Original Article



Investigation of the Psychometric Properties of the Persian Version of the Functioning Assessment Short Test (FAST) in Bipolar Patients

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Abstract

Background: This study assessed the Persian version of the Functioning Assessment Short Test (FAST) in bipolar disorder patients to determine its reliability and validity, as currently no specialized tools are available to evaluate functional impairment in this population.

Methods: A cross-sectional study was conducted with 240 bipolar disorder patients at Shafa Hospital in Rasht in 2023. The Persian version of the FAST was translated and reviewed for content validity, reliability, and factor analysis. Data analysis was done using IBM SPSS version 26, and confirmatory factor analysis (CFA) was performed with LISREL version 8.8.

Findings: The results indicated a content validity ratio (CVR) above 0.62. To assess convergent validity, the Short Form Health Survey (SF-36) was used, yielding a direct and significant correlation (P < 0.001, r = 0.675). The FAST exhibited a Cronbach's alpha of 0.953, indicating robust internal consistency. The intraclass correlation coefficient (ICC) ranged from 0.74 to 0.98, signifying excellent reliability. The correlation coefficient between scores from repeated tests demonstrated strong reliability. CFA was employed to confirm the dimensions of the FAST, and the construct validity was considered satisfactory.

Conclusion: The Persian version of the FAST demonstrated strong psychometric properties in the study, making it useful for evaluating rehabilitation interventions, assessing medication effects, and supporting research efforts.

Keywords: Bipolar disorder, Functioning, Rehabilitation, Psychometrics

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Introduction

Bipolar disorder is a category of mood disorders that can lead to functional disorders, even among patients whose symptoms have remitted.1 Functioning is a complex concept that includes various domains. Cognitive disorder, occupational impairment, challenges in fulfilling household responsibilities, interpersonal relationship issues, leisure and sexual problems are key functional impairments reported by patients.²⁻⁶ Understanding the factors that contribute to the improvement of outcomes related to this functional impairment can aid in the advancement of therapeutic interventions, necessitating tools that assess various domains of functioning in these patients. However, there is currently no specific instrument designed to assess the different areas of functional impairment in bipolar disorder, and most available tools are time-consuming. The most commonly

used scale for assessing functioning is the Global Assessment of Functioning scale (GAF), but the GAF is structured to rate symptoms as functioning.^{7,8} Other scales, such as the Social Adjustment Scale (SAS), Life Functioning Questionnaire (LFQ), Short Form-36 (SF-36), and WHO-DAS, are commonly used tools to assess functional impairment in bipolar disorder, although they are not specifically designed for this purpose.⁹ They often prioritize global measures or limited criteria for functional recovery instead of analyzing specific and distinct aspects of psychosocial functioning.^{4,9}

The Functioning Assessment Short Test (FAST) is used to assess functional impairment in patients with psychiatric disorders, such as bipolar disorder. It consists of 24 items across six domains: autonomy, occupational functioning, cognitive functioning, financial issues, interpersonal relationships, and leisure time. Its advantages include



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simplicity, ease of use, and a brief administration time. In terms of psychometric properties, the original FAST is a reliable tool with high internal consistency. It improves the evaluation of functional impairment in patients with bipolar disorder and can be beneficial in evaluating supplementary interventions aimed at rehabilitation and improving the functioning of bipolar patients, as well as assessing the pharmacological effects and psychosocial interventions.¹⁰

In recent years, FAST has become one of the most widely used instruments in clinical practice and research for assessing the functioning of bipolar patients globally,¹¹ yet it has not been psychometrically evaluated in Persian. The study will assess the reliability and validity of the Persian version of the FAST in individuals with bipolar disorder.

Methods

In the first stage, after obtaining the consent of the original designers—Rosa et al—the questionnaire was translated into Persian by two native Persian speakers proficient in English. The translation was then discussed with researchers, resulting in a unified version. For back-translation, two additional translators, also native Persian speakers and fully proficient in both languages, who had not seen the original English version, translated the questionnaire. The Persian version was prepared after comparing the two English versions produced by the translation team and researchers.

To assess content validity, the questionnaire was provided to 20 bipolar disorder patients to evaluate and refine the writing style and ease of understanding of the words and sentences. The reduction and elimination of inappropriate items and the determination of the importance of each item were conducted using a quantitative item impact method. Ultimately, a 5-point Likert scale was used to assess the impact coefficient of the questions. In this method, questions with an impact coefficient of 1.5 or higher were retained, while decisions regarding those with lower values were made after consulting with the original questionnaire designer and the research team.

For content validity, feedback was gathered from 10 faculty members in the field of psychiatry using the content validity ratio (CVR) and the content validity index (CVI). In this study, a 3-point Likert scale was established to calculate CVR. This index was determined for each question based on the Lawshe table for a panel of ten, aiming for a CVR value greater than 0.62. To evaluate the CVI, the relevance of each item was assessed based on four-point responses and scored accordingly. The CVI index in the simplicity and clarity domains was calculated in the same way. In the construct validity, we used confirmatory factor analysis (CFA). For CFA and determining the scope of this 24-question questionnaire,

the data of at least 240 bipolar disorder patients referred to Shafa Rasht Hospital in 2023 were used. The patient sampling method for this study was based on consecutive sampling.

To determine convergent validity, the Short Form Health Survey (SF-36), which has also been psychometrically evaluated in Iran, was administered to 40 patients, and the correlation between the scores of the two instruments was calculated.

For reliability, the internal consistency method was employed. To determine internal consistency for the entire instrument and by domain, a Cronbach's alpha value of 0.7 or higher was used as an indicator of good internal consistency of the questions for measuring treatment progress. The test-retest reliability of the scale was assessed using the intraclass reliability coefficient (ICC). This involved a retest with 30 patients over a minimum of 10 days, classified as a test-retest method.

Data analysis

CFA was conducted using LISREL 8.8 software to assess construct validity, and model fit indices were calculated. For external reliability, the ICC was used, while Cronbach's alpha was employed for assessing internal reliability. Data analysis was conducted using SPSS 26 software.

Results

The study included participants aged 40-60 years, with an average age of 47.4 ± 13.8 years. The majority were female (53%) and married (55%) (Table 1). To assess item impact for quantitative face validity, 20 bipolar disorder patients

Table 1. Frequency Distribution of Study Samples According to Individual Factors $(n\!=\!240)$

Variables		No.	%
	<40	73	30.42
	40-60	128	53.33
Age	>60	39	16.25
	Mean \pm SD	47.35 ±	13.83
	(Min, Max)	(16.0,	89.0)
6	Male	112	46.67
Sex	Female	128	53.33
	Under diploma	125	52.08
	Diploma	79	32.92
Education	Post graduate	8	3.33
Education	Bachelor's degree	18	7.50
	Master's degree	5	2.08
	Ph.D.	5	2.08
	Single	66	27.50
Marital	Married	132	55.00
status	Divorced	26	10.83
	Widow	16	6.67

rated the importance of each item on a 5-point Likert scale (1=not important at all, 5=very important) based on their experiences. All calculated impact scores were above 1.5, indicating that all questions in the questionnaire were confirmed concerning quantitative face validity. The CVR for each of the 24 questions in the questionnaire was greater than 0.62, demonstrating acceptable CVR, and there was no need for the removal or modification of any questions (Table 2). For all items, the CVI was above 0.8, confirming the content validity as well (Table 3).

CFA was used to validate the dimensions of the FAST for patients with bipolar disorder, which includes six domains. All factor loading values were greater than 0.4, indicating acceptable construct validity. In assessing the significance of the relationship between variables, the t-test results showed that the t-values were outside of -1.96 to 1.96 for each item, indicating a statistically significant association between the items of each subscale and respective subscales. Therefore, none of the items were removed (Figures 1 and 2).

All fit indices, except for the Adjusted Goodness of Fit Index (AGFI) and the Parsimonious Goodness of Fit Index (PGFI), had acceptable values, indicating a good model fit (Table 4).

To assess convergent validity, the SF-36 health-related

Table 2. CVR values, acceptance or rejection of items

quality of life questionnaire was utilized, revealing a direct and significant relationship between the short performance assessment test and the SF-36 (P < 0.001, r = 0.675).

For evaluating internal consistency of the FAST in bipolar disorder patients, Cronbach's alpha was employed and indicated high internal stability (Table 5).

To determine test-retest reliability of the scale, intraclass correlation coefficient (ICC) and Spearman correlation coefficient were used. The ICC values for each of the subscales and the overall scale ranged from 0.740 to 0.980, reflecting high test-retest reliability of the questionnaire (Table 6). The high correlation coefficient between retest scores in each subscale and the total score indicates good reliability of the tool.

Discussion

The FAST consists of 24 items that assess six specific performance domains, including autonomy, occupational functioning, cognitive functioning, financial issues, interpersonal relationships, and leisure time. The Persian version of FAST showed strong internal consistency, with all items having a Cronbach's alpha above 0.90. The reliability of the instrument was also very good, and these findings align with the psychometric results of this tool

Table 3. CVI values, acceptance or rejection of items

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Items	E	U	N	CVR	Results	Items	Items CVIs	Items CVIs CVIr	Items CVIs CVIr CVIc
1	10	0	0	1	Acceptable	1	1 1	1 1 1	1 1 1 1
2	10	0	0	1	Acceptable	2	2 0.9	2 0.9 1	2 0.9 1 1
3	8	2	0	0.8	Acceptable	3	3 1	3 1 0.9	3 1 0.9 0.9
4	10	0	0	1	Acceptable	4	4 0.8	4 0.8 1	4 0.8 1 0.8
5	10	0	0	1	Acceptable	5	5 1	5 1 1	5 1 1 1
6	10	0	0	1	Acceptable	6	6 1	6 1 1	6 1 1 1
7	8	2	0	0.8	Acceptable	7	7 1	7 1 0.9	7 1 0.9 0.9
8	8	2	0	0.8	Acceptable	8	8 0.9	8 0.9 1	8 0.9 1 1
9	10	0	0	1	Acceptable	9	9 0.8	9 0.8 0.9	9 0.8 0.9 0.8
10	10	0	0	1	Acceptable	10	10 1	10 1 1	10 1 1 1
11	10	0	0	1	Acceptable	11	11 0.8	11 0.8 1	11 0.8 1 1
12	10	0	0	1	Acceptable	12	12 0.8	12 0.8 1	12 0.8 1 0.8
13	10	0	0	1	Acceptable	13	13 1	13 1 1	13 1 1 1
14	10	0	0	1	Acceptable	14	14 1	14 1 1	14 1 1 1
15	10	0	0	1	Acceptable	15	15 1	15 1 1	15 1 1 1
16	10	0	0	1	Acceptable	16	16 1	16 1 1	16 1 1 1
17	10	0	0	1	Acceptable	17	17 1	17 1 1	17 1 1 1
18	10	0	0	1	Acceptable	18	18 1	18 1 1	18 1 1 1
29	8	2	0	0.8	Acceptable	19	19 1	19 1 1	19 1 1 1
20	8	2	0	0.8	Acceptable	20	20 1	20 1 1	20 1 1 1
21	10	0	0	1	Acceptable	21	21 1	21 1 1	21 1 1 1
22	8	2	0	0.8	Acceptable	22	22 0.9	22 0.9 1	22 0.9 1 0.8
23	8	2	0	0.8	Acceptable	23	23 1	23 1 1	23 1 1 1
24	8	2	0	0.8	Acceptable	24	24 1	24 1 1	24 1 1 1



Figure 1. First-order confirmatory factor analysis model for factor estimation of the Persian version of the FAST $\,$

in various countries such as China, Italy, Brazil, Finland, Turkey, and France.¹²⁻¹⁶

The test-retest reliability in this study was assessed over 10 days, indicating high test-retest reliability for this questionnaire. Similar findings regarding test-retest reliability were reported in the initial study in Turkey.^{2,15}

In our study, convergent validity was determined using the SF-36, and a direct and significant relationship was found between the FAST and the SF-36. In China and



Figure 2. T-values of items of the Persian version of the FAST in a first-order confirmatory factor analysis model

Italy, the GAF scale was used, while in Finland, the Social Disability Scale (SDS) and the Structured Interview for the Social and Occupational Functioning Assessment Scale (SOFAS) were utilized, and in Turkey, the Bipolar Disorder Functioning Questionnaire (BDFQ) was administered, all of which demonstrated significant associations with the FAST.^{12-14,16}

The initial study on the FAST found that more severe symptoms are linked to higher FAST scores and lower

Table 4. First-order confirmatory f	factor analysis model fit indices
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Fit indices	χ²/df	TLI-NNFI	CFI	IFI	RMSEA	AGFI	PGFI
Result	2.14	0.98	0.98	0.98	0.07	0.88	0.81
Criterion	>2 and<5	>0.85	0.9	0.9	0.08	0.9	0.9
Interpretation	Accepted	Accepted	Accepted	Accepted	Accepted	Rejected	Rejected

 Table 5. Cronbach's alpha coefficient for internal consistency of FAST subscales

	Number of items	Cronbach's alpha	internal stability
Autonomy	4	0.899	High
Occupational functioning	5	0.933	High
Cognitive functioning	5	0.896	High
Financial issues	2	0.966	High
Interpersonal relationships	6	0.842	High
Leisure time	2	0.757	High
FAST	24	0.953	High

functioning. A hypothetical cutoff score of 11 was proposed, which enhances diagnostic accuracy, exhibiting a sensitivity of 72% and a specificity of 87%.² In the Chinese study, a hypothetical cutoff of 29 was proposed to differentiate between acutely ill bipolar patients and euthymic patients.¹³

Other studies have shown that FAST is a sensitive tool for diagnosing different mood states, based on the observation that euthymic patients demonstrate twice the functional outcomes compared to depressed and manic patients.^{2,13} Our study did not include a healthy control group to assess the tool's ability to differentiate between patients and healthy individuals, but a study in Turkey demonstrated that FAST can differentiate between bipolar patients in acute phases and those in recovery from healthy individuals on average.¹⁶ It was also found that depressed patients showed greater functional impairment than manic patients.^{13,17} However, this may not be the most interesting feature of the scale, as a screening tool may not be particularly useful for diagnosing patients' clinical status.¹²

A study in France found that this tool could also be used to assess the impact of residual symptoms of bipolar disorder on performance levels.¹⁸ Clinical status is a key factor in social functioning, however, other cultural factors such as stigma, opportunities, and overall wellbeing also play a role. This can lead to variations in social functioning related to clinical disorders across different cultures.¹² For example, in the Chinese tradition, autonomy often encompasses financial issues, family financial management, leisure activities, hobbies, and personal pursuits.¹³

Due to the lack of long-term follow-up in our study, the long-term stability of FAST in bipolar patients could not be assessed, but previous studies show that it maintains high consistency even when assessments are conducted 6 Table 6. ICCs of FAST subscales

Itomo		95% confide	Dualua		
nems	icc	Lower limit	Upper limit	r value	
Autonomy	0.942	0.887	0.970	< 0.001	
Occupational functioning	0.939	0.881	0.968	< 0.001	
Cognitive functioning	0.976	0.953	0.988	< 0.001	
Financial issues	0.874	0.756	0.935	< 0.001	
Interpersonal relationships	0.940	0.883	0.969	< 0.001	
Leisure time	0.741	0.497	0.867	< 0.001	
FAST	0.944	0.891	0.971	< 0.001	

to 12 months apart.^{19,20}

The main limitation of this study was the lack of access to two separate sample sizes, which prevented the conduct of exploratory factor analysis for construct validity.

Conclusion

The Persian version of the FAST demonstrated favorable psychometric properties in this study. This tool enhances the evaluation of specific functional domains in bipolar disorder patients and represents a significant advancement compared to existing assessment tools. Given its simplicity and the ease with which it can be administered and executed by an interviewer in a short amount of time, it can be valuable in evaluating supplementary interventions aimed at rehabilitation and improving the functioning of bipolar patients, as well as assessing pharmacological effects, psychosocial interventions, and research purposes.

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Authors' Contribution

Conceptualization: All authors.

Data curation: Mohammad Abolghasemi Moghadam.

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Writing-review & editing: All Authors.

Competing Interests

The authors declared no conflict of interests.

Ethical Approval

This study received approval from the Ethics Committee of

Guilan University of Medical Sciences (Ethical code: IR.GUMS. REC.1402.096) and was carried out in compliance with the ethical principles outlined in the 2013 Declaration of Helsinki.

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