





## Original Article

## Convergent Validity and Reliability of the Persian Version of the Bay Area Functional Performance Evaluation-Task-Oriented Assessment in People with Severe Psychiatric Disorders

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### ABSTRACT

**Background:** Functional performance plays an important role in the independence and participation of people with severe psychiatric disorders. The Bay Area Functional Performance Evaluation-Task-Oriented Assessment (BaFPE-TOA) is a tool that evaluates functional performance. The present study aimed to assess the convergent validity and inter-rater reliability of the BaFPE-TOA tool using the classic test theory.

**Methods:** In this psychometric study, the population comprised people with severe psychiatric disorders. Participants were selected according to the inclusion criteria and convenience sampling. Consent to participate in the study was given by all participants. To examine the convergent validity, two tests, the BaFPE-TOA test and Kohlman Evaluation of Living Skills (KELS) test, were performed for 55 patients. To assess the inter-rater reliability, two examiners (occupational therapists) performed the BaFPE-TOA test for 26 patients simultaneously. Then, the Pearson correlation coefficient was used to examine convergent validity, and the intraclass correlation coefficient was used to assess inter-rater reliability.

**Results:** Participants in this study comprised 44 men (81.8%) and 10 women (18.2%). The age of participants ranged from 22 to 69 years with a mean of 41.5 years (SD=10.5). The Pearson correlation coefficient between the BaFPE-TOA and the KELS was good ( $r=0.74$ ,  $P<.001$ ). The Intraclass correlation coefficient and Pearson correlation coefficient between the two examiners showed a good relation ( $r=0.75$ ,  $P<.001$ ).

**Conclusion:** The results showed that the Persian version of the BaFPE-TOA has acceptable convergent validity with KELS and inter-rater reliability that represents the suitability of this tool for use in the healthcare environment.

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### Introduction

The Bay Area Functional Performance Evaluation (BaFPE) was created in 1977-1978 by Bloomer and Williams as a reliable and valid tool for evaluating the body function of people with severe psychiatric disorders.

The creators used theories such as the model of human occupation, adaptive performance, bio-development, and occupational behavior in developing this tool and focused on cognitive, emotional, and social skills that are essential for connecting objects and people in the environment. The principle of this orientation is based on functional skills which are learned, accomplished, and then effectively created in response to the requirements of the social and physical environment [1].

The BaFPE consists of five tasks (sorting shells, money

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and marketing, home drawing, block design, kinetic person design), twelve parameters (memory for written and verbal instructions, organization, attention span, evidence of disorder, ability to abstract, completion, errors, efficiency, motivation and compliance, frustration tolerance, self-confidence, and general affective impression), and three components (cognitive, affective, and performance). Several studies have examined the validity and reliability of the BaFPE-TOA [1-9].

The current study purposed to assess the psychometric (convergent validity and inter-rater reliability) of the BaFPE-TOA and to consider the importance of functional performance and the utility of this tool for showing the functional status and lack of psychometric characteristics (convergent validity and inter-rater reliability) in our country [1].

Because of several results which were extracted from our study, we presented the findings in two parts. First, we presented the results related to translation, face and content validity, and internal consistency in the Journal Archives of Rehabilitation. In this article, we report the convergence validity and inter-rater reliability between evaluators [10].

## Methods

Type of study is psychometric study. Data collection used for this study was Convenience sampling that conducted in Tehran in 2017. The statistical population comprised adult patients with severe psychiatric disorders according to DSM-5. The number of samples was determined using the formula:

$$N = \frac{8z^2\alpha(1-p)^2(1+(K-1)p)^2}{K(K-1)w^2}$$

$$P=0.9 \quad k=2 \quad w=0.1 \quad (1-\alpha)= \%95$$

Participants included 55 severe psychiatric patients who received services at the Razi Psychiatric Hospital. Inclusion criteria included 1) having a psychiatric disorder based on DSM 5 listed in the patient's medical records by a psychiatrist; 2) being over 18 years of age; 3) completion of the participation consent form; 4) having the ability to read and write; 5) absence of a comorbidity (mental retardation, drug abuse); 6) having no physical constraints that affect performance; 7) having no visual impairment or severe hearing loss. The exclusion criteria comprised 1) refusal to continue, and 2) recurrence of symptoms during performance of the tasks.

The ethical code (IR.USWR.REC.1396.132) for this study was obtained from the University of Social Welfare and Rehabilitation Sciences. Those patients meeting the inclusion criteria were identified. The purpose of the test and the confidentiality of the results were explained to them and then consent was obtained from them. The KELS test and immediately thereafter the BaFPE-TOA were performed on 55 patients with various diagnoses who agreed to participate. To determine the reliability, two evaluators (occupational therapists) mastered the BaFPE-TOA manual, and then simultaneously scored them during administration of the test to 26 patients.

## Outcome Measurement

Outcome measurements used in this study include the BaFPE-TOA and the KELS, both of which measure performance, but at different levels. The KELS assesses occupational performance in the Instrumental Activity of Daily Living (IADL) area, and the BaFPE assesses the performance skills needed to perform the occupation.

The BaFPE-TOA yields information about a client's ability in a task-oriented and one-to-one setting. It was developed for use in both inpatient and outpatient mental health facilities, but may also be appropriately used with developmentally or physically disabled clients to gather clinical information about task-oriented activities.

The rating format was provided for recording information about a client's functioning in 12 general areas, called "functional parameters". Rating is done while the client completes five tasks on a scale of one (1) to four (4), ranging from dysfunctional to functional task behavior.

The results of the rating are summarized on a score sheet, and client functioning is rated in 12 functional parameters which are sorted into cognitive, performance, and affective components [1, 5].

The KELS was developed by Kohlman in 1977 to assess a patient's ability to perform basic life skills, including self-care, safety, health, money management, transportation, calling, work, and leisure. The purpose of this test is to help people to adapt to their environment. Based on the test results, the therapist can offer to a person a position in which they can independently manage life. This test is scored from 0 to 16, with a score higher than 5.5 indicating a person's dependency in life [11]. The validity and reliability of this tool were reviewed by Kazazi, Karbalaee-Noori, and Rafei in psychiatric patients in Iran in 2010. This study evaluated inter-rater and test-retest reliability as well as concurrent and construct validity, and the results indicated that this test has validity and reliability [12].

Statistical analyses: The validity and reliability of this tool were evaluated using the classic test theory (convergent validity and inter-rater reliability) [13, 14]. Data was entered into SPSS16, and to obtain convergent validity and inter-rater reliability, the correlation interclass and Pearson coefficients were calculated.

## Results

Participant demographics are shown in Table 1.

### Convergent Validity

Table 2 shows the relationships between the parameters, components, and total score of the BaFPE-TOA test and the KELS test. As expected, the cognitive, performance, and affective components and the total score of the BaFPE test were statistically related to the total score of the KELS test ( $P < 0.001$ ).

### Inter-rater Reliability

Table 2 shows the results of the intraclass and Pearson correlation coefficients between the two evaluators. The correlation coefficient for all domains was higher than

**Table 1:** Demographics of participants in study of convergent validity (n=55) and inter-rater reliability (n=26)

Variable	Levels	Convergent validity (N=55)	Inter-rater reliability (N=26)
		Number (percentage)	Number (percentage)
Gender	Male	45 (81.8)	26 (100)
	Female	10 (18.2)	
Diagnosis	Schizophrenia	20 (36.4)	9 (34.6)
	Bipolar	23 (41.8)	11 (46.2)
	Depression	1 (1.8)	1 (3.8)
	Schizoaffective	10 (18.2)	4 (5.4)
Level of education	Under diploma	32 (58.2)	16 (61.5)
	Diploma	14 (25.5)	5 (19.2)
	College degree	8 (14.8)	5 (19.2)
Employment	Employed	6 (10.9)	3 (11.5)
	Unemployed	49 (89.1)	23 (88)
Age (M=40.5, SD=10)	20-35	18 (32.7)	8 (30.8)
	35-50	27 (49.1)	17 (65.4)
	>50	10 (18.2)	1 (3.8)
Hospitalization time (Day)	0-5	38 (69.1)	16 (61.5)
	5-10	14 (25.5)	7 (26.9)
	<10	3 (5.5)	3 (11.5)

M=mean; SD=standard deviation

**Table 2:** Pearson (P) and intraclass correlation coefficient (ICC) for convergent validity and inter-rater reliability

	Convergent validity (n=55)	Inter-rater reliability (n=27)	
	R	r	ICC
Cognitive Component	-0.74	0.94	0.96
Memory for written/verbal instructions	-0.68	0.94	0.94
Organization of time and materials	-0.73	0.92	0.96
Attention span	-0.68	0.91	0.95
Evidence of thought disorder	-0.64	0.75	0.85
Ability to abstract	-0.71	0.75	0.91
Performance component	-0.75	0.94	0.96
Task completion	-0.75	0.95	0.97
Errors	-0.70	0.88	0.93
Efficiency	-0.68	0.74	0.85
Affective component	-0.67	0.9	0.94
Motivation or compliance	-0.63	0.84	0.91
Frustration tolerance	-0.68	0.88	0.90
Self-confidence	-0.65	0.88	0.94
General affective and behavioral impression	-0.60	0.82	0.90
Total	-0.74	0.94	0.97

0.75, and the value of the correlation coefficient for all domains was higher than 0.85 ( $P < 0.0001$ ), representing a good reliability between the evaluators.

## Discussion

The purpose of this study was to provide evidence of the psychometric properties in the Persian version of the BaFPE-TOA in severe psychiatric patients. Similar to studies conducted by Bloomer and William, Cheeseman, Newman, Thibeault and Blackmer, Klyczek and Mann, Mercer Castilla and Klyczek, Accardi, Rogers, and Tardiff on the concurrent validity of the English version with the functional life scale (FLS), global assessment scale (GAS), Jebson hand function test, Allen cognitive level test (ACLS), Wechsler Adult Intelligence Scale (WAIS), Part 1 of the American Association on Mental Deficiency Adaptive Behavior Scale (AAMD-ABS), and the Scorable Self-Care Evaluation (SSCE), the results of this study showed that this test has concurrent validity in the Persian language [1, 2, 7, 8]. Kaufman studied

the concurrent validity of the TOA by comparing TOA scores of 16 psychiatric inpatients with their KELS scores and reported that the composite BaFPE and TOA correlations to both were  $-0.84$  at  $P < 0.001$  [2]. The relationship between the BaFPE-TOA and the KELS in this study was  $-0.74$  at  $P < 0.0001$  (Table 2). The results of this study and the current study indicate that the results of the two studies are coherent, with the difference that the current study was conducted with a larger sample size and in another language.

In the relationship between the BaFPE-TOA and the KELS, the most effective parameter for fulfilling life skills was the ability of a person to perform a task ( $P < 0.001$ ,  $r = -0.75$ ) and showed that performance components had a more effective effect than cognitive and affective components.

The analysis of the relationship between the BaFPE-TOA as a tool for measuring life skills components with KELS as a tool for measuring ADL and IADL skills suggests that by improving the lower levels of components measured by BaFPE, such as the cognitive, performance, and affective

components of a person, s/he can dominate the skills necessary for independent living (ADL and IADL). Of course, the results of this study do not suggest that two tests should be used instead, as these two tests examined different levels of functional skill and performance.

Williams and Bloomer reported that the inter-rater reliability of the revised TOA is higher than the original. They evaluated inter-rater reliability with four pairs of occupational therapists. Each team evaluated 25 patients with different diagnoses. Complete data on 91 subjects was evaluated with Pearson's product-moment correlation coefficients. Approximately 80% of the correlations equaled or exceeded 0.80. The average correlations for the total TOA and the cognitive, performance, and affective components were 0.96, 0.93, 0.96, and 0.85, respectively.

Comparison of the reliability of the Persian version of the test ( $r > 0.75$ ,  $ICC > 0.85$ ,  $P < 0.0001$ ) with an acceptable value for ICC and previous studies on the English version by William and Bloomer demonstrates the reliability of this test in the Persian language [5]. The minimum amount of inter-rater reliability was related to abstract thinking and thought disorder, and the maximum amount was related to task completion. These results are due to the subjective nature of abstract thinking and thought disorder and the nature of objectivity of task completion.

The results of this study showed that the BaFPE-TOA can be used in the rehabilitation centers of our country. It can also be used as a standard evaluation to demonstrate the evidence-based practice effectiveness, identifying strengths and weaknesses, planning treatment goals, and health services appropriateness to meet an individual's needs.

## Conclusion

This study was conducted to determine the psychometric properties of the Persian version of the BaFPE-TOA tool in severe psychiatric patients. For this purpose, the classic test theory was used that included convergent validity and inter-rater reliability. The results of this study showed that the Persian version of this tool has the necessary validity and reliability.

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**Conflict of Interests:** None declared.

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