviation corrected estimation. As a general CFA procedure for the two-factor model, we restricted items 1 through 7 to load only on the first factor, and item 8 and 9 to load only on the second factor. The confirmatory factor analysis indicated the one-factor model did not fit the data well χ^2 (27, $N = 229$) = 92.16, $p < .001$, $\chi^2/df = 3.41$, CFI = .85,

RMSEA = 0.10 90% CI [0.08, 0.12]. The Chi-square goodness of test statistic was significant, relative Chi-square statistics, CFI and RMSEA were not in an acceptable range. As for the two-factor model, the results indicated the two-factor model had a better fit to the data, χ^2 (26, $N = 229$) = 61.88,

Table 1 Means and standard deviations for each of the items on the DAS-9, factor loadings, eigenvalues and percentage of variance explained by each factor

Item		M (SD)	Factor loadings	
			Factor 1	Factor 2
2	My life is wasted unless I am a success.	4.55 (1.42)	.525	.170
4	If a person has to be alone for a long period of time, it follows that he or she has to feel lonely.	4.50 (1.24)	.588	.365
3	My value as a person depends greatly on what others think of me.	4.60 (1.35)	.539	.406
1	I should be able to please everybody.	4.35 (1.30)	.525	.170
7	I should be happy all the time.	4.46 (1.32)	.526	.094
6	If someone performs a selfish act, this means that he or she is a selfish person.	4.36 (1.27)	.404	.225
5	If a person is not a success, his or her life is meaningless.	4.20 (1.51)	.543	.487
9	Turning to someone for advice or help is an admission of weakness.	3.84 (1.43)	.173	.838
8	If I do well, it is probably due to chance; If I do badly, it is probably my own fault.	3.93 (1.53)	.295	.739
	Initial eigenvalues		3.830	1.084
	% of variance explained by the factors		22.036	21.014

$p < .001$, $\chi^2/df = 2.38$, CFI = .91, RMSEA = .07 90% CI [.05, .10]. Although, the CFI was below .95, researchers in the past argued .90 or higher was acceptable for CFI (Hu & Bentler, 1999). Although the researchers recommended that numbers of items per factor should range from three to five (MacCallum et al. 1999), social psychology literature supports the use of scales that have only two-items per factor (Gosling et al. 2003). Confirmatory factor analysis results for the tested models are shown in Table 2.

The first factor was related to personal/internal rigid thoughts and the second factor was related to dysfunctional thoughts involving other people and the external world. Therefore, the first factor was labeled as personal/internal dysfunctional attitudes, and the second factor was labeled as dysfunctional attitudes involving other people. However, it is important to note that previous research indicated that the DAS has two factors that are related to perfectionism and dependency.

Multiple Causes and Multiple Indicator Model

In this study, we tested whether the participants with high risk and low risk for depression, and gender would influence the factorial structure of the DAS-9. We grouped participants who had one standard deviation above average PHQ-9 scores as the high risk group and below average PHQ-9 scores as low-risk group for depression as shown in Table 3.

Table 2 Confirmatory factor analysis results for the tested models

Models	χ^2	p	χ^2/df	CFI	RMSEA- 90% CI
One-factor model	92.16	< .001	3.41	.85	0.10(0.08–0.12)
Two-factor model	61.88	< .001	2.38	.91	0.07(0.05–0.10)

The results of the MIMIC model indicated that the model fit the data well χ^2 (40, $N = 229$) = 57.60, $p < .05$, χ^2/df = 1.44, CFI = .95, RMSEA = 0.05 90% CI [0.01, 0.07]. The model sufficiently explained the data in comparison to the null model, and error approximation of the model in the population was in the acceptable range. The results indicated participants with a high risk for depression tend to endorse items on factor 1 and factor 2, significantly higher than participants with low risk for depression. There were no significant differences between male and female participants endorsing items on factor 1 and factor 2.

Internal Consistency Reliability

Internal consistency reliability of the scales were measured using Cronbach's alpha. Cronbach's alpha scores for factor 1 and factor 2 were .78 and .85 respectively. Both scales exceeded Kline's criterion of .70 for internal consistency, which indicated both factors had acceptable reliability. Cronbach's alpha level of the total scale was .82.

Validity Studies

Concurrent, divergent, and discriminant validity of the Turkish abbreviated version of the DAS-9 was established using the Pearson product-moment correlation coefficient and independent samples *t*-test. Concurrent validity was measured by correlating scores of factor 1 and factor 2 with PHQ-9, PSS-10, and GAD-7 scores. It was hypothesized that participants with higher dysfunctional attitudes would also have higher depression, stress, and anxiety scores. The results

Table 3 MIMIC model results of high and non-risk participants for depression and gender differences in dysfunctional attitudes

Effect	Estimate	SE	Z-value	p
Factor 1 on High-risk group and Low-risk group for depression	0.458	0.138	0.315	0.001
Factor 2 on High-risk group and Low-risk group for depression	0.766	0.246	3.112	0.002
Factor 1 on Gender	0.116	0.110	1.050	0.294
Factor 2 on Gender	0.125	0.201	0.618	0.536

indicated that factor 1 and factor 2 were significantly correlated with depression ($r = .30$, $p < .01$; $r = .23$, $p < .01$), stress related feelings of helplessness ($r = .21$, $p < .05$; $r = .14$, $p < .01$, and anxiety ($r = .23$, $p < .01$; $r = .18$, $p < .01$). To achieve divergent validity, we correlated the factor scores with the SWLS scores. It was hypothesized that the SWLS and DAS-9 measure different constructs. The results indicated that there was no significant correlation between scores of the factors and the SWLS ($r = -.06$, $p = .32$; $r = -03$, $p = .60$). The two scales were measuring different constructs.

Discussion

The present study validated the DAS-9 using a Turkish sample of college students. The results provide substantial support regarding the validity and reliability of the Turkish version of the DAS-9. Both exploratory and confirmatory factor analysis indicated that the one-factor model was not a good fit for the data. A two-factor model provided an acceptable fit for the data. The first factor was more related to dysfunctional attitudes that were related to personal/internal rigid thoughts (e.g., "My life is wasted unless I am a success), and the second factor was more related to the dysfunctional attitudes involving other people and the external world (e.g., consulting someone for advice or help is an admission of weakness). Given the relationship between dysfunctional attitudes and depression, rigid thoughts on personal/internal issues can play an important role in dysfunctional attitudes, and can eventually lead to mental health problems for Turkish college students.

Dysfunctional attitudes was significantly associated with depression and anxiety scores, and did not have a significant relationship with satisfaction with life. The results showed that dysfunctional attitudes were not directly associated with satisfaction with life, implying that some other constructs may play a mediation role between dysfunctional attitudes and satisfaction with life. In addition, given that dysfunctional attitudes may interact with stress and personality types, a more thorough explanation regarding the association between dysfunctional attitudes and life satisfaction is needed.

The MIMIC results support a significant association between dysfunctional attitudes and depression. Participants in the high-risk group for depression endorsed factor 1 and factor 2 items significantly higher than the low risk group participants for depression. A positive association between depression and dysfunctional attitudes is frequently reported in the literature, and the findings of this study confirm that dysfunctional attitudes are associated with depression. In other words, the results confirm that Turkish students who endorse dysfunctional attitudes are at risk of depression than students without dysfunctional attitudes (Lewinsohn et al. 2001). Female students were rated more at risk to develop dysfunctional attitudes, although the difference was not significant in this study. Given that depression is more common among women than men (Kessler et al. 2003), the fact that there were no significant gender differences in terms of dysfunctional attitudes warrants further investigation.

An intriguing finding of this study was that the number of years of formal education was significantly related with dysfunctional attitudes. Specifically, students in their senior year had significantly higher dysfunctional attitudes than freshman, sophomore, and junior students. Following graduation in Turkey, students are required to take a national examination to be eligible for employment as civil servants, a highly coveted employment outcome. Since students in their senior year are faced with uncertainty regarding employment after graduation, their situation could create greater stress and thus lead to heightened dysfunctional attitudes. The results confirm Beck's theory that dysfunctional attitudes are activated when one is faced with highly stressful life events.

Implications

Given that few studies have been conducted regarding the mental health status of Turkish college students, this study both adds another instrument for use with college students, and explains the relationship between dysfunctional attitudes and other mental health constructs such as depression, anxiety, and life satisfaction. Although, a 40-item version of the DAS has been translated into Turkish by Şahin and Şahin (1992), given the fast-paced environment of health system advances, and the large caseloads of mental health professionals, a shorter version of the DAS would be more time efficient and helpful in office settings. In addition, students in college settings and clients in mental health settings may be more willing to complete a shorter instrument in contrast to a longer survey. Given that the shorter version would be both time and cost

efficient, a shorter version of the DAS may be preferred by institutions and clinicians. Although, some may argue that the longer version of the DAS may provide more information regarding a client's dysfunctional attitudes, a shorter version could be useful when the longer version is not preferred.

The Turkish version of the DAS-9 can be used as an assessment tool to detect cognitive vulnerability of patients regarding mental health issues that could be related to dysfunctional attitudes or negative schemas. The use of the Turkish version of the DAS-9 in the evaluation of mental health problems, particularly depression is appropriate. Mental health professionals can also conduct item analyses to discover what particular dysfunctional thoughts are troubling clients (e.g., rigid thoughts about one self, rigid thoughts about other people), and use this information to plan effective psychosocial interventions for their clients. At the minimum, the Turkish version of the DAS-9 can be a supplementary tool to obtain more information about clients' cognitive schemas and beliefs.

In this study, students in their senior year had a significantly higher number of dysfunctional attitudes than freshman, sophomore, and junior students, which indicated the seniors were more cognitively vulnerable to depression. Accordingly, students in their senior year should be provided screening services to diagnose depression and anxiety so that effective counseling services can be used to enhance their cognitive and mental health well-being of senior students. The national examination that students are required to take in their senior year in order to secure employment, and the uncertainty regarding their future, creates stress and can heighten dysfunctional attitudes. Organizational and institutional proactive efforts such as stress reduction and career development and planning workshops or seminars could be offered to decrease the ambiguity and stress for the students who find themselves in that situation.

Limitations

This study is the first to investigate the factorial validity of the Turkish version of the DAS-9; there are no other studies with which to compare the results. Therefore, the results should be interpreted with caution. In addition, as validity studies can be influenced by sample characteristics, further studies are needed to confirm the results. As more studies are published in regard to dysfunctional attitudes, a more accurate picture of the factorial validity of the DAS-9 can be drawn.

A number of dysfunctional attitudes and beliefs may exist within individuals across the spectrum of mental health diagnoses. In the present study, dysfunctional attitudes is assessed using only 9 items. Although, the results of this study demonstrated reliability and validity of the measurement tool, it is noteworthy to mention that the longer version of the DAS may provide additional information concerning a wide range of dysfunctional attitudes. However, the Turkish version of the DAS-9 will inform clinicians and researchers about dysfunctional attitudes that exist within individuals.

Compliance with Ethical Standards

Conflict of Interest The authors declared that they have no conflict of interest.

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