

Reliability and Validity Study of The Turkish Version of Functioning Assessment Short Test in Bipolar Disorder



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SUMMARY

Objective: There is a need for instruments to assess the Functioning Assessment Short Test practically. In this study the goal was to to perform a reliability and validity analyses of the Functioning Assessment Short Test (FAST) in bipolar disorder.

Method: The study was harbored 70 patients with bipolar disorder and 134 healthy control subjects. Thirteen of the patients were in the manic episode, 16 were in the depressive episode, and 41 patients were in remission. First, FAST was translated into Turkish and then it was back-translated into English. The translation was finally approved by the author of the original development study. In the concurrent validity, Bipolar Disorder Functioning Questionnaire (BBi) was used.

Results: In the reliability analyses, Cronbach alpha coefficient of internal consistency was calculated to be 0.960, and test-retest reliability coefficient was found to be 0.945. In the validity analyses, in the exploratory factor analysis five factors were obtained and the factor represented social functioning, occupational functioning, autonomy, cognitive functioning and financial issues. In the confirmatory factor analysis, comparative fit index was 0.912 and RMSEA value was 0.085. In the concurrent validity analyses, the domains of FAST were correlated poorly to moderately with the subscales of BBi. FAST discriminated bipolar patients with symptomatic episodes and remitted patients, healthy controls. The area under the ROC curve was found to be 0.824.

Conclusion: These results point out that the Turkish version of Functioning Assessment Short Test can used reliably and validly in bipolar patients.

Key Words: Functioning Assessment Short Test, reliability, validity

INTRODUCTION

After the establishment of more effective treatment alternatives for the episodes of bipolar disorder, the outcome criteria such as functionalty and quality of life are becoming topics of interest. Even though full remission is suggested in bipolar patients, residual symptoms persist. Hence, functioning does not return to the premorbid level (Özer ve ark. 2002, Kaya ve ark. 2007, Kaya ve ark. 2009). The assessment and follow-up of functioning is crucial in symptomatic episodes as well as in remission phase.

In the assessment of functioning, a Bipolar Disorder Functioning Questionnaire, which was developed and vali-

dated by Aydemir et al. (2007) is being used in many studies. The Bipolar Disorder Functioning Questionnaire is a 52-item self-rated scale with a 3-point Likert-type rating. Even though the questionnaire provides a detailed assessment in studies, there is a need for a briefer and easy-to-use rating instrument in routine daily practice. Global assessment of functioning (GAF) in DSM Axis 5 provides assesment in only one dimension and is easy-to-use. However, while bipolar patients may experience impairment or problems in one dimension, the other dimensoins may be fully intact. Thus, instrument rating functioning in one dimension are not useful. In the assessment of functioning, there must be a social dimension which should contain familial and occupational functioning,

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Table 1. Demographic and clinical features of the study groups

	Bipolar Disorder N=70		control N=134	
Agea	40.7±11.9		21.8±6.8	
Gender				
Male	31	%44.3	45	%34.9
Female	39	%55.7	84	%65.1
Educationa				
Primary	18	%25.7	5	%3.7
High	19	%27.1	7	%5.3
University	33	%47.2	122	%91.0
Bipolar type				
Bipolar I disorder	59	%84.3		
Bipolar II disorder	11	%15.7		
Episode type				
Manic	13	%18.6		
Depressive	16	%22.8		
Remission	41	%58.6		
Duration of illness (years)	11.9±9.4			
Number of episodes	6.2±5.0			
GAF	69.4±23.7			
HAM-D	6.1±7.6			
YMRS	7.1±10.4			
ap<0.0001				

interpersonal relations, and psychological dimension which consists of intellectual, sexual, and emotional dimensions of functioning (Michalak et al. 2006).

Functioning Assesment Short Test (FAST) was developed by Rosa et al. (2007) for quickly assessing functioning in bipolar disorder. FAST is a 24-item interviewer-rated scale with 4-point Likert-type rating (0=no difficulty, 3=severe difficulty). FAST consists of six dimensions: autonomy, occupational functioning, cognitive functioning, financial issues, interpersonal relations, and leisure time. A higher score indicates poor functioning. The validation studies for Spanish, Portuguese and English versions were performed and are widely used in the assessment of functioning in bipolar disorder.

The aim of the study is to perform the reliability and validity studies of the Turkish version of Functioning Assessment Short Test in bipolar disorder.

METHOD

Translation Procedure

Permission was granted from the developer of the scale before the adaption study of Functioning Assesment Short Test could be performed in Turkish. The translation process of the scale was performed by two psychiatrists and a public health specialist who are experienced in patient reported outcomes. The texts were translated, controlled, and merged into a final text. To examine if the items were understandable 10 patients were asked to read the items, report whether the items are understandable and represent their psychosocial state.

The Turkish translation of the scale was back-translated into English by a linguist. The back-translated text was controlled by the developer of the original scale. After the confirmation, the final Turkish version of the scale was obtained.

Subjects

The subjects consisted of bipolar patients drawn from the inpatient or outpatient ward of the department of psychiatry of Celal Bayar University, School of Medicine. Along with bipolar patients in remission, patients with depressive or manic episodes were also included. A 17-item Hamilton Depression Rating Scale score confirmed the remission state (less than 7 and a Young Mania Rating Scale score less than 4). The inclusion criteria consisted of an age between 18-65, having been diagnosed with bipolar disorder type I or II (according to DSM-IV), and demonstrating a physical and cognitive ability sufficient to comply with the study protocol. The exclusion criteria consisted of any psychiatric disorder other than bipolar disorder type I or II, substance abuse, and having any neurological or organic diagnosis requiring treatment. The study was carried out with 70 patients. The bipolar group consisted of 13 patients with manic episode, 16 patients with depressive episode and 41 patients in remission. The control group consisted of health care workers and university students. The inclusion criteria for the control group was being older than 18 years, not having any psychiatric or organic diagnosis, not having alcohol or any other substance abuse and demonstrating physical and cognitive ability sufficient to comply with study protocol. 134 volunteers were included in the control group.

The study was approved by the Local Ethical Committee of Celal Bayar University.

Besides the Functioning Assessment Short Test, for assessing mood symptoms, the Young Mania Rating Scale (YMRS) (Karadag et al. 1996) and the Hamilton Depression Rating Scale (HAM-D) (Akdemir et al. 2002) were used.

Bipolar Disorder Functioning Questionnaire

For concurrent validity, the Bipolar Disorder Functioning Questionnaire (BDFQ) which is validated in Turkish (Aydemir et al. 2007) was used. BDFQ is a 52-item self-rated, 3-point Likert type scale with 11 domains: emotional functioning, intellectual functioning, sexual functioning, sense of stigmatization, social withdrawal, household activities, relations with friends, participation to social activities, daily activities and hobbies, taking initiative and self-sufficiency, and occupation. A higher score indicates better psychosocial functioning.

Global Assessment of Functioning

Global Assessment of Functioning Scale (GAF) is a measure that assesses the individual's overall functioning on a rating scale that ranges from 0 to 100 and it is the axis V in the diagnostic classification (DSM) of American Psychiatric Association.

Table 2. Item – total score correlation coefficients of Functioning Assessment Short Test

Domain	Item	Coefficient
Autonomy	FAST #1	0.686
	FAST #2	0.611
	FAST #3	0.707
	FAST #4	0.704
Occupational functioning	FAST #5	0.609
	FAST #6	0.733
	FAST #7	0.717
	FAST #8	0.810
	FAST #9	0.838
Cognitive functioning	FAST #10	0.733
	FAST #11	0.656
	FAST #12	0.735
	FAST #13	0.480
	FAST #14	0.755
Financial issues	FAST #15	0.656
	FAST #16	0.665
Interpersonal relations	FAST #17	0.751
	FAST #18	0.760
	FAST #19	0.811
	FAST #20	0.628
	FAST #21	0.599
	FAST #22	0.774
Leisure time activities	FAST #23	0.606
	FAST #24	0.706

Study Procedure

Seven of the symptomatic patients were assessed during hospitalization. 22 patients were rated in the outpatient ward, and all of the remitted patients were included in the outpatient ward. In the control group, 20 volunteers were health care workers and the rest (114 volunteers) were university students. After the description of the study aims, informed consent was gained from each volunteer. Then the study scales were applied, and all of the scales were checked whether they were fully filled.

Statistical Analyses

In the comparison of the study groups, in terms of demographic and clinical features, the chi-square test was performed for categorical variables and q T-test or Analysis of Variance tests were used for continuous variables. For all the means subjected to the statistical analyses, normal distribution was tested with Levene Test. All means were found to be normally distributed.

In the reliability analysis, the Cronbach alpha coefficient for the internal consistency was calculated. In addition, the item-total score correlation coefficients were also obtained for the reliability analysis. In the bipolar group with remission, Functioning Assessment Short Test was applied to 40 volunteers two weeks later and test-retest reliability was demonstrated with the Person's correlation test between the two ratings.

For the construct validity of the scale, both exploratory and confirmatory factor analyses were calculated. In order to test the sampling adequacy for factor analysis, Kaiser – Meier – Olkin measure ve Bartlett's Test were checked. Exploratory factor analysis was performed. A principal component analysis, with varimax rotation, and factors with eigenvalues greater than 1 and items with factor loadings greater than 0.4 were taken into consideration. The structure of the scale obtained in the exploratory factor analysis was compared with the original scale. Confirmatory factor analysis is also considered to be a crucial analysis in the validation studies. When evaluating the fit of the CFA and stability models to the data, we used several types of goodness-of-fit indexes: root mean square error of approximation (RMSEA) and comparative fit index (CFI). The RMSEA is an absolute index of fit. RMSEA values under 0.05 indicate close fit with the data. Values between 0.05 and 0.08 represent reasonable fit. Values between 0.08 and 0.10 reflect poor fit and values greater than 0.10 are unacceptable. The CFI values range between 0 and 1 and should be greater than 0.90. One of the characteristics of the CFI is that it is not affected by sample size or distribution. For the concurrent validity, correlation between Functioning Assessment Short Test and Bipolar Disorder Functioning Questionnaire were used. Correlation coefficients for the similar dimensions of the two scales were calculated. In addition, correlation between FAST total score and Global Assessment of Functioning score were calculated. For the criterion validity, analysis, and curve of Receiver Operating Characteristics, comparing symptomatic bipolar patients with remitted bipolar patients and healthy controls were obtained. If the area under the curve (AUC) is greater than 0.9 it indicates good discrimination. If AUC is between 0.8-0.9 the discrimination is suggested to be acceptable.

RESULTS

The study was carried out with 70 patients with bipolar disorder ,and 134 healthy controls.

Demographical features

Table 1 demonstrates demographical and clinical features of the study volunteers. There is a statistically significant difference between the bipolar and control groups in terms of age ($T=14.1214$, $p<0.0001$) and education (chi-square=51.868, $p<0.0001$).

Reliability Analyses

For the internal consistency of Functioning Assessment Short Test, Cronbach alpha coefficient was found to be 0.960. Item-total score correlation coefficients were between 0.480 and 0.838 (Table 2) while all were statistically significant ($p<0.0001$).

Table 3. Exploratory factor solution of Functioning Assessment Short Test

	Factrr				
	1	2	3	4	5
FAST #1			0.646		
FAST #2			0.702		
FAST #3			0.727		
FAST #4			0.714		
FAST #5		0.783			
FAST #6		0.667			
FAST #7		0.718			
FAST #8		0.658			
FAST #9		0.615			
FAST #10				0.490	
FAST #11				0.702	
FAST #12				0.606	
FAST #13				0.730	
FAST #14				0.700	
FAST #15					0.812
FAST #16					0.787
FAST #17	0.598				
FAST #18	0.680				
FAST #19	0.640				
FAST #20	0.436				
FAST #21	0.729				
FAST #22	0.697				
FAST #23	0.739				
FAST #24	0.792				
Eigenvalue	12.787	1.452	1.162	1.086	1.000
Variance (%)	53.27	6.05	4.84	4.52	4.16

For the test-retest reliability analysis of FAST, the correlation coefficient between the two ratings in 15-day interval was found to be 0.945 ($p < 0.0001$).

Validity Analyses

For the structure validity of FAST, exploratory factor analysis was performed. To test the sampling adequacy, the coefficient was found as 0.936 in Kaiser – Meier – Olkin Test and the chi-square value was 4.005 ($p < 0.0001$) in Bartlett's Test. After confirming the sampling adequacy, in the exploratory factor analysis, 5 factors with eigenvalues greater than 1 were obtained and represented 72.86% of the total variance (Table 3). All items were represented in the factor structure and all items in the factors were positive. The eigenvalue of the first factor was 12.787 and represented 53.27% of the total variance. The first factor contained eight items with factor loadings greater than 0.4. It can be called social functioning due to the item's related to interpersonal relations and leisure time activities. The second factor had an eigenvalue of 1.452 and represented 6.05% of the total variance. The second factor consisted of 5 items and from the occupational functioning domain. The eigenvalue of the third factor is 1.162 and represented 4.84% of the total variance. The third factor contained 4 items related to autonomy. The fourth factor had an eigenvalue of 1.086 and represented

4.52% of the total variance. The fourth factor consisted of 5 items representing the cognitive functioning domain. The fifth factor had an eigenvalue of 1.000 representing 4.16% of the total variance. The fifth factor contained 2 items related to the financial issues domain.

To test whether the model of the scale is fit, confirmatory factor analysis was performed and the distribution of the sample was examined. In the confirmatory factor analysis, for the 6-dimension model of FAST, the CFI value was 0.912 and the RMSEA value was 0.085.

The correlation between similar domains of the Bipolar Disorder Functioning Questionnaire (BDFQ) and FAST were evaluated. The correlation between cognitive functioning (FAST) and intellectual functioning (BDFQ) was -0.308 ($p = 0.005$), between interpersonal relations (FAST) and household relations (BDFQ) was -0.369 ($p = 0.001$), between interpersonal relations (FAST) and relations with friends (BDFQ) was -0.484 ($p < 0.0001$), between occupational functioning (FAST) and employment (BDFQ) was -0.167 ($p > 0.05$), between autonomy (FAST) and taking initiative and self-sufficiency was -0.374 ($p = 0.001$), between autonomy (FAST) and social withdrawal (BDFQ) was -0.421 ($p < 0.0001$), between leisure time activities (FAST) and daily activities and hobbies (BDFQ) was -0.291 ($p = 0.008$), between leisure time activities (FAST) and participation in social activities (BDFQ) was -0.267 ($p = 0.016$), between financial issues (FAST) and taking initiative and self-sufficiency (BDFQ) was -0.285 ($p = 0.009$), between occupational functioning (FAST) and taking initiative and self-sufficiency (BDFQ) was -0.313 ($p = 0.004$) and between sexual functioning (BDFQ) and the item related to sexuality (FAST #21) was -0.664 ($p < 0.0001$). The correlation between total score of FAST and Global Assessment of Functioning was found to be -0.376 ($p = 0.001$).

To evaluate the discriminative effect of FAST, total scores of the bipolar and healthy control groups were compared. The total score of the bipolar patients in episodes (31.8) was statistically higher than the bipolar patients in remission (13.9) and the healthy controls (15.7) ($F = 16.588$, $p < 0.0001$). Similar results were obtained with the subscales (Table 4).

In the ROC analysis of FAST, concerning the bipolar versus healthy control groups, the area under the ROC curve (AUC) was found to be 0.583. The same analysis was repeated concerning the bipolar group with episodes versus the bipolar group in remission and healthy control group and AUC was calculated as 0.824.

DISCUSSION

In the follow-up of bipolar disorders, the evaluation of functioning is drawing more attention than the monitorisation of the symptoms. Chieiving, improving functioning, and determining

Table 4. Comparison of the study groups in terms of total score and domain scores of Functioning Assessment Short Test.

	Group	N	Score	D.F.	F
Autonomy	episode	29	3.8		
	remission	41	1.7	2	5.653 ^a
	control	134	2.2		
Occupational functioning	episode	29	6.7		
	remission	41	3.3	2	9.579 ^b
	control	134	3.4		
Cognitive functioning	episode	29	6.0		
	remission	41	3.0	2	9.153 ^b
	control	134	3.2		
Financial issues	episode	29	2.6		
	remission	41	0.8	2	8.867 ^b
	control	134	1.3		
Interpersonal relations	episode	29	8.7		
	remission	41	3.5	2	19.871 ^b
	control	134	3.7		
Leisure time activities	episode	29	3.7		
	remission	41	1.5	2	23.455 ^b
	control	134	1.6		
Total score	episode	29	31.8		
	remission	41	13.9	2	16.588 ^b
	control	134	15.7		

D.F.: degree of freedom, ^ap<0.01, ^bp<0.0001

the factors that negatively affect functioning are the main goals in the follow-up of the bipolar patients (Wingo ve ark. 2010, Bonnin ve ark. 2009, Rosa ve ark. 2009). FAST, which is providing an easy assessment of functioning during routine daily practice, is a very useful instrument in the longitudinal follow-up of bipolar disorders. In this study, the adaptation, reliability, and validity of the Turkish version of FAST is evaluated. It was determined that the Turkish version of FAST is useful.

Reliability Analyses

The Cronbach alpha coefficient for internal consistency of the scale was very high. The internal consistency coefficient was also high in the original development study of the scale (Rosa et al. 2007) and in the validation study of the Brazilian version (Cacilhas ve ark. 2009). It shows that the structure of the scale consistently represents as a whole. Item – total score correlation coefficients were also found to be high. This indicates the reliability of the Turkish version of the scale. “Ability to remember newly-learned names” had the lowest coefficient of item – total score correlation. Since this item is related to cognitive functioning and social functioning, its reliability may be low. When the scores of the remitted patients in a 15-day interval were taken into consideration, the correlation was very high. The test-retest reliability is also good in the other validation studies of FAST (Rosa ve ark. 2007, Cacilhas ve ark. 2009). In regard to all these findings, the Turkish version of FAST can be used reliably in clinical practice.

Validity Analyses

The validity analyses were performed in three extents. For structure validity, in exploratory factor analysis, a 5-dimension factor solution was obtained and represented a significant proportion of the variance. In the validation studies of both original scale and Brazilian version, a 5-dimension factor solution was also been obtained and the subscales of FAST have been represented in these factors. In this present study, there is a 5-dimension factor solution and all dimensions of the scale are represented in this solution. The last two dimensions of the scale (interpersonal relations and leisure time activities) were represented in one factor solution. Instead of hobbies, interpersonal relations have a special emphasis in terms of leisure activities. In our society, it is understandable to have these two dimensions in one factor solution. Thus the results of the exploratory factor analysis fit the dimensions of the scale well.

The participant’s “ability to concentrate on a book, film” and “living with their own family” have had the lowest factor loadings. Patients had limited participation in reading a book or watching movies. In addition, it is not generally expected for bipolar patients to live with their families. Bipolar patients have a better autonomy. Thus, these two items have relatively low factor loadings in the original development study of FAST (Rosa et al. 2007). In the structure validity, the second analysis confirms the factor analysis and the fit index for the dimensional model of the scale tested. It is demonstrated that the structure of the scale fits the dimensional model. These findings demonstrate that the structure validity of the scale is good. In the criterion validity, the discriminative properties of the scale between bipolar patients and healthy controls were evaluated. In the comparison of FAST scores, it was observed that the scale is useful in discriminating bipolar patients with episodes from bipolar patients in remission and healthy controls. Also in the ROC curve, it was shown that it moderately discriminates bipolar patients with episodes and in remission from healthy controls. On the other hand, it discriminates bipolar patients with episodes from bipolar patients in remission and healthy controls. It is found that the scale is very sensitive to the impairment of episodes of bipolar disorder. However it can not adequately differentiate bipolar patients in remission from the healthy controls. This limitation may be a result of the sensitivity of the scale to differentiate remitted patients from the healthy controls along with the perfect functioning of the remitted patients. When the same analysis was repeated with the Bipolar Disorder Functioning Questionnaire, even though it can perfectly differentiate bipolar patients with episodes from bipolar patients in remission and healthy controls, it can poorly discriminate between bipolar patients and healthy controls. It will be helpful to test the discriminating property of the scale in further studies.

In concurrent validity, BDFQ and global assessment of functioning (GAF) were utilized. Though all the correlation coefficients of FAST total score or subscale scores with BDFQ subscales and GAF are statistically significant, they are poor to

moderate. Moreover, the correlation between the two subscales concerning occupational functioning is not statistically significant. However, the correlation between FAST and GAF is very high in the original development study (Rosa et al. 2007), and the correlation between FAST, GAF and the Sheehan Disability Scale is moderate to high in the study of the Brazilian version (Cacilhas et al. 2009). The rate of different concepts is one reason why the correlation between FAST and BDFQ is lower than expected. The question content of FAST emphasizes competency. On the other hand, BDFQ is a performance scale rating, the level of functioning of the patients in given domains. This difference in concept may limitate the correlation between these two scales. As an example, while there was no statistically significant difference between the subscales concerning occupational functioning, there was a significant correlation between occupational functioning of FAST and taking initiative and self-sufficiency of BDFQ. Thus, occupational adequacy of FAST was found to be equivalent to the concept of taking initiative and self-sufficiency rated by BDFQ. Another reason is that while FAST is an interviewer-rated scale, BDFQ is a self-rated scale. It was previously reported that there is a difference between the subjective versus objective rating of the functioning (Aydemir ve ark. 2009, Martínez-Aran ve ark. 2005, Goldberg ve Harrow 2005). As a result, even though the correlation between the FAST and the other scales is poor, it has some contribution to the validity of FAST.

When all validity analyses were taken into consideration, it is suggested that FAST is valid in bipolar disorder.

Limitations and Strengths of the Study

The first limitation of the study is that the sample size of bipolar patients with episodes is relatively small. The second limitation is that no structured clinical interview was performed for psychiatric diagnosis in healthy controls. The statistically significant difference between the study groups (in terms of age and education) should be recognized when interpreting the comparison of the mean scores of the study scales. In accordance with the aims of the study, all the necessary statistical analyses were performed with this study sample. One strength of the study is that the study sample represents patients. Hence, it is possible to use the scale in the clinical environment. Another strength is that patients from different mood states were included in the study. The validation study perfectly fits the aims of the scale.

CONCLUSION

The Turkish version of Functioning Assessment Short Test can be reliably and validly used in bipolar disorder. It will be useful both in routine clinical practice and clinical trials with its easy-to-use properties.

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Validity and reliability of the Finnish version of the Functioning Assessment Short Test (FAST) in bipolar disorder. *International Journal of Bipolar Disorders*, Vol. 3, Issue. 1, CrossRef. Google Scholar. Zhang, Yong Long, Xingning Ma, Xiaojuan He, Qianqian Luo, Xingguang Bian, Yanhui Xi, Yuanyuan Sun, Xia Ng, Chee H. Vieta, Eduard and Xiang, Yu-Tao 2018. Psychometric properties of the Chinese version of the Functioning Assessment Short Test (FAST) in bipolar disorder. *Journal of Affective Disorders*, Vol. 238, Issue. , p. 156. CrossRef. Google Scholar. A Self-administered Version of the Functioning Assessment Short Test for Use in Population-based Studies: A Pilot Study. *Clinical Practice & Epidemiology in Mental Health*, Vol. 16, Issue. 1, p. 192. Reliability and Validity Studies of Turkish Translation of Eysenck Personality Questionnaire Revised-Abbreviated. A. Nuray KARANCI, G lay D K, Or sun YORULMAZ. Abstract. The internal consistency, test-retest reliability, and validity were subsequently evaluated. Results: Factor analysis, similar to the original scale, yielded 4 factors; the neuroticism, extraversion, psychoticism, and lie scales. Kuder-Richardson alpha coefficients for the extraversion, neuroticism, psychoticism, and lie scales were 0.78, 0.65, 0.42, and 0.64, respectively, and the test-retest reliability of the scales was 0.84, 0.82, 0.69, and 0.69, respectively. The relationships between EPQR-A-48, FSI-III, EMBU-C, and RSES were examined in order to evaluate the construct validity of the sca