Research / Araştırma

Psychometric Properties of The Drug Abuse Screening Test (DAST-10) in Heroin Dependent Adults and Adolescents with Drug Use Disorder

Cuneyt Evren[1], Yesim Can[2], Alkin Yilmaz[3], Ethem Ovali[3], Sera Cetingok[3], Vahap Karabulut[2], Elif Mutlu[2]

[1]Assoc. Prof. Dr., [2]Psychiatrist, [3]Psychiatry Resident, Bakirkoy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Alcohol and Drug Research, Treatment and Training Center (AMATEM), Istanbul - Turkey

ABSTRACT

Psychometric properties of the Drug Abuse Screening Test (DAST-10) in heroin dependent adults and adolescents with drug use disorder

Objective: The psychometric properties of the Drug Abuse Screening Test (DAST-10), developed to screen individuals for drug problems, are evaluated in Turkish patients with drug use disorder.

Method: Participants included 100 adolescents with drug use disorder in a substance abuse treatment program for adolescents, 123 heroin dependent adults in a residential substance abuse treatment program, and 35 alcohol dependents from the same clinic who did not report a drug abuse problem.

Results: The DAST-10 was found to be a psychometrically sound drug abuse screening measure with high convergent validity (r=0.76) when correlation with the Drug Use Disorders Identification Test (DUDIT) was measured and to have a Cronbach's alpha of 0.92. In addition, a single component accounted for 59.35% of total variance, and the DAST-10 had sensitivity and specificity scores of 0.98 and 0.91, respectively, when using the optimal cut-off score of 4. Additionally, the DAST-10 showed good discriminant validity as it significantly differentiated patients with drug use disorder from alcohol dependents.

Conclusions: These findings support the DAST as a reliable and valid drug abuse screening instrument that measures a unidimensional construct. Further research is warranted with additional clinical populations and with high risk populations such as those in criminal justice settings.

Key words: DAST-10, drug abuse, factorial structure, reliability, validity

ÖZET

Madde Kötüye Kullanımı Tarama Testi'nin (DAST-10) eroin bağımlısı erişkinlerde ve madde kullanım bozukluğu olan ergenlerde psikometrik özellikleri

Amaç: Bu çalışmanın amacı, madde sorunu yaşayan bireyleri tarama amaçlı geliştirilen Madde Kötüye Kullanımı Tarama Testi'nin (DAST-10) psikometrik özelliklerinin madde kullanım bozukluğu olan Türk hastalarda değerlendirilmesidir.

Yöntem: Çalışmaya, ergenler için madde kötüye kullanımı tedavi programında olan ve madde kullanım bozukluğu bulunan 100 ergen, madde kötüye kullanımı yatılı tedavi programındaki 123 erişkin eroin bağımlısı hasta ve aynı klinikten alkol bağımlılığı olan ve madde kötüye kullanımı sorunu iletmeyen 35 hasta katıldı.

Bulgular: DAST-10'un DUDIT (Madde Kullanım Bozukluğu Tanıma Testi) ile ilişkisine bakıldığında, yüksek konverjan geçerlik (r=0.76) gösteren ve Cronbach alfa değeri 0.92 olan, psikometrik olarak güvenilir bir madde kötüye kullanımı tarama ölçeği olduğu bulunmuştur. Ek olarak, tek bileşen toplam varyansın %59.35'ini açıklamıştır. Kesme noktası 4 ve üzeri olarak alındığında DAST-10 duyarlılık ve özgüllük puanları, sırasıyla 0.98 ve 0.91 olarak bulunmuştur. Ayrıca DAST-10, alkol kullanım bozukluğu olan hastaları madde kullanım bozukluğu olan hastalardan anlamlı düzeyde ayırd ettiği için iyi düzeyde ayırıcı geçerlilik göstermiştir.

Sonuç: Bu bulgular, DAST-10'un madde kullanım bozukluğu olan Türk hastalarda tek boyutlu yapıda ölçüm yapan geçerli ve güvenilir bir madde kötüye kullanımı tarama ölçeği olduğunu desteklemektedir. Ek klinik populasyonlarda ve cezaevi ortamlarındaki gibi yüksek riskli populasyonlarda daha ileri çalışmaların yapılması gerekmektedir.

Anahtar kelimeler: DAST-10, madde kötüye kullanımı, faktoriel yapı, güvenilirlik, geçerlilik

Address reprint requests to / Yazışma adresi:
Assoc. Prof. Dr. Cuneyt Evren,
Icadiye Cad. Mentes Sok. Selcuk Apt. 1/17
Kuzguncuk 34674 Uskudar, Istanbul - Turkey

Phone / Telefon: +90-212-409-1515/2111

Fax / Faks: +90-212-660-0026

E-mail address / Elektronik posta adresi:
cuneytevren@yahoo.com

INTRODUCTION

There are several drug abuse screening instruments that have been developed to assess the severity of substance abusers' drug use (1). One of the most frequently used drug assessment instruments is the Drug Abuse Screening Test (DAST) (2). Developed in North America, the original DAST is a 28-item screening instrument modeled after the Michigan Alcohol Screening Test (MAST) (3) that classifies individuals on a continuum from low to high drug problem severity. The DAST assesses drug consequences and problem severity in the past year (2).

Factor analysis demonstrated that the DAST was a unidimensional scale. Skinner (2) also developed a 20- and 10-item version of the DAST, both of which had high internal consistency (Cronbach's $\alpha > 0.85$), acceptable test–retest reliabilities ($r > 0.70$), correlated highly with the original 28-item DAST, and discriminated drug abusers from alcohol abusers (4-6). Furthermore, the DAST-10 and the DAST-20 correlated ($r = 0.97$) with each other (7).

The three studies evaluating the reliability of DAST-10 covered 3 countries: USA [Cronbach's alpha=0.86, test-retest kappa=0.71 (7); Spanish version Cronbach's alpha=0.94 (8)] and India (Cronbach's alpha=0.94) (9). The DAST-10 has been shown to have good internal consistency, temporal stability, and the ability to identify individuals who need more intensive assessment for substance abuse problems (7-9). No validity studies were identified for DAST-10 (1). Nevertheless, a recent study that evaluated the psychometric properties of DUDIT found a high correlation coefficient of 0.85 with DAST-10 (10).

For DAST-10, four studies in psychiatric patients reported a sensitivity range of 65% to 90% and specificity range of 68% to 98% (7-9,11). Three of the studies were conducted in the USA, one of which was Spanish version, and one was conducted in India. DAST-10 had a positive predictive value (PPV) range of 35% to 90% and negative predictive value (NPV) range of 93% to 99% at different cut off scores; 3 or 4 (8-9,11).

Although a variety of drug use measures currently exist, the DAST has several advantages over other instruments. For example, unlike the Addiction Severity Index (12), the DAST-10's administration time is brief (<5 min) and it is easy to score. Also, unlike some drug screening measures that inquire about lifetime use [e.g., Cut-down Annoy Guilty Eye-opener Adapted to Include Drugs (CAGE-AID)] (13), the DAST-10 focuses on drug use and drug-related consequences occurring within the past year, thus identifying possible diagnosable drug use problems. The DAST-10 was designed to provide a brief instrument for clinical screening and treatment evaluation among adults and older youth. Although psychometric properties of the DAST-10 was not evaluated among adolescents, it was also successfully used in web-based surveys in undergraduate students (14,15). Abusing drugs is an important problem in adolescents and the age of onset of first drug use is decreasing, thus it is important to evaluate psychometric properties of DAST-10 in this population.

Although Turkish version of Michigan Alcohol Screening Test (MAST) (3,16) is used widely for alcohol use problems in Turkey in the last two decades, currently there is no instrument to measure to detect possible substance abuse problems associated with the use of a wide variety of drugs other than alcohol. One screening test that could be considered for this purpose is the DAST-10, a brief screening instrument that can be used in clinical and nonclinical settings (2). Since the 10-item version of the DAST (DAST-10) has comparable sensitivity and specificity to its 28 and 20-item counterparts (6), the aim of the present study is to evaluate the psychometric properties of the DAST-10, a self-report questionnaire developed previously to screen individuals for drug problems (2).

METHOD

Settings and Sample

The data were gathered from the two treatment centers in Bakirkoy Training and Research Hospital for Psychiatry, Istanbul, Neurology and Neurosurgery. Adolescent with drug use disorder (n=100) were randomly taken from the Child and Adolescent Substance Treatment and Training Center (CEMATEM).

Heroin dependent inpatients (n=123) who were under buprenorphine maintenance treatment and alcohol dependent inpatients (n=35) were randomly taken from the Alcohol and Drug Research Training and Treatment Center (AMATEM). Participants were classified as (a) adolescents with drug use disorder (ADUD; n=100), (b) residential heroin dependents (RHD; n=123), or (c) alcohol dependents without a drug abuse problem (AD; n=35). The third group was included to evaluate the discriminant validity of the DUDIT. Group membership was based on the substance use disorder module of the Turkish version of Structured Clinical Interview for DSM-IV (SCID-I) (17,18) which was conducted by a psychiatrist who was experienced with the administration of this instrument (C.E.). The study was approved by the ethical comity of the hospital. Patient's written informed consent was obtained after the study protocol was thoroughly explained.

Translation

The original DAST-10 was independently translated from English into Turkish by two experts in psychiatry. Consensus was reached on a common draft by these experts. This Turkish version was back translated into English by an independent translator.

Measures

Participants at both adolescent and adult treatment programs completed the DAST-10, the DUDIT and a short questionnaire gathering demographic and substance abuse history information.

DAST-10: As the development and psychometric properties of the DAST have been described earlier in introduction section, they will not be repeated here. Respondents were informed that drug refers to the use of prescription drugs not prescribed to the respondent, or the use of prescription drugs in a manner not intended by the prescribing clinician, or the use of other drugs such as marijuana, cocaine, LSD, ecstasy, and others. Respondents were instructed that DAST-10 questions were about drugs other than alcohol, and they were instructed to answer "yes" or "no" to each of the DAST-10 items. For the DAST-10, score 1 point for each question answered "yes", except for question (3) for which a "no" answer receives 1 point and (0) for a "yes". For the DAST-10, scores range from 0 to 10.

Drug Use Disorders Identification Test (DUDIT): The DUDIT was selected as a comparison measure for the DAST because it is frequently used in the drug abuse field and has demonstrated sound psychometric properties (10). DUDIT is an 11-item self-report questionnaire that was developed to screen individuals for drug problems. Developed as an analogous instrument to the Alcohol Use Disorders Identification Test (AUDIT) (19), the questions on the DUDIT are parallel to those on the AUDIT with very few exceptions (i.e., two items on the AUDIT were deleted and three new items were added). In their initial investigation of the psychometric properties of the DUDIT, Berman et al. (20) used both general and clinical population samples. First nine questions are scored on 5-point scales ranging from 0 to 4, and last two are scored on 3-point scales with values of 0, 2, and 4. Thus, total scores range from 0 to 44, with higher scores being suggestive of a more severe drug problem. The Turkish version of the DUDIT had a Cronbach's alpha of 0.93 and a single component accounted for 58.65% of total variance. Additionally, the Turkish version showed good discriminant validity as it significantly differentiated patients with drug use disorder from alcohol dependents (21).

Statistical Analysis

The following strategies were used to investigate the psychometric properties of the DUDIT: (a) convergent validity was evaluated by calculating a Pearson product–moment correlation between the DAST-10 and DUDIT; (b) internal consistency reliability was assessed using Cronbach's alpha and test-retest correlation was used only for RHD group; (c) factorial structure was examined using a principal component analysis (PCA); (d) predictive validity, sensitivity, specificity, and optimal cut-off scores were estimated by constructing a Receiver

Table 1: Characteristics of participants by group

	Heroin Dependent Adults n=123		Adolescents with DUD n=100		Alcohol dependents n= 35	
	Mean	SD	Mean	SD	Mean	SD
Age	28.07	7.96	16.59	0.99	49.34	11.13
Age onset of any substance use	16.04	3.12	14.02	1.74	18.46	4.46
Age onset of heroin use	20.50	4.27	-	-	-	-
Duration of education	8.51	2.77	6.61	2.15	9.29	3.75
	n	%	n	%	n	%
Female	11	8.9	0	0	0	0
Without employment	87	70.7	60	60	11	34.40

DUD: Drug Use Disorder, SD: Standard Deviation

Operating Characteristic (ROC) curve; and (e) discriminant validity was evaluated using a one-way analysis of variance (ANOVA) of the DUDIT scores for the three groups of participants.

RESULTS

Table 1 presents demographic and substance abuse history variables for the three groups of participants (ADUD, RHD, and AD).

Factorial Structure

To explore construct validity of the scale first exploratory factor analysis than confirmatory factor analysis were conducted. Prior to any further analysis, the adequacy of sample size was verified using the Bartlett's test of sphericity and the Keiser-Meyer-Olkin (KMO) measurement of sampling adequacy. Bartlett's test of sphericity was significant (Chi-Square= 1702.237, d.f.=45, p<0.001) and the KMO measure of sampling adequacy was acceptable at 0.915.

To explore the factorial structure of the DAST-10, a PCA was performed using all participants (n=258). Criteria for retaining extracted components on the PCA were: (a) visual inspection of the scree plot to note breaks in size of Eigenvalues between the components, (b) Eigenvalues greater than one, and (c) percentage of variance accounted for by components retained.

A visual inspection of the scree plot revealed two component accounting for the majority of variance before components started to level off. Two

components on the DAST-10 reached the criterion of an Eigenvalue greater than one (5.94 and 1.12) and the variance accounted for by these components were 59.35% and 11.16% respectively. The unidimensionality of the scale then is assessed simultaneously with confirmatory factor analysis. As generally excepted we took criteria as Chi-Square/d.f.≤5, >0.90 for GFI, CFI, NFI and IFI, and for RMSEA<0.05 being perfect, whereas <0.08 being acceptable when evaluating the fit index (22,23). Estimation of the model produced a good fit (Chi-Square=28.7, d.f.=19; root mean square error of approximation [RMSEA]=0.044, goodness of fit index [GFI]=0.977, adjusted GFI=0.934, parsimony GFI=0.338, normed fit index [NFI]=0.983, comparative fit index [CFI]=0.994, incremental fit index [IFI]=0.994).

As seen in Table 2, all item-component loadings were in the "good" to "excellent" range. Thus, results from the PCA suggest that the DAST-10 assesses a unidimensional construct.

Convergent validity and internal consistency reliability

The Pearson product–moment correlation between the DAST-10 and DUDIT scores for all participants (n=258) was high (r=0.76, p<0.001). Internal consistency reliability for the DAST-10, examined by Cronbach's alpha, was also very high (coefficient α=0.92) (Table 2). Coefficient of test-retest in RHD group was r=0.57, p<0.001. Corrected item total correlations for the DAST-10 in total sample are shown in Table 2. Also inter-item and item-total correlations for the DAST-10 are shown in Table 3.

Table 2: Item-component loadings, Cronbach's alpha values for components, corrected item-total correlations for the Drug Abuse Screening Test (DAST-10) and the correlation of the DAST-10 with the Drug Use Disorders Identification Test (DUDIT) (n=258)

Items	Component 1	Component 2	Component 1	Corrected Item-Total Correlation
1		0.795	0.733	0.655
2	0.698		0.782	0.731
3		0.604	0.687	0.647
4	0.800		0.811	0.767
5		0.847	0.751	0.659
6		0.699	0.706	0.619
7		0.814	0.743	0.646
8	0.856		0.842	0.815
9	0.720		0.801	0.712
10	0.823		0.832	0.807
Mean±SD (Min.-Max.)			5.93±2.60 (0-44)	
Eigenvalue	5.94	1.12	5.94	
% of Variance	59.35	11.16	59.35	
Cronbach's Alpha	0.896	0.782	0.915	
DUDIT	r=0.76	p<0.001		

Coefficient of test-retest in heroin dependent group (n=123): r=0.57, p<0.001, SD: Standart Deviation

Table 3: Inter-item and item-total correlations for total sample (n=258)

DAST-10 Items	1	2	3	4	5	6	7	8	9	10
2	0.57									
3	0.40	0.51								
4	0.55	0.65	0.57							
5	0.56	0.45	0.38	0.51						
6	0.51	0.39	0.44	0.52	0.60					
7	0.49	0.48	0.32	0.48	0.63	0.57				
8	0.53	0.70	0.66	0.67	0.50	0.47	0.53			
9	0.54	0.60	0.33	0.58	0.64	0.54	0.75	0.60		
10	0.52	0.63	0.70	0.69	0.53	0.47	0.48	0.77	0.57	
DAST Total	0.65	0.37	0.15	0.37	0.53	0.50	0.55	0.30	0.47	0.27

Predictive validity, sensitivity, specificity, and optimal cut-off scores

The DUDIT's predictive validity, sensitivity, and specificity were examined using a ROC curve that included all participants (n=258). Participants dichotomously classified according to SCID-I as group with alcohol use disorder or group with drug use disorder. Results revealed that the area under curve (AUC) (0.973- Std. Error=0.018) was in the "excellent" range and that a score of 4 was the most critical value for identifying a participant as having a drug problem. As seen in Table 4, this cut-off score corresponds to sensitivity and specificity values of 0.98 and 0.91, respectively.

Table 5 shows the comparison of alcohol use disorders with drug use disorders according to cut-off point 4 on DAST-10 and mean scores of DAST.

Discriminant Validity

To evaluate discriminant validity, a one-way ANOVA was conducted using the total mean score on the DAST-10 as the dependent variable and the participants' group membership (ADUD, RHD, AD) as the independent variable. The assumption of homogeneity of variance and normal distribution of scores were tenable. The ANOVA for the DAST was statistically significant, $F_{(2,255)}=239.05$, $p<0.001$.

Table 4: Drug Abuse Screening Test (DAST-10) cut-off point analysis

Cut-off point[a]	Sensitivity	Specificity	Kappa	PPP	NPP
1	1.00	0.77	0.85	0.97	1.00
2	1.00	0.86	0.91	0.98	1.00
3	1.00	0.86	0.91	0.98	1.00
4	0.98	0.91	0.89	0.99	0.89

Kappa: Cohen's Kappa, PPP: Positive Predictive Power, NPP: Negative Predictive Power.
To conserve space, only the three cut-off scores below the suggested critical value of 4 are shown.
[a]Positive if Greater Than or Equal To

Table 5: Drug use disorder status according to the cut-off point 4

		Alcohol Use Disorder		Drug Use Disorder			
		n=35	%	n=223	%	χ^2	p
DAST-10	Negative	32	91.4	4	1.8	202.44	<0.001
(cut-off=4)	Positive	3	8.6	219	98.2		
	Mean±SD	0.74±1.74		6.74±1.57		t= -20.73	<0.001

χ^2= Chi square test

Post-hoc analysis using Tukey's procedure revealed that the mean (SD) DAST score for the RHD group, 7.15 (1.54) was higher than scores in both, the ADUD group, 6.25 (1.47), p<0.001, and the AD group, 0.74 (1.74). Finally, DAST mean score was significantly higher in the ADUD group as compared to the AD group (p<0.001).

DISCUSSION

The DAST was developed to classify individuals on a continuum from low to high drug problem severity among individuals in the general public who may have a drug problem as well as individuals in clinical settings who are likely to meet criteria for a drug use disorder (2). Previous studies were mostly conducted in the USA and only one was conducted in India. The present study extended the evaluation of the psychometric properties of the DAST-10 to drug abusers in Turkey, by also conducting validity analyses.

Overall, the DAST-10 was found to have satisfactory psychometric characteristics as a drug abuse screening test. Consistent with a previous study (10) conducted in the USA (r=0.85), the instrument's high correlation with the DUDIT, an established drug abuse screening measure, indicated good convergent validity (r=0.76). The DAST-10 also showed good discriminant validity as evidenced by its ability to significantly differentiate drug abusers from alcohol abusers, and it had high internal consistency reliability (Cronbach's alpha=0.90), similar with previous studies, which found Cronbach's alphas between 0.86-0.94 (7-9).

One of two published data regarding the factor structure of the DAST-10 suggests that it has a 3-factor structure accounting for 64% of the variance; the first factor consisted of general problems, and the last two factors consisted of just one item each (items 5 and 7) (7). Second study, which evaluated the psychometric characteristics of a Spanish version, found that only one component for the DAST-10 attained the criterion of an Eigenvalue or greater than one for retaining components (6.48) and the variance accounted for this component was 64.83%. In the present study, PCA for the DAST-10 produced two components. Further evaluation of factorial structure by fixing the number of factors to a single factor, a unidimensional construct was supported with a single component accounting for 59.35% of the total variance. A replication of this finding using Confirmatory Factor Analyses provided further support for the unidimensional structure of the DAST-10.

The ROC curve showed that the DAST-10 had good predictive validity as suggested by high sensitivity, specificity, and the AUC. Results revealed that a cut-off

score of 4 was the most critical value for identifying participants as having a drug use disorder according to the SCID-I. While this cut-off point was same with Spanish version of the scale (8), previous studies (7,9,14) suggested 3 as a cut point score because according to their data, this has shown the best balance between sensitivity and specificity. Finally, in the present study mean (SD) DAST-10 scores were 6.74 (1.57) for the group with drug use disorder, whereas it was 0.74 (1.74) for the group with AD. Results were similar with Spanish version, as reported 6.9 (2.5) and 2.0 (2.7) respectively (8).

In addition to having good psychometric characteristics, the DAST-10 has an advantage over other drug abuse screening instruments, because it is brief, not substance specific, and inquires about use and consequences within the past 12 months are consistent with the DSM-IV-TR interval criterion for diagnosis. The current study has one main limitation, which concerns the homogeneity of the sample. Specifically, about half of all drug abusers in the present study were adults dependent to heroin and the other half were adolescents with different drug use disorders. Future research will need to evaluate the DAST-10's characteristics using a larger and more heterogeneous sample of drug abusers. In the present study, instead of RHD group, including adults with drug use disorder

may have been more appropriate. Also in these future studies, individuals that are not abusing any substances, even alcohol, should be included in the sample. High risk populations for drug use disorder, such as those in prison may be the target of evaluation. Finally, when evaluating the Turkish version of the DAST-10, the 3rd item showed lower correlation with total score. It was suggested that responses to negatively worded items differ from those to affirmatively worded items in inventories (24). The difference in responses to those two types of items may be much more remarkable for some cultures. The results, however, might be due to a translation artifact rather than the reflection of cross-cultural differences in the dimensionality of aggression. Thus item, "Are you always able to stop using drugs when you want to?" might be difficult to understand when translated to Turkish, particularly if they are not using any drug.

In conclusion, the present study extended the evaluation of the psychometric properties of the DAST-10 to both adult and adolescent populations with drug use disorder and supported the unidimensional construct of DAST-10 with confirmatory analysis in Turkey. This and previous studies support the use of the DAST-10 in various clinical settings and encourage continued research into its use.

REFERENCES

1. Mdege ND, Lang J. Screening instruments for detecting illicit drug use/abuse that could be useful in general hospital wards: a systematic review. Addict Behav 2011; 36:1111-1119.

2. Skinner H. The Drug Abuse Screening Test. Addict Behav 1982; 7:363-371.

3. Gibbs LE. Validity and reliability of the Michigan Alcoholism Screening Test: a review. Drug Alcohol Depend 1985; 12:279-285.

4. Gavin DR, Ross HE, Skinner HA. Diagnostic validity of the Drug Abuse Screening Test in the assessment of the DSM III drug disorders. Br J Addict 1989; 84:301-307.

5. Skinner HA, Goldberg AE. Evidence for a drug dependence syndrome among narcotic users. Br J Addict 1986; 81:471-484.

6. Yudko E, Lozhkina O, Fouts A. A comprehensive review of the psychometric properties of the Drug Abuse Screening Test. J Subst Abuse Treat 2007;32:189-198.

7. Cocco KM, Carey KB. Psychometric properties of the Drug Abuse Screening Test in psychiatric outpatients. Psychol Assess 1998; 10:408-414.

8. Bedregal LE, Sobell LC, Sobell MB, Simco E. Psychometric characteristics of a Spanish version of the DAST-10 and the RAGS. Addict Behav 2006; 31:309-319.

9. Carey KB, Carey MP, Chandram PS. Psychometric evaluation of the alcohol use disorders identification test and short drug abuse screening test with psychiatric patients in India. J Clin Psychiatry 2003; 64:767-774.

10. Voluse AC, Gioia CJ, Sobell LC, Dum M, Sobell MB, Simco ER. Psychometric properties of the Drug Use Disorders Identification Test (DUDIT) with substance abusers in outpatient and residential treatment. Addict Behav 2012; 37:36-41.

11. Maisto SA, Carey MP, Carey KB, Gordon CM, Gleason JR. Use of the AUDIT and the DAST-10 to identify alcohol and drug use disorders among adults with a severe and persistent mental illness. Psychol Assess 2000; 12:186-192.

12. McLellan AT, Luborsky L, Woody GE, O'Brien CP. An improved diagnostic evaluation instrument for substance abuse patients: the Addiction Severity Index. J Nerv Ment Dis 1980; 168:26-33.

13. Brown R, Rounds L. Conjoint screening questionnaires for alcohol and other drug abuse: criterion validity in a primary care practice. Wis Med J 1995; 94:135-140.

14. McCabe SE, Boyd CJ, Cranford JA, Morales M, Slayden J. A modified version of the Drug Abuse Screening Test among undergraduate students. J Subst Abuse Treat 2006; 31:297-303.

15. Kaloyanides KB, McCabe SE, Cranford JA, Teter CJ. Prevalence of illicit use and abuse of prescription stimulants, alcohol, and other drugs among college students: relationship with age at initiation of prescription stimulants. Pharmacotherapy 2007; 27:666-674.

16. Coskunol H, Bagdiken I, Sorias S, Saygili R. Validity and reliability of the Michigan Alcoholism Screening Test (Turkish version). Ege Tip Dergisi 1995; 34:15-18. (Turkish)

17. First MB, Spitzer RL, Gibbon M, Williams JBW. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinical Version. Washington D.C. and London. American Psychiatric Press, Inc, 1997.

18. Corapcioglu A, Aydemir O, Yildiz M, Esen A, Koroglu E. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinical Version. Hekimler Yayin Birligi, Ankara, 1999. (Turkish)

19. Saunders J, Aasland O, Babor T, de la Fuente J, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. Addiction 1993; 88:791-804.

20. Berman A, Bergman H, Palmstierna T, Schlyter F. Evaluation of the Drug Use Disorders Identification Test (DUDIT) in criminal justice and detoxification settings and in a Swedish population sample. Eur Addict Res 2005; 11:22-31.

21. Evren C, Ovali E, Karabulut V, Cetingok S, Mutlu E. Psychometric properties of the Drug Use Disorders Identification Test (DUDIT) with heroin dependent adults and adolescents with drug use disorder. Bulletin of Clinical Psychopharmacology 2014 (In Press).

22. Byrne BM. Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming. Second Ed. New York: Taylor & Francis, 2010.

23. Hair JF, Anderson RE, Tatham RL, Black WC. Multivariate Data Analysis. Seventh Ed. New Jersey: Prentice-Hall, 2010.

24. Mook J, Kleijn WC, van der Ploeg HM. Symptom-positively and negatively worded items in two popular self-report inventories of anxiety and depression. Psychol Rep 1991; 69:551-560.

MADDE KÖTÜYE KULLANIMI TARAMA TESTİ (DAST-10)

Cinsiyet: ☐ Erkek ☐ Kadın **Yaş:** _____

Kullanmakta olduğunuz maddeyi ya da maddeleri seçerek işaretleyiniz.

☐ Esrar ☐ Eroin ☐ Ecstasy ☐ Kokain ☐ Uçucu maddeler (Tiner/Bally)

☐ Benzodiazepinler Diğer_____

Aşağıdaki sorular kullanmakta olduğunuz alkol ve sigara dışındaki maddeler içindir ve son 12 ayı içermektedir. Mümkün olduğunca dürüst bir şekilde cevaplayarak kendinize en uygun cevabı işaretleyiniz.	**Evet**	**Hayır**
1- Tıbbi nedenlerle gerekli olanlar dışında madde kullandınız mı?		
2- Tek seferde birden fazla madde kötüye kullanır mısınız?		
3- Her istediğiniz zaman madde kullanmayı bırakabiliyor musunuz?		
4- Madde kullanımınız nedeniyle "kendinizden geçtiğiniz-blackout" ya da "geçmişte gibi yaşadığınız-flashback" oldu mu?		
5- Madde kullanımınızla ilgili olarak kendinizi hiç kötü ya da suçlu hisseder misiniz?		
6- Eşiniz (ya da ebeveyniniz) maddelere olan ilginiz nedeniyle hiç yakınır mı?		
7- Madde kullanımınız nedeniyle ailenizi ihmal ettiniz mi?		
8- Maddeyi elde etmek için yasa dışı eylemlerde bulundunuz mu?		
9- Madde almayı kestiğiniz zaman hiç yoksunluk belirtisi (hasta hissetmek gibi) yaşadınız mı?		
10- Madde kullanımınız sonucunda tıbbi bir problem yaşadınız mı (örn. hafıza kaybı, hepatit, sara nöbeti ya da kanama vs)?		