Psychometric Properties of the Turkish Version of the Barratt Impulsiveness Scale-11

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ÖZET:
Barratt dürtüsellik ölçeği -11 (BIS-11)'nin Türkçe uyarlamasının psikometrik özellikleri

Amaç: Dürtüsellik birçok farklı psikiyatrik bozukluğun önemli klinik özelliklerinden biridir. Barratt Dürtüsellik Ölçeğinin 11. Versiyonu (BIS-11) dürtüselliğin ölçümünde en sık kullanılan ve henüz Türkçe geçerlik ve güvenirliği yapılmamış bir ölçektir. Bu çalışmada BIS-11 Türkçe versiyonunun psikometrik özelliklerinin belirlenmesi amaçlanmıştır.
Yöntem: Ölçek Türkçe'ye çevrilmiş ve uyarlanmış ve daha sonra İngilizce'ye geri çevrilmiştir. Ölçek 237 üniversite öğrencisine ve 83 bipolar bozukluk ve madde bağımlılığı tanısı almış psikiyatrik hastalara uygulanmıştır. BIS-11'in toplam puan ve alt ölçek puanlarının iç tutarlılığına, her iki grup için Cronbach alfa katsayıları hesaplanarak değerlendirilmiştir. Bunun dışında BIS-11'in Türkçe versiyonunun test- test tekrar güvenirliğine ve faktör yapısına da bakılmıştır.
Bulgular: Yapılan istatistiksel analizler sonucu, BIS-11'in orijinal versiyonundaki tüm maddeler Türkçe versiyonunda da korunmuştur. Açımlayıcı temel bileşenler yönteminin uygulanması sonucunda orijinal İngilizce versiyonunda bildirilen altı birinci-sıra-faktör yapısı ile üç ikinci-sıra-faktör yapısının Türkçe versiyonunda da doğrulandığı saptanmıştır. Bununla birlikte birinci-sıra-faktörlerin, ikinci-sıra-faktör altında toplanması bu iki versiyon arasında farklılık göstermiştir. İç tutarlılığın Cronbach alfa katsayıları öğrencilerde 0.78, hastalarda 0.81, iki ay sonra tekrar test güvenirliği öğrencilerde 0.83 bulunmuştur. BIS-11 puanları, hasta grubunda yaş ve cinsiyet açısından eşleştirilmiş öğrenci grubundan anlamlı düzeyde yüksek bulunmuştur. Ayrıca BIS-11 toplam puanı agresyon, nörotizm, psikotizm, sürekli öfke, öfke kontrol ve öfke dışa puanları ile anlamlı biçimde korelasyon göstermiştir.
Tartışma: Çalışmanın sonuçları, BIS-11'in Türkçe versiyonunun iyi test-test tekrar güvenirliği ve kabul edilebilir iç tutarlılık düzeyine sahip olduğunu göstermiştir. Ek olarak ölçeğin Türkçe versiyonunun orijinal ölçekle benzer faktör yapısına sahip olduğu söylenebilir. Bazı kısıtlılıklarına karşın, Türkçe BIS-11 hem sağlıklı örneklemlerde hemde psikiyatrik hasta gruplarında dürtüselliği ölçebilen geçerli ve güvenilir bir ölçektir.

Anahtar sözcükler: Dürtüsellik, BIS-11 Türkçe versiyonu, geçerlik, güvenirlik

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ABSTRACT:
Psychometric properties of the Turkish version of the barratt impulsiveness scale-11

Objective: Impulsivity is an important clinical feature of many different psychiatric disorders. The Barratt Impulsiveness Scale version 11 is one of the scales mostly used to measure impulsivity and currently it does not have a validated Turkish version. The aim of this study was to determine the psychometric properties of the Turkish version of the Barratt Impulsiveness Scale-11 (BIS-11),
Method: The Turkish version of the Barratt Impulsiveness Scale-11 was administered to 237 college undergraduates and 83 psychiatric patients with bipolar disorders, and substance dependence. The internal consistency reliabilities of the Turkish version of BIS-11 and its subscales were assessed for each sample, by calculating Cronbach's alpha coefficient. Pearson correlations were applied to examine test-retest reliabilities of the Turkish version of BIS-11. The factor validity of the Turkish version of BIS-11 was calculated in the college students, using exploratory factor analysis (EFA).
Results: Based on analyses using factor validity, internal consistency, test-retest reliability, discriminating power for specific group's validity and concurrent validity, and all items from the English version of the BIS-11 were retained in the Turkish version. An exploratory principal-components analysis replicated the six first-orders factors and three second-order factors, consistent with the number identified in the English version. However, subscale item loadings differed between the English and Turkish versions. Cronbach's alphas for internal consistency were 0.78 (students) and 0.81 (patients), and two-month test-retest reliability was 0.83 (students). The BIS-11 significantly differentiated with between age and gender-matched student group and patients' group. The BIS-11 total score was also significantly correlated with aggression, neuroticism, psychoticism, anger-trait, anger-control, and anger-out.
Conclusions: The findings showed that the Turkish version of the BIS-11 had good test-retest reliability and acceptable internal consistency reliability. In addition, the Turkish version could be accepted to have similar factor structure to the original one. Despite some limitations, the Turkish version of BIS-11 is a reliable and valid measure that could be used to assess impulsiveness in both non-clinical samples and psychiatric patients.

Key words: Impulsivity, Turkish BIS-11, validity, reliability

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INTRODUCTION

In recent years, much attention has been paid to impulsiveness in not only psychiatric practices, but also many areas of behavioral science by clinicians and researchers. Impulsivity is conceptualized as related to the control of thoughts and behavior and is broadly defined as acting without thinking. Impulsivity is implicated in a wide range of formally defined mental disorders both Axis I and Axis II disorders (1). The high comorbidity of impulsivity and these psychiatric disorders is in a large part related to the association between impulsivity and the biological substrates of these disorders (2,3). With impulsivity a key factor in so many disorders and an important factor in treatment, it could be argued that biological and

psychological research is limited by current diagnostic categories and that a dimensional approach may be more appropriate than the categorical approach used in psychiatric diagnosis and treatment. Before such a change could take place, further research on the measurement of impulsivity and its response to treatment will be needed (4)

Although a wide variety of measures are correlated with impulsivity and have been used as "measures" of impulsivity, there are primarily three main classes of instruments that appear to measure key aspects of impulsivity: self-report measures, behavioral laboratory measures, and event-related potentials (4). Barratt and Stanford (5) proposed a discipline-neutral model for synthesizing data from different disciplines into a convergent construct of impulsiveness. The Barratt Impulsiveness Scale (BIS) is one of the most commonly used scales to measure the construct of impulsivity. Findings with BIS showed that the scale was related not only to clinical parameters, but also to biological parameters.

The objective of the current study was to establish psychometric properties and factorial validity of the Turkish version of the Barratt Impulsiveness Scale-11 (BIS-11) in a healthy college graduate and a patient samples to obtain normative data for future epidemiological and clinical studies in Turkish psychiatric patients.

METHODS

Subjects

The subjects included two samples of 83 psychiatric outpatients (40 men and 43 women) and of 237 college students (125 men and 112 women). Prior to their initial assessment, all subjects gave their verbal informed consent. The mean age of these two samples were 23.11 years (SD=2.43) and 23.12 years (SD=3.54), respectively. The average level of education were 10.45 years (SD=4.72) and 12.92 years (SD=2.01), respectively.

The first group which was consisted of 83 psychiatric outpatients was recruited from 89 outpatients who were admitted to the Psychiatry Clinics of Çukurova University Medicine Faculty, Adana,

and outpatient clinics of Erenköy Training and Research Hospital for Psychiatric and Neurological Diseases, Istanbul. The remaining 6 patients declined to participate in this study or did not fulfill the inclusion criteria (participation rate, 93.3%). For these outpatients, psychiatric diagnoses have been established on the basis of the DSM-IV-TR criteria. Of 83 patients included in the study, 40 of them were diagnosed as bipolar disorder whereas the remaining 43 received a diagnosis of current substance use disorder. Since this study was performed at the time of the first referral to the outpatient clinics, patients with severe psychiatric symptoms such as psychomotor excitation, delusions, and auditory hallucinations were excluded.

The second group in the study included healthy controls composed of college students. The Turkish BIS-11 was administered to 237 college undergraduates studying at the Karadeniz Technical University of Trabzon and living at this city. One hundred and twenty-five subjects (52.7%) were male and 112 subjects (47.3%) were female. All subjects signed informed consent forms. A smaller subsample of these subjects (n=44) agreed to participate in a 2-month re-test study of the BIS-11 from the administration of the test, which they complied fully.

Barratt Impulsiveness Scale, 11th version

The BIS-11 (6), as noted, is a 30-item self-report questionnaire designed to measure impulsiveness. All items are measured on a 4-point Likert scale (1=rarely/never; 2=occasionally; 3=often; 4=almost always/always). The factor analysis revealed three components as follows: (1) attentional impulsiveness, (2) motor impulsiveness, (3) non-planning impulsiveness. These components were identified by the second-order factor analysis for the primary six factors. Four generally indicates the most impulsive response, but some items are scored in reverse order to avoid a response bias. The higher the BIS-11 total score, the higher the impulsiveness level is.

Turkish version of Barratt Impulsiveness Scale, 11th version

The original version of BIS-11 was translated into

Turkish by one of authors (A.G.) and two independent psychiatrists fluent in both English and Turkish. A consensus translation was obtained and iteratively controlled through back version by an English mother-tongue professional translator.

Eysenck Personality Questionnaire Revised Abbreviated Form (EPQR-A)

Francis et al. (7) developed EPQR-A by reviewing the Eysenck Personality Questionnaire (8) and the abbreviated form of the same questionnaire (48-items) (9). EPQR-A consists of 3 subscales: Extraversion, Neuroticism, and Psychoticism, each containing 6 items. In order to prevent bias during the administration of the questionnaire, the lie scale, which is scored as yes (1)/ no (0) with possible scores ranging from 0 to 6, was used for control purposes. A Turkish validity and reliability study was performed by Karanci et al. (10).

Aggressions Questionnaire (AQ)

Buss and Perry (11) adapted the Buss-Durkee Hostility Inventory (BDHI) into a 29-item Likert scale. AQ was developed for attempting to improve the psychometric properties of subscales of BDHI. A Turkish validity and reliability study was performed by Can (12). The study of Turkish adaptation was shown the AQ is a 34-item self-report questionnaire, and consist of five subscales: Physical Aggression, Verbal Aggression, Anger, Hostility, and Indirect Aggression.

Spielberger State-Trait Anger Expression Inventory (STAXI)

This scale measures the feeling and expression of anger. It is a self assessing scale which includes 34 items. Ten items evaluate continuous anger and 24 items evaluate expression of anger. Studies of state anger subscale have not been completed yet. Style of anger expression includes three subscales; anger-in (8 items), anger-out (8 items) and anger control (8 items). It was developed by Spielberger (13) and a Turkish validity and reliability study was performed by Özer (14).

Statistical analysis

The internal consistency reliabilities of the Turkish version of the BIS-11 and its subscales were assessed for each sample, by calculating Cronbach's alpha coefficients. Pearson correlations were applied to examine test-retest reliabilities of the Turkish version of BIS-11. The factor validity of the Turkish version of the BIS-11 was calculated in the college students, using exploratory factor analysis (EFA). As in the original study of BIS-11 factor structure (6), an exploratory factor analysis [principle component analysis (PCA), with varimax rotation and with unlimited numbers of factor (eigenvalues greater than 1 as a criterion)] of the Turkish version of the BIS-11 was chosen. The ability of the Turkish version of the BIS-11 to discriminate between college students which considered as normal healthy subjects, and patients which has high impulsiveness is associated with a wide range of psychiatric disorders was studied by using independent sample t test analysis. Finally, we examined the relationship between the BIS-11 score and other measures of impulsivity-related traits such as the AQ, EPQR-A and STAXI. For the analyses, the statistical software SPSS 9.0 for Windows has been used.

RESULTS

Factor validity

Item-total correlations: Item analyses (Table 1) of the Turkish version of the BIS-11 showed that all item-total correlations were significant. However, as shown in Table 1, eight items were problematic showing low item-total correlations and no decrease of · at item deletion.

Principal components analysis: Using tables provided by original study (6), six factors were retained for PROMAX rotation (Table 2).

A comparison of item location on first- and second-order factors for the Turkish and U.S. version (6), and Italian version (15) is presented in Table 3.

Factor intercorrelations: Pearson's product-moment correlation coefficients among second-order factors were calculated. All scores highly significant (F1 vs. F2: .40; F1 vs. F3: .52; F2 vs. F3: .29; all ps < .001).

Table 1: Item Analysis of Turkish version of Barratt Impulsiveness Scale-11

BIS-11 items	Item-total correlation (students/patients)	α if item deleted (students/patients)
1. I plan tasks carefully.	.477/.508	.76/.79
2. I do things without thinking.	.545/.543	.76/.79
3. I make-up my mind quickly.	.114/.105	.77/.81
4. I am happy-go-lucky.	.259/.199	.77/.81
5. I don't "pay attention."	.419/.359	.76/.80
6. I have "racing" thoughts.	.173/.148	.77/.81
7. I plan trips well ahead of time.	.200/.482	.77/.79
8. I am self controlled.	.258/.487	.77/.80
9. I concentrate easily.	.289/.540	.77/.79
10. I save regularly.	.171/.107	.77/.81
11. I "squirm" at plays or lectures.	.217/.300	.77/.80
12. I am a careful thinker.	.421/.459	.76/.80
13. I plan for job security.	.404/.392	.76/.80
14. I say things without thinking.	.299/.361	.77/.80
15. I like to think about complex problems.	.164/.275	.77/.83
16. I change jobs.	.240/.516	.77/.79
17. I act "on impulse."	.477/.626	.76/.79
18. I get easily bored when solving thought problems.	.278/.444	.77/.80
19. I act on the spur of the moment.	.474/.476	.76/.79
20. I am a steady thinker.	.509/.395	.76/.80
21. I change residences.	.153/.260	.77/.80
22. I buy things on impulse.	.326/.373	.77/.80
23. I can only think about one thing at a time.	.067/.045	.78/.81
24. I change hobbies.	.175/.195	.77/.81
25. I spend or charge more than I earn.	.279/.459	.77/.80
26. I often have extraneous thoughts when thinking.	.297/.538	.77/.80
27. I am more interested in the present than the future.	.116/.056	.77/.81
28. I am restless at the theater or lectures.	.333/.213	.76/.81
29. I like puzzles.	.180/.204	.77/.81
30. I am future oriented.	.360/.162	.77/.81

Table 2: Principal Components Analysis of Turkish version of Barratt Impulsiveness Scale-11

BIS-11 items	Factor Loadings*					
	F1	F2	F3	F4	F5	F6
11. I "squirm" at plays or lectures.				.39		
28. I am restless at the theater or lectures.	.38					
5. I don't "pay attention."	.52					
9. I concentrate easily.			.44			
20. I am a steady thinker.	.64					
17. I act "on impulse."	.64					
19. I act on the spur of the moment.	.58					
22. I buy things on impulse.		.31				
3. I make-up my mind quickly.			.39			
2. I do things without thinking.	.64					
25. I spend or charge more than I earn.					.40	
4. I am happy-go-lucky.					.25	
12. I am a careful thinker.	.55					
1. I plan tasks carefully.	.61					
8. I am self controlled.	.37					
7. I plan trips well ahead of time.			.46			
13. I plan for job security.	.51					
14. I say things without thinking.	.44					
15. I like to think about complex problems.		.47				
29. I like puzzles.				.36		
10. I save regularly.						.40
27. I am more interested in the present than the future.						.21
18. I get easily bored when solving thought problems.			.47			
21. I change residences.					.39	
16. I change jobs.		.36				
30. I am future oriented.	.43					
23. I can only think about one thing at a time.						.40
26. I often have extraneous thoughts when thinking.						.47
6. I have "racing" thoughts.		.44				
24. I change hobbies.			.27			
% total variance	15.8	8.2	5.8	5.3	4.9	4.5

* According to second-order factor, three second-order factors were identified. The first second-order factor includes F1 and F4; the second second-factor includes F2 and F5, and the third second-factor includes F3 and F6.

Table 3: Comparison of item location on second-order factors

BIS-11 items	Turkish Version			U.S. Version			Italian Version		
	F1	F2	F3	F1	F2	F3	F1	F2	F3
11.	.37(4)			.84(1)			.85(5)		
28.	.38(1)			.84(1)			.80(5)		
5.	.52(1)			.57(1)			.35(5)		
9			.44(3)	.55(1)			.25(5)		
20	.64(1)			.45(1)					.81(2)
17.	.64(1)				.74(2)		.78(1)		
19.	.57(1)				.72(2)		.76(1)		
22.		.31(2)			.59(2)			.63(4)	
3.			.39(3)		.48(2)			.41(4)	
2.	.64(1)				.42(2)		.60(1)		
25.		.22(5)			.37(2)			.58(4)	
4.		.25(5)			.32(2)			.31(6)	
12.	.55(1)					.64(3)			.75(2)
1.	.61(1)					.64(3)			.56(3)
8.	.37(1)					.63(3)	.63(1)		
7.			.48(3)			.57(3)			.40(3)
13.	.51(1)					.49(3)			.76(3)
14.	.44(1)					.45(3)	.59(1)		
15.		.47(2)				.71(4)			.72(2)
29.	.20(4)					.68(4)		.24(4)	
10.			.38(6)			.46(4)		.61(4)	
27.			.16(6)			.36(4)			.50(3)
18.			.47(3)			.34(4)		.37(6)	
21.		.29(5)			.69(5)			.44(6)	
16.		.36(2)			.54(5)			.45(6)	
30.	.43(1)				.53(5)				.79(3)
23.			.13(6)		.38(5)			.43(6)	
26.			.46(6)	.77(6)				.45(6)	
6.		.44(2)		.58(6)			.33(1)		
24.			.27(3)	.35(6)				.32(4)	

The item locations on first-order factors are listed between brackets.

Internal consistency and test-retest reliability

The Cronbach's alpha coefficient for the total showed acceptable internal consistency reliability and that were demonstrated in Table 4. But, its subscales' internal consistencies have not achieved adequate level (except first second-order factor). Test-retest reliability results (r=0.83, p=0.001) of the Total score and Turkish version of the BIS-11 subscales were also demonstrated in Table 4.

Discriminating power for specific group's validity

The Turkish version of the BIS-11 total and its subscales scores were significantly different among groups (t:-2.506, df: 132.529, p: 0.013; t:-2.423, df: 136.992, p: 0.017 t:-3.717, df: 259, p< 0.001; t:-0.335, df: 259, p: 0.738, respectively). Results have shown that psychiatrically ill individuals performed significantly worse on the total and its subscales of the Turkish version of the BIS-11 except third second-order factor subscale of the BIS-11 when compared to the undergraduates controls.

Table 4: Turkish version of Barratt Impulsiveness Scale-11: Internal consistency and Test-retest reliability

Scale	Cronbach alpha		Test-retest (Undergraduates)	
	Undergraduates	Patients	r	p*
Total BIS	0.78	0.81	0.832	<0.001
The first second-order factor	0.76	0.76	0.647	0.001
The second second-order factor	0.38	0.27	0.633	0.001
The third second-order factor	0.23	0.43	0.797	<0.001

*Pearson correlation Test, Patients: Bipolar Disorder and Substance-abuse

Concurrent validity

Significant correlations were found between the BIS-11 total scores and AQ, EPQR-A and STAXI (Table 5).

Table 5: Correlations of Turkish version of BIS-11 total score with AQ, EPQR-A, and STAXI

Measures	Turkish version of BIS-11	
	r	p
AQ		
AQ_Total	.307	<.001
AQ_Physical Aggression	.280	<.001
AQ_Verbal Aggression	.139	NS
AQ_Anger	.320	<.001
AQ_Hostility	.111	NS
AQ_Indirect Aggression	.321	<.001
EPQR-A		
EPQR-A_ Extraversion	-.028	NS
EPQR-A_ Neuroticism	-.225	.003
EPQR-A_ Psychoticism	.-200	.007
EPQR-A_ Lie	.277	<.001
STAIX		
STAXI_Trait	.287	<.001
STAXI _Anger In	-.013	NS
STAXI _Anger Out	.289	<.001
STAXI _Anger Control	-.316	<.001

BIS: Barratt Impulsiveness Scale, AQ: Aggression Questionnaire, EPQR: abbreviated form of the revised Eysenck Personality Questionnaire, STAXI: Spielberger State-Trait Anger Expression Inventory, NS: non significant.

DISCUSSION

This study was undertaken to explore the psychometric properties of the 30 item version of the Barratt Impulsiveness Scale (11th version) in a Turkish sample. In order to compare our findings we used a similar approach with Patton and colleagues' study (6). We found that its factor validity, internal consistency, test-retest reliability, discriminating power for specific group's validity and concurrent validity were at an acceptable level for the Turkish population. The results of the present study indicated that the Turkish version of the BIS-11 has sufficient reliability and validity to evaluate impulsivity.

The six oblique first-order factors and three inter-correlated second-order factors, which have been previously reported for the structure of the BIS-11 evaluation (6), were also replicated in this study. However there were some differences between Turkish version and US, Italian versions. As shown in Table 3, contrary to US and Italian samples, in second-order factor analysis, not all the original items loaded in the same original factor group, and besides the number of items loaded in the second-order factors were also significantly varied. As in the Italian version (15), the differences observed between the factor analyses of the Turkish and English versions, in part, can be attributed in part to cultural differences or factors arising from translation or language differences rather than to sampling differences or low reliability of the subfactors.

With the exception of the total score and first second-order factor of the BIS-11, all other factors of the BIS have not shown adequate internal consistency coefficients. This difference might be related with the low number of items loaded in second and third second-order factor. Before reaching a decision about elimination of the items with low loadings on factor analysis from the Turkish version of the scale, more studies should be conducted among clinical and non-clinical samples. In addition, necessary revisions in the Turkish language of items should be implemented based on the feedbacks from subjects who completed the scale.

The internal consistency of the total scale was acceptable, with Cronbach's alpha being 0.80 (whole sample). The subscales had somewhat lower internal consistencies although Cronbach's alpha for the subscales ranged between 0.23 and 0.76. Thus the Turkish version of the BIS-11 (total score) could be accepted to have sufficient internal consistency reliability.Test-retest reliability of the BIS-11 was evaluated by administering the scale on all subject groups after an interval of 2 months. There was a positive correlation of 0.83 between the total scores of the two tests. When each item was assessed separately, the correlation was observed to have a range of 0.51 to 0.84. The BIS-11 total score, as well as the subscale scores, had good retest reliability. They are even higher than the internal consistency reliability. The large retest reliability coefficient indicates that, independent from the subjects' impulsiveness patterns, the intensity of impulsiveness (i.e., the BIS-11 total score) was stable over a two-month period, which was also observed in Italian, and US versions (6,15).

For discriminating power for specific group's

validity of the Turkish version of the BIS-11, the differences in mean items scores between the controls and the patients were evaluated. It was noted that mean scores of BIS-11 items were significantly higher in the patient group than control group.

For concurrent validity of the Turkish version of the BIS-11, the subjects were administered with the AQ, EPQR-A and STAXI. Barratt (16) also mentioned about these tests as other measures of impulsivity and conducted the concurrent validity analysis with these scales in his studies. He reported significant correlation rates between BIS and BDHI total score and six subscales (r=0.17-0.38); anger-out of STAXI scale (r=0.51) and psychoticism scale of EPQ (r=0.66). We also observed statistically significant correlations between the BIS-11 scores and AQ, EPQR-A and STAXI scale scores in our patient samples.

In conclusion, the present results has suggested that the Turkish version of the BIS-11 has reliable psychometric properties for measuring impulsiveness in nonclinical samples and several patient populations like the original version. Nonetheless, item content and factor loadings of BIS subscales differed from US version of the scale. Larger studies should be conducted among different Turkish populations with this scale to reach a conclusion on factor structures and item contents of subscales and find out its reliability in different clinical populations.

References:

1. Coles EM. Impulsivity in major mental disorders. In C.D. Webster and M.A. Jackson (Eds.), Impulsivity: Theory, assessment and treatment. New York, NY: Guilford, 1997; 180-194

2. Gray JA. A model of the limbic system and basal ganglia: applications to anxiety and schizophrenia, in The Cognitive Neurosciences. Edited by Gazzaniga MS. Cambridge, Mass, MIT Press, 1995, s: 1165-1176

3. Rachlin H. The Science of Self Control. Cambridge, Mass, Harvard University Press, 2000

4. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of Impulsivity. Am J Psychiatry 2001; 158:1783-1793

5. Barratt ES, Stanford MS. Impulsiveness. In C.G. Costello (Eds.) Personality characteristics of the personality disordered. New York, NY: Willey, 1995, s: 91-119

6. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. J Clin Psychol 1995; 51:768-774

7. Francis LJ, Brown LB, Philipchalk R. The development of an abbreviated form of the Revised Eysenck Personality Questionnaire (EPQR-A): its use among students in England, Canada, the USA and Australia. Pers Individ Diff 1992; 13:443-449

8. Eysenck HJ, Eysenck SB. Manual of the Eysenck Personality Questionnaire (adult and junior). Hodder & Stoughton, London, 1975

9. Eysenck SBG, Eysenck HJ, Barrett P. A revised version of the psychoticism scale. Pers Individ Dif 1985; 6: 21-29

10. Karancı N, Dirik G, Yorulmaz O. Reliability and validity studies of Turkish translation of Eysenck Personality Questionnaire Revised-Abbreviated. Turk Psikiyatri Derg 2007; 18:254-261

11. Buss AH, Perry M. The Aggression Questionnaire. J Pers Soc Psychol 1992; 63:453-459

12. Can S. Aggression Questionnaire adlı ölçeğin Türk populasyonunda geçerlilik ve güvenirlik çalışması. Unpublished Doctoral Dissertation,. GATA Haydarpaşa Hospital Psychiatry Clinics, Istanbul, Turkey, 2002

13. Spielberger CD, Jacobs G, Russel F, Crane RS. Assessment of anger: The state trait anger scale. Advances in personality assessment, Cilt II, Butcher JN, Spielberger CD (Eds), LEA, Hillsdale, NJ: s:159-87, 1983

14. Özer AK. Sürekli Öfke ve Öfke İfade Tarzı ölçekleri ön çalışması. Türk Psikoloji Dergisi 1994; 9:31:26-35

15. Fossati A, Di Ceglie A, Acquarini E, Barratt ES. Psychometric properties of an Italian version of the Barratt Impulsiveness Scale-11 (BIS-11) in nonclinical subjects. J Clin Psychol 2001; 57:815-828

16. Barratt ES. Barratt. Impulsiveness Scale, Version 11 (BIS-11). Impulse-Control Disorders measures. Hollander E, Cohen L, Simon L (Eds): Handbook of psychiatric measures. Rush AJ, Pincus HA, First MB (Eds), APA, Washington, DC: 2005; s: 691-693

Barratt Dürtüsellik Ölçeği -11 Türkçe Versiyonu
Açıklamalar: İnsanlar farklı durumlarda gösterdiği düşünce ve davranışları ile birbirlerinden ayrılırlar. Bu test bazı durumlarda nasıl düşündüğünüzü ve davrandığınızı ölçen bir testtir.
Lütfen her cümleyi okuyunuz ve bu sayfanın sağındaki, size en uygun daire içine X koyunuz.
Cevaplamak için çok zaman ayırmayınız. Hızlı ve dürüstçe cevap veriniz.

		Nadiren/ Hiçbir zaman	Bazen	Sıklıkla	Hemen herzaman/ Herzaman
1	İşlerimi dikkatle planlarım	❑	❑	❑	❑
2	Düşünmeden iş yaparım	❑	❑	❑	❑
3	Hızla karar veririm	❑	❑	❑	❑
4	Hiç bir şeyi dert etmem	❑	❑	❑	❑
5	Dikkat etmem	❑	❑	❑	❑
6	Uçuşan düşüncelerim var	❑	❑	❑	❑
7	Seyahatlerimi çok önceden planlarım	❑	❑	❑	❑
8	Kendimi kontrol edebilirim.	❑	❑	❑	❑
9	Kolayca konsantre olurum	❑	❑	❑	❑
10	Düzenli para biriktirim	❑	❑	❑	❑
11	Derslerde veya oyunlarda yerimde duramam	❑	❑	❑	❑
12	Dikkatli düşünen birisiyim	❑	❑	❑	❑
13	İş güvenliğine dikkat ederim	❑	❑	❑	❑
14	Düşünmeden bir şeyler söylerim	❑	❑	❑	❑
15	Karmaşık problemler üzerine düşünmeyi severim	❑	❑	❑	❑
16	Sık sık iş değiştiririm	❑	❑	❑	❑
17	Düşünmeden hareket ederim	❑	❑	❑	❑
18	Zor problemler çözmem gerektiğinde kolayca sıkılırım	❑	❑	❑	❑
19	Aklıma estiği gibi hareket ederim	❑	❑	❑	❑
20	Düşünerek hareket ederim	❑	❑	❑	❑
21	Sıklıkla evimi değiştiririm	❑	❑	❑	❑
22	Düşünmeden alışveriş yaparım	❑	❑	❑	❑
23	Aynı anda sadece birtek şey düşünebilirim	❑	❑	❑	❑
24	Hobilerimi değiştiririm	❑	❑	❑	❑
25	Kazandığımdan daha fazla harcarım	❑	❑	❑	❑
26	Düşünürken sıklıkla zihnimde konuyla ilgisiz düşünceler oluşur	❑	❑	❑	❑
27	Şu an ile gelecekten daha fazla ilgilenirim	❑	❑	❑	❑
28	Derslerde veya sinemada rahat oturamam	❑	❑	❑	❑
29	Yap-boz/puzzle çözmeyi severim	❑	❑	❑	❑
30	Geleceğini düşünen birisiyim	❑	❑	❑	❑

Turkish version of BIS-11:
1st Order Factor Item Content
The first first-order factor (12 items): 1*, 2, 5, 8*, 12*, 13*, 14, 17, 19, 20*, 28, 30*
The second first-order factor (4 items): 6, 15*, 16, 22
The third first-order factor (5 items): 3, 7*, 9*, 18, 24
The fourth first-order factor (2 items): 11, 29*
The fifth first-order factor (3 items): 4, 21, 25
The sixth first-order factor (4 items): 10*, 23, 26, 27
2nd Order Factor Item Content
The first second-order factor(14 items):1*, 2, 5, 8*, 11, 12*, 13*, 14, 17, 19, 20*, 28, 29*, 30*
The second second-order factor (7 items): 4, 6, 15*, 16, 21, 22, 25
The third second -order factor (9 items): 3, 7*, 9*, 10*, 18, 23, 24, 26, 27
*Reversed item scored 4, 3, 2, 1

Patton et. al. (1995)' study:
1st Order Factor Item Content
Attention (5 items): 5, 9*, 11, 20*, 28
Motor (7 items): 2, 3, 4, 17, 19, 22, 25
Self-Control (6 items): 1*, 7*, 8*, 12*, 13*, 14
Cognitive Complexity (5 items): 10*, 15*, 18, 27, 29*
Perseverance (4 items): 16, 21, 23, 30*
Cognitive Instability (3 items): 6, 24, 26
2nd Order Factor Item Content
Attentional Impulsiveness (8 items): 6, 5, 9*, 11, 20*, 24, 26, 28
Motor Impulsiveness (11 items): 2, 3, 4, 16, 17, 19, 21, 22, 23, 25, 30*
Non-planning Impulsiveness (11 items): 1*, 7*, 8*, 10*, 12*, 13*, 14, 15*, 18, 27, 29*
*Reversed item scored 4, 3, 2, 1