Iran J Psychiatry 2024; 19: 3: 315-326

Original Article

Validity and Reliability Assessment of the Complete Persian Version of the Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Auto-Questionnaire in an Iranian Population

Roya Vaziri Harami[2], Seyed Mehdi Samimi Ardestani[1], Seyed Saeed Sadr[1], Shaghayegh Dehghani[3]*

Abstract

Objective: The Temperament Evaluation of Memphis, Pisa, Paris, and San Diego – Auto-questionnaire (TEMPS-A) assesses five affective temperaments and has been translated into 32 languages. A 35-item short version is available in Persian, but the complete version is not yet translated. This study aimed to assess the validity and reliability of the complete Persian version of the TEMPS-A in an Iranian population.

Method: This descriptive study translated the TEMPS-A questionnaire from English to Persian using a standard forward-backward method. The translation was evaluated for face and content validity by 10 psychiatry specialists, with quantitative content validity assessed through content validity ratio (CVR) and content validity index (CVI) calculations. The Persian TEMPS-A was completed twice, with a two-week interval, by 30 individuals out of the 319 medical staff of Imam Hossein Hospital in Tehran, Iran, who participated in the study, and its reliability was evaluated using Cronbach's alpha. The questionnaire was then distributed to the entire sample (n = 319) for the analysis of temperament frequencies and statistical indices by a statistician.

Results: The Persian version of the TEMPS-A, consisting of 110 items across five factors (depressive, cyclothymic, hyperthymic, irritable, and anxious), demonstrated excellent reliability with Cronbach's alpha values of 0.910, 0.909, 0.911, 0.910, and 0.909, respectively. The questions related to cyclothymic and hyperthymic temperaments exhibited the highest and lowest correlation coefficients with the general scale, respectively. Most subscales in the Persian TEMPS-A version showed correlation coefficients ranging from 0.28 to 0.68. An ANOVA with Cochrane's test revealed a significant difference in the mean scores of the questionnaire items ($P < 0.001$), with a grand mean score of 1.73 across all questions.

Conclusion: The Persian version of the TEMPS-A, consisting of 110 items, showed good internal consistency and a strong correlation with the original version. This suggests that it is suitable for use in temperament studies among the Iranian population.

Key words: *Iran; Psychometrics; Questionnaires; Reproducibility of Results; Surveys and Questionnaires; Temperament; Validation Studies as Topic*

1. Department of Psychiatry, Behavioral Sciences Research Center, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Behavioral Sciences Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. Department of Psychiatry, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

***Corresponding Author:**
Address: Department of Psychiatry, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Postal Code: 19395-4631.
Tel: 98-21 23871, Fax: 98-21 22439863, Email: Shaghayeghdehghani@yahoo.com

Article Information:
Received Date: 2023/11/06, Revised Date: 2024/05/25, Accepted Date: 2024/06/10

Temperament, described as an individual's innate patterns of behavior, feelings, and thoughts, plays a crucial role in the development and progression of mood disorders (1-3). Mood disorders, like depressive and bipolar disorders, are a significant public health concern worldwide, with depression alone affecting more than 264 million individuals worldwide and being a leading cause of disability (4, 5). In Iran, a review and analysis found that the prevalence of major depressive disorder is 4.8% in women and 2.3% in men (6). Mood disorders not only affect individuals but also have significant economic and societal impacts (7).

In psychology and psychiatry, understanding how temperament influences behavior, emotions, and interpersonal relationships is essential for the comprehensive assessment and treatment of mental health conditions (8). Temperament refers to variations in how individuals react to and manage emotions, which can make them more susceptible to certain mood disorders and other mental health issues (9). For instance, having a depressive temperament can increase the likelihood of developing major depressive disorder, while a cyclothymic temperament is often connected to bipolar disorder (10, 11). Understanding these connections between temperament and mental health conditions can help uncover the root causes of mood disorders and guide personalized treatments for individuals (12).

The Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Auto-questionnaire (TEMPS-A) is a widely used self-administered questionnaire designed to assess five affective temperaments: depressive, cyclothymic, hyperthymic, irritable, and anxious (1). The TEMPS-A provides a thorough method for assessing temperament characteristics, enabling clinicians and researchers to gain a deeper insight into the intricacies of mood control and susceptibility to mental health conditions (13). Each temperament subtype is associated with specific characteristics and potential mental health implications. Depressive temperament is linked to major depressive disorder, cyclothymic temperament resembles a milder form of bipolar disorder, hyperthymic temperament may predispose individuals to bipolar disorder or substance abuse, irritable temperament is associated with substance abuse and personality disorders, and anxious temperament is associated with anxiety disorders (1, 14-17).

While the TEMPS-A has been translated into 32 languages and validated in various cultural contexts (18-27), it is essential to assess its validity and reliability in the Iranian population. Cultural and linguistic differences can impact the interpretation and expression of mood and temperament, potentially affecting the validity of assessment tools (28, 29). A shortened version of the TEMPS-A has been translated and validated in Iran (30, 31), but the full version has not been adapted for use in the country. Iran is in need of assessment tools that are accurate and culturally appropriate to address the high rates of mood disorders in the population. The prevalence of depressive disorders among Iranian children and adolescents is 33.3%, signifying the critical need for effective assessment and intervention methods (32). Therefore, this study was conducted to assess the validity and reliability of the complete Persian version of the TEMPS-A in an Iranian population. The TEMPS-A, with its focus on affective temperaments, may provide a valuable addition to the assessment of mood disorders in Iran, potentially leading to improved diagnosis, treatment, and prevention strategies.

Materials and Methods

Population and Eligibility Criteria

The study participants comprised medical staff from Imam Hossein Hospital in Tehran, Iran, including personnel, internship, interns, and residents, who met the following inclusion criteria: (a) adults aged 18 years and above, (b) absence of current severe mental disorders, and (c) willingness to participate in the study. Exclusion criteria encompassed recent unexpected adverse events within the past 3 months (such as participant or family member illnesses, bereavement, or other significant events impacting mental health), and questionnaires containing over 10% distorted or missing information.

Sample Size:

The study's target population included personnel (1350), internship students (98), interns (120), and residents (330) of Imam Hossein Hospital, totaling 1898 individuals. Due to the large population size, conducting a full census was not feasible in terms of time and cost efficiency. Therefore, the sample size was calculated using the Cochrane formula;

$$n = \frac{z^2 pbN}{d^2(N-1) + Z^2 pb}$$

where z is the z-score corresponding to the desired confidence level, p is the estimated proportion, and d is the desired margin of error. The required sample size was determined to be 319 participants. This calculation assumed a confidence level of 95% (z = 1.96), an estimated proportion of 0.5 (assuming maximum variability for a conservative estimate), and a margin of error of 5%. The sample size was adjusted for a finite population size of 1898 using the formula adjusted = n_0 / (1 + n_0/population size), resulting in a final sample size of 319 participants. The sample was selected through convenience sampling.

Data Collection

Sociodemographic characteristics of participants (medical staff of Imam Hossein Hospital in Tehran, Iran) such as age, gender, year of education, marital status, and occupation were collected.

Study Measurement

The research utilized the self-administered TEMPS-A tool created by Akiskal *et al*. (1) in 2005, consisting of 110 items (109 for males) that necessitate a "true/false" response to determine the presence of five affective temperaments: depressive, cyclothymic, hyperthymic, irritable, and anxious. Each temperament is evaluated by a specific set of items in the questionnaire: items 1-21 (depressive temperament) measure traits such as pessimism and low self-esteem; items 22-42 (cyclothymic temperament) evaluate mood swings and emotional sensitivity; items 43-63 (hyperthymic temperament) measure traits like optimism and high energy; items 64-84 (irritable temperament) assess tendencies towards anger and impulsivity; and items 85-110 (anxious temperament) evaluate characteristics such as fear and anxiety. Each subset comprises 21 items, except for the anxious temperament which has 26 items. All responses were scored as "Yes" (1) or "No" (0).

Validity and Reliability Procedures

The translation process followed the WHO's guidelines for instrument translation and adaptation (34). Approval was obtained from the developer before commencing the translation process (1). The forward-backward method was used to translate the items from English to Persian. In using this method two independent bilingual experts were involved, translating the questionnaire from English to Persian. Subsequently, an independent translator back-translated the Persian version to English, ensuring accuracy and equivalence. The back-translated version was compared with the original English version for consistency. Following necessary corrections, 10 psychiatrists evaluated the Persian version for face and content validity.

To assess the content validity, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated by a panel of experts. Subsequently, the questionnaire was administered to 30 randomly selected participants after obtaining their written informed consent. Participants completed the questionnaire, and items with missing or multiple responses were excluded. Data were categorized based on dominant temperaments. The same participants completed the questionnaire again after a two-week interval for test-retest reliability assessment using Pearson's correlation coefficient. The questionnaire was then administered to the entire study population to determine the frequency of different temperaments and evaluate internal consistency, convergent validity, divergent validity, and reliability.

CVI and CVR Calculated

In order to evaluate the content validity of the Persian TEMPS-A questionnaire, a group of experts calculated the CVR and CVI. The CVR was determined for each item using a specific formula based on the number of panelists who rated the item as "essential." A higher CVR score indicates stronger content validity. Items with CVR scores above the critical value were considered essential and kept in the questionnaire. The CVI was also calculated at both the item and scale levels. Panelists rated each item on a four-point scale, and the I-CVI was calculated based on the number of panelists who rated the item as relevant. The S-CVI was calculated as the average of all I-CVI scores. A S-CVI/Ave of at least 0.90 or a S-CVI/UA of at least 0.80 is considered acceptable. The CVR and CVI values were analyzed for each item and the overall scale to ensure content validity. Items with low scores were adjusted or removed based on expert input to enhance the content validity of the final questionnaire version.

Statistical Aanalysis

The handling of missing data was done systematically and transparently to maintain the completeness of the dataset and enhance the reliability of our results. This approach aimed to uphold the quality and accuracy of the findings by focusing on complete and valid responses, thereby strengthening the robustness of our study outcomes. Data were analyzed using SPSS version 22 (SPSS Inc., IL, USA) by the Cronbach's alpha. Also, the mean, standard deviation, and frequency distribution values were calculated and reported. The level of statistical significance was set at 0.05.

Ethical Consideration

The methodology of this observational research was authorized by the Institutional Review Board and Ethics Committee of Shahid Beheshti University of Medical Sciences in Tehran, Iran (IR.SBMU.RETECH.REC.1400.228) in line with the ethical standards of the Declaration of Helsinki of the World Medical Association (33). Consent forms were given to participants, offering comprehensive details about the study goals. Participants were guaranteed anonymity and were informed that participation was voluntary, with the option to withdraw at any point without consequences.

Results

Characteristics of Participants

The demographic characteristics of the participants were as follows: out of the 319 participants, 94 (29.5%) were male and 225 (70.5%) were female. Regarding marital status, 111 (34.8%) were single, 199 (62.4%) were married, and 9 (2.8%) were divorced. In terms of occupation, 209 (65.5%) were physicians, 40 (12.5%) were internship students, 5 (1.6%) were interns, 31 (9.7%) were residents, and 34 (10.7%) were nurses. The mean age of the participants was 33.50 ± 8.74 years, and the mean number of years of education was 19.47 ± 2.79 years.

Reliability Findings

Table 1 provides the mean and standard deviation of response scores for each question, while Table 2 presents the correlation coefficients and the impact on reliability (Cronbach's alpha) for each question. The reliability of this Persian TEMPS-A was assessed using Cronbach's alpha, a measure of internal consistency. The

Cronbach's alpha values were 0.910 for depressive, 0.909 for cyclothymic, 0.911 for hyperthymic, 0.910 for irritable, and 0.909 for anxious temperaments. These high alpha values indicate excellent reliability, meaning the items within each scale are closely related and measure the same underlying construct. These high alpha values indicate excellent reliability, meaning the items within each scale are closely related and measure the same underlying construct. Further analysis showed that all questions had a positive impact on reliability and did not require correction or omission.

Table 1. Mean and Standard Deviation of Response Scores for Each Question in the Persian Version of TEMPS-A (n = 319)

Question	Mean	Std. Deviation
1	1.93417	0.248376
2	1.80878	0.393882
3	1.64263	0.523835
4	1.92790	0.259060
5	1.95298	0.212018
6	1.96865	0.174530
7	1.65517	0.476059
8	1.77743	0.416626
9	1.75235	0.432325
10	1.53605	0.499482
11	1.84953	0.358093
12	1.78370	0.412369
13	1.54545	0.498712
14	1.19749	0.398732
15	1.63636	0.481801
16	1.23511	0.424734
17	1.73041	0.444445
18	1.38245	0.486748
19	1.81505	0.388869
20	1.97492	0.156609
21	1.76176	0.426679
22	1.83072	0.375587
23	1.73041	0.444445
24	1.89969	0.300890
25	1.83699	0.369955
26	1.86520	0.342042
27	1.82759	0.378333
28	1.83386	0.372795
29	1.84639	0.361136
30	1.84953	0.358093
31	1.53918	0.499245
32	1.80251	0.398732
33	1.85893	0.348636
34	1.86834	0.338654
35	1.87147	0.335201
36	1.66144	0.473963
37	1.89028	0.313029
38	1.78370	0.412369

Question	Mean	Std. Deviation
39	1.74922	0.434145
40	1.61129	0.488224
41	1.92790	0.259060
42	1.96552	0.182752
43	1.38245	0.486748
44	1.70219	0.458012
45	1.43887	0.497029
46	1.19436	0.396327
47	1.35737	0.479977
48	1.40752	0.492146
49	1.39498	0.489615
50	1.56426	0.496632
51	1.52038	0.500370
52	1.77116	0.420746
53	1.36364	0.481801
54	1.68025	0.467112
55	1.52978	0.499896
56	1.83072	0.375587
57	1.76803	0.422756
58	1.58621	0.493286
59	1.52351	0.500232
60	1.47649	0.500232
61	1.80878	0.393882
62	1.84013	0.367066
63	1.68652	0.464636
64	1.93103	0.253794
65	1.83072	0.375587
66	1.72100	0.449211
67	1.77429	0.418703
68	1.91223	0.283411
69	1.86520	0.342042
70	1.82132	0.383689
71	1.98746	0.111449
72	1.84326	0.364126
73	1.83386	0.372795
74	1.74608	0.435935
75	1.86834	0.338654
76	1.85266	0.354997
77	1.96865	0.174530
78	1.95925	0.198027
79	1.94671	0.224967
80	2.00000	0.000000
81	1.91536	0.278782
82	1.74922	0.434145
83	1.93103	0.253794

Question	Mean	Std. Deviation
84	1.66458	0.472880
85	1.67398	0.469491
86	1.61442	0.487497
87	1.65831	0.475022
88	1.63950	0.480900
89	1.64263	0.479977
90	1.73668	0.441128
91	1.84639	0.361136
92	1.81191	0.391396
93	1.72414	0.447650
94	1.57367	0.495320
95	1.76803	0.422756
96	1.74608	0.435935
97	1.77743	0.416626
98	1.66144	0.473963
99	1.78056	0.414515
100	1.75862	0.428592
101	1.81191	0.391396
102	1.39812	0.490279
103	1.53292	0.499699
104	2.00000	0.000000
105	1.65517	0.476059
106	1.80564	0.396327
107	1.88715	0.316910
108	1.77429	0.418703
109	1.91536	0.278782
110	1.52038	0.500370

TEMPS-A: Temperament Evaluation of Memphis, Pisa, Paris, and San Diego – Auto-questionnaire

Table 2. Correlation Coefficient and Impact on Reliability (Cronbach's Alpha) for Each Question in the Persian Version of TEMPS-A

Question	Mean scale by omitting this item	Variance of scale by omitting this item	Correlation of this item with the scale	Cronbach's alpha after omission of this item
Question	188.64890	184.071	0.151	0.911
1	188.77429	178.301	0.636	0.908
2	188.94044	182.842	0.143	0.911
3	188.65517	182.510	0.368	0.910
4	188.63009	183.033	0.361	0.910
5	188.61442	183.697	0.301	0.910
6	188.92790	181.413	0.274	0.910
7	188.80564	180.704	0.381	0.910
8	188.83072	183.072	0.162	0.911
9	189.04702	186.951	-0.150	0.913
10	188.73354	183.819	0.124	0.911
11	188.79937	183.828	0.103	0.911
12	189.03762	181.999	0.216	0.911
13	189.38558	182.502	0.231	0.910
14	188.94671	180.617	0.332	0.910
15	189.34796	184.592	0.033	0.912
16	188.85266	183.893	0.088	0.911
17	189.20063	183.903	0.076	0.912
18	188.76803	180.279	0.452	0.909

Question	Mean scale by omitting this item	Variance of scale by omitting this item	Correlation of this item with the scale	Cronbach's alpha after omission of this item
19	188.60815	185.296	-0.040	0.911
20	188.82132	182.097	0.249	0.910
21	188.75235	180.030	0.494	0.909
22	188.85266	178.472	0.546	0.908
23	188.68339	181.129	0.485	0.909
24	188.74608	180.310	0.473	0.909
25	188.71787	181.813	0.349	0.910
26	188.75549	179.997	0.493	0.909
27	188.74922	181.541	0.345	0.910
28	188.73668	178.981	0.625	0.908
29	188.73354	178.762	0.654	0.908
30	189.04389	182.413	0.184	0.911
31	188.78056	181.744	0.302	0.910
32	188.72414	180.584	0.474	0.909
33	188.71473	181.739	0.361	0.910
34	188.71160	181.935	0.343	0.910
35	188.92163	179.815	0.402	0.909
36	188.69279	181.025	0.478	0.909
37	188.79937	177.526	0.678	0.908
38	188.83386	179.705	0.452	0.909
39	188.97179	180.373	0.346	0.910
40	188.65517	182.233	0.407	0.910
41	188.61755	183.639	0.298	0.910
42	189.20063	186.224	-0.099	0.913
43	188.88088	184.652	0.023	0.912
44	189.14420	184.879	0.002	0.912
45	189.38871	185.691	-0.065	0.912
46	189.22571	186.276	-0.104	0.913
47	189.17555	183.145	0.132	0.911
48	189.18809	183.770	0.086	0.912
49	189.01881	184.780	0.009	0.912
50	189.06270	184.355	0.040	0.912
51	188.81191	181.248	0.329	0.910
52	189.21944	183.744	0.090	0.912
53	188.90282	182.402	0.200	0.911
54	189.05329	184.076	0.061	0.912
55	188.75235	184.074	0.092	0.911
56	188.81505	180.912	0.357	0.910
57	188.99687	182.097	0.211	0.911
58	189.05956	178.729	0.461	0.909
59	189.10658	183.611	0.095	0.912
60	188.77429	182.251	0.258	0.910
61	188.74295	180.198	0.489	0.909
62	188.89655	185.307	-0.030	0.912
63	188.65204	183.435	0.240	0.910
64	188.75235	181.149	0.382	0.910
65	188.86207	179.264	0.473	0.909
66	188.80878	184.256	0.063	0.911
67	188.67085	181.825	0.424	0.910
68	188.71787	180.084	0.539	0.909
69	188.76176	178.497	0.635	0.908
70	188.59561	184.569	0.188	0.911
71	188.73981	181.835	0.324	0.910
72	188.74922	181.069	0.393	0.910
73	188.83699	179.590	0.460	0.909
74	188.71473	181.701	0.365	0.910
75	188.73041	181.657	0.352	0.910
76	188.61442	183.282	0.389	0.910
77	188.62382	184.613	0.092	0.911
78	188.63636	183.119	0.325	0.910
79	188.58307	185.150	0.000	0.911
80	188.66771	183.506	0.207	0.911
81	188.83386	180.630	0.371	0.910

Question	Mean scale by omitting this item	Variance of scale by omitting this item	Correlation of this item with the scale	Cronbach's alpha after omission of this item
82	188.65204	183.001	0.303	0.910
83	188.91850	181.880	0.239	0.910
84	188.90909	176.970	0.637	0.908
85	188.96865	177.383	0.580	0.908
86	188.92476	178.265	0.525	0.908
87	188.94357	179.500	0.420	0.909
88	188.94044	178.647	0.489	0.909
89	188.84639	181.979	0.250	0.910
90	188.73668	181.056	0.408	0.909
91	188.77116	178.435	0.627	0.908
92	188.85893	182.342	0.216	0.911
93	189.00940	181.148	0.282	0.910
94	188.81505	181.661	0.290	0.910
95	188.83699	183.753	0.102	0.911
96	188.80564	182.245	0.243	0.910
97	188.92163	178.519	0.506	0.909
98	188.80251	178.826	0.555	0.908
99	188.82445	177.812	0.626	0.908
100	188.77116	181.775	0.305	0.910
101	189.18495	185.063	-0.012	0.912
102	189.05016	182.972	0.143	0.911
103	188.58307	185.150	0.000	0.911
104	188.92790	182.136	0.217	0.911
105	188.77743	182.947	0.191	0.911
106	188.69592	181.973	0.360	0.910
107	188.80878	180.061	0.437	0.909
108	188.66771	183.009	0.274	0.910
109	189.06270	180.839	0.302	0.910

TEMPS-A: Temperament Evaluation of Memphis, Pisa, Paris, and San Diego – Auto-questionnaire

All questions contributed positively to the overall reliability of the questionnaire, as indicated by the high Cronbach's alpha values. The questions related to cyclothymic temperament exhibited the highest correlation coefficients with the total score, while hyperthymic temperament questions showed the lowest correlation. Most subscales in the Persian TEMPS-A version demonstrated moderate to strong correlations with the general scale, with correlation coefficients ranging from 0.28 to 0.68. However, a small subset of questions in the depressive and hyperthymic subscales showed small and negative correlation coefficients. This suggests a weaker relationship between these specific questions and the overall measure.

Comparison of the Mean Scores of the Questions

The ANOVA with Cochrane's test was conducted to compare the mean scores of the questions in the TEMPS-A questionnaire (Table 3). The grand mean score across all questions was 1.73. The results showed a significant difference in the mean scores between the questionnaire items ($F(109, 34662) = 6325.377$, $P < 0.001$). This indicates that the mean scores of at least one question differed significantly from the others. The within-participants analysis revealed a significant effect of items ($F(109, 34662) = 70.687$, $P < 0.001$), suggesting that the mean scores varied significantly across the different questions in the questionnaire. The between-participant analysis did not yield any significant results, as it was not the focus of this particular analysis. Therefore, the ANOVA with Cochrane's test demonstrated that the mean scores of the questions in the TEMPS-A questionnaire differed significantly from each other, indicating that the items were able to differentiate between the participants' responses.

Table 3. Comparative Analysis of Mean Scores for Each Question in the Persian Version of TEMPS-A

		Sum of Squares	df	Mean Square	Cochran's Q	P-value
Between Participants		535.250	318	1.683		
Within Participants	Between Items	1155.748	109	10.603	6325.377	0.000
	Residual	5197.471	34662	0.150		
	Total	6353.218	34771	0.183		
Total		6888.469	35089	0.196		

ANOVA with Cochrane's Test, Grand Mean = 1.73257. TEMPS-A: Temperament Evaluation of Memphis, Pisa, Paris, and San Diego – Auto-questionnaire

Discussion

The study delved into the psychometric properties and clinical implications of the Persian version of the TEMPS-A questionnaire among medical staff, shedding light on its reliability, validity, and potential utility in mood disorder assessment and treatment. The analysis of Cronbach's alpha coefficients revealed a high level of internal consistency for the questionnaire, indicating that the items within each temperament subscale were strongly correlated. All questions had a good impact on reliability and none of them needed to be modified or omitted. This suggests that the TEMPS-A is a reliable tool for measuring affective temperaments enhancing its utility in clinical and research settings.

The reliability analysis of the Persian TEMPS-A version revealed strong internal consistency, as evidenced by high Cronbach's alpha values ranging from 0.909 to 0.911 across the five temperament factors. Most subscales in the Persian TEMPS-A version exhibited correlation coefficients between 0.28 and 0.68, indicating a moderate to strong association with the general scale. However, a subset of questions displayed lower correlation coefficients, suggesting a weaker connection to the overall measure. These results emphasize the need for carefully evaluating individual items to ensure the questionnaire's validity and reliability. Questions that demonstrated poor correlation with the general scale may necessitate further refinement or validation to enhance the questionnaire's psychometric properties and ensure accurate assessment of affective temperaments. Notably, some individual items exhibited weaker correlation coefficients than anticipated, prompting concerns about their construct validity within the questionnaire. Understanding why these questions did not align well with the overall scale is crucial. Potential explanations for this discrepancy include cultural nuances affecting item interpretation, ambiguity in question wording, or limitations in capturing the full range of affective temperaments accurately. The variance in correlation coefficients may also stem from cultural and linguistic disparities between the original English version and the Persian translation. Despite efforts to ensure semantic equivalence through rigorous translation, some items may have lost their original meaning or relevance in the Persian context. To address these challenges, we recommend conducting qualitative research, such as cognitive interviews or focus group discussions, to explore participants' comprehension and interpretation of questionnaire items. This approach can help identify problematic questions and refine translations accordingly. Additionally, considering revising or replacing items with low correlation coefficients can enhance the overall consistency and effectiveness of the Persian TEMPS-A questionnaire.

The results of this research align with previous studies that assessed the validity of the TEMPS-A in various languages (21, 35, 36). The examination of correlations among different components showed a negative relationship between the depressive and hyperthymic factors and the overall score, which was also found in similar studies by Nabizadehchianeh *et al*. (31) and Rózsa *et al*. (27). Additionally, the reliability of the Persian version of the TEMPS-A questionnaire was found to be high based on Cronbach's alphas for both items and factors (30, 31).

The clinical relevance of the findings lies in the TEMPS-A questionnaire's potential to aid clinicians in diagnosing and differentiating mood disorders based on patients' temperament profiles. By identifying predominant affective temperaments such as depressive, cyclothymic, hyperthymic, irritable, and anxious, clinicians can gain valuable insights into patients' emotional tendencies and vulnerabilities. Understanding these temperament profiles can inform personalized treatment approaches tailored to individual needs, leading to more effective interventions and improved patient outcomes. Additionally, numerous studies have illustrated the practical application of the TEMPS-A questionnaire in clinical practice (37-42).

Vazquez *et al*. (43) found a connection between specific affective temperaments, as measured by the TEMPS-A, and suicidal risk in psychiatric and general population samples. Other studies have also examined how certain affective temperaments measured by the TEMPS-A relate to resistance to treatment in patients with major depressive disorder (MDD) and bipolar disorder (BD) (34, 38, 39, 41). Additionally, Goto *et al*. (44) proposed that cyclothymic and hyperthymic temperaments are associated with bipolarity and studied the relationship between different treatments and remission rates in bipolar patients. A meta-analysis conducted by Solmi *et al*. (45) discovered that individuals with BD scored significantly higher for cyclothymic, hyperthymic, and irritable temperaments compared to those with MDD. Therefore, evidence showed that by incorporating temperament assessments into diagnostic evaluations, clinicians can enhance their understanding of patients' psychological makeup and tailor treatment plans accordingly, promoting more targeted and holistic care (46-48).

Limitation

The validation of the Persian translation of the complete version of the TEMPS-A was a strength of the present study. However, one limitation of the present study lies in the restricted sample size and the exclusive inclusion of hospital staff as the study population. These factors may have impacted the generalizability of the findings and the ability to detect subtle differences in temperament among diverse demographic groups. By limiting the study to hospital staff, the results may not accurately represent the broader population, potentially overlooking variations in temperament that exist among different demographic segments. Moreover, recruiting solely from hospital staff introduces biases related to

occupational factors and may not capture the full spectrum of temperament traits present in the general population. To address these limitations in future research, it is recommended to conduct studies with larger and more diverse samples, including individuals from various backgrounds and patients with diagnosed psychological conditions. This approach would enhance the representativeness of the findings and allow for a more comprehensive exploration of the correlation between TEMPS-A subscales and specific psychological disorders, thereby improving the clinical relevance of the questionnaire. Understanding how individual temperament traits intersect with different psychiatric conditions can significantly impact treatment planning and intervention strategies, emphasizing the importance of further research in this area to advance clinical practice and enhance patient outcomes.

Conclusion

This study demonstrates that the Persian translation of the complete TEMPS-A questionnaire is valid and reliable. High Cronbach's alpha coefficients and strong internal consistency measures across temperament factors support its reliability in assessing affective temperaments, consistent with previous studies in various languages. With its potential as a primary diagnostic tool for mood disorders, the TEMPS-A offers valuable insights into patients' temperament profiles to tailor treatment approaches and improve outcomes. Future research should focus on larger-scale studies with diverse populations to enhance clinical utility and advance understanding of the relationship between temperament and mental health, ultimately improving care for those with mood disorders.

Acknowledgment

We would like to thank everyone who contributed to this study.

Conflict of Interest

None.

References

1. Akiskal HS, Akiskal KK. TEMPS: Temperament Evaluation of Memphis, Pisa, Paris and San Diego. J Affect Disord. 2005;85(1-2):1-2.
2. Luciano M, Steardo L, Jr., Sampogna G, Caivano V, Ciampi C, Del Vecchio V, et al. Affective Temperaments and Illness Severity in Patients with Bipolar Disorder. Medicina (Kaunas). 2021;57(1).
3. Fico G, Caivano V, Zinno F, Carfagno M, Steardo LJ, Sampogna G, et al. Affective Temperaments and Clinical Course of Bipolar Disorder: An Exploratory Study of Differences among Patients with and without a History of Violent Suicide Attempts. Medicina (Kaunas). 2019;55(7).
4. Bete T, Misgana T, Nigussie K, Aliye K, Abdeta T, Wedaje D, et al. Depressive disorder, bipolar disorder, and associated factors among adults, in the Eastern part of Ethiopia. BMC Psychiatry. 2024;24(1):17.
5. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. Lancet. 2021;398(10312):1700-12.
6. Gharraee B, Zahedi Tajrishi K, Sheybani F, Tahmasbi N, Mirzaei M, Farahani H, et al. Prevalence of major depressive disorder in the general population of Iran: A systematic review and meta-analysis. Med J Islam Repub Iran. 2019;33:151.
7. Greenberg P, Chitnis A, Louie D, Suthoff E, Chen SY, Maitland J, et al. The Economic Burden of Adults with Major Depressive Disorder in the United States (2019). Adv Ther. 2023;40(10):4460-79.
8. Menefee DS, Ledoux T, Johnston CA. The Importance of Emotional Regulation in Mental Health. Am J Lifestyle Med. 2022;16(1):28-31.
9. Rettew DC, McKee L. Temperament and its role in developmental psychopathology. Harv Rev Psychiatry. 2005;13(1):14-27.
10. Bartosik NK, Frankowski R, Kobierecki M, Deska K, Twarowski A, Bąk B, et al. The association between affective temperaments and depressive symptoms in a population of medical university students, Poland. Front Psychiatry. 2023;14:1077940.
11. Karam EG, Saab D, Jabbour S, Karam GE, Hantouche E, Angst J. The role of affective temperaments in bipolar disorder: The solid role of the cyclothymic, the contentious role of the hyperthymic, and the neglected role of the irritable temperaments. Eur Psychiatry. 2023;66(1):e37.
12. Pang NTP, James S, Giloi N, Rahim S, Omar A, Jeffree MS, et al. Relationships between Psychopathology, Psychological Process Variables, and Sociodemographic Variables and Comparison of Quarantined and Non-Quarantined Groups of Malaysian University Students in the COVID-19 Pandemic. Int J Environ Res Public Health. 2021;18(18).
13. Białczyk K, Kłopocki J, Kryś J, Jaskulski M, Lewandowska A, Szafkowski R, et al. A Feasibility Study of the Usefulness of the TEMPS-A Scale in Assessing Affective Temperament in Athletes. Medicina (Kaunas). 2022;58(2).
14. Dembińska-Krajewska D, Rybakowski J. The Temperament Evaluation of Memphis, Pisa and San Diego Autoquestionnaire (TEMPS-A)--an important tool to study affective temperaments. Psychiatr Pol. 2014;48(2):261-76.
15. Najmi B. Correlation between personality traits of parents and type of behavioral disorders in children. Journal of fundamentals of mental health. 2010;12(46):33-522.

16. Rybakowski JK, Dembinska D, Kliwicki S, Akiskal KK, Akiskal HH. TEMPS-A and long-term lithium response: positive correlation with hyperthymic temperament. J Affect Disord. 2013;145(2):187-9.
17. Giupponi G, Innamorati M, Rogante E, Sarubbi S, Erbuto D, Maniscalco I, et al. The Characteristics of Mood Polarity, Temperament, and Suicide Risk in Adult ADHD. Int J Environ Res Public Health. 2020;17(8).
18. Nakato Y, Inoue T, Nakagawa S, Kitaichi Y, Kameyama R, Wakatsuki Y, et al. Confirmation of the factorial structure of the Japanese short version of the TEMPS-A in psychiatric patients and general adults. Neuropsychiatr Dis Treat. 2016;12:2173-9.
19. Jiménez E, Bonnín CDM, Solé B, Sánchez-Moreno J, Reinares M, Torrent C, et al. Spanish validation of the Barcelona TEMPS-A questionnaire in patients with bipolar disorder and general population. J Affect Disord. 2019;249:199-207.
20. Lin K, Chen L, Chen K, Ouyang H, Akiskal H, Xu G. Validation of a short Chinese (45-item) TEMPS-A in a non-clinical chinese population. Neuropsychiatry. 2018;8(1):47-54.
21. Erfurth A, Gerlach AL, Hellweg I, Boenigk I, Michael N, Akiskal HS. Studies on a German (Münster) version of the temperament auto-questionnaire TEMPS-A: construction and validation of the briefTEMPS-M. J Affect Disord. 2005;85(1-2):53-69.
22. Blöink R, Brieger P, Akiskal HS, Marneros A. Factorial structure and internal consistency of the German TEMPS-A scale: validation against the NEO-FFI questionnaire. J Affect Disord. 2005;85(1-2):77-83.
23. Woodruff E, Genaro LT, Landeira-Fernandez J, Cheniaux E, Laks J, Jean-Louis G, et al. Validation of the Brazilian brief version of the temperament auto-questionnaire TEMPS-A: the brief TEMPS-Rio de Janeiro. J Affect Disord. 2011;134(1-3):65-76.
24. Karam EG, Mneimneh Z, Salamoun M, Akiskal KK, Akiskal HS. Psychometric properties of the Lebanese-Arabic TEMPS-A: a national epidemiologic study. J Affect Disord. 2005;87(2-3):169-83.
25. Vahip S, Kesebir S, Alkan M, Yazici O, Akiskal KK, Akiskal HS. Affective temperaments in clinically-well subjects in Turkey: initial psychometric data on the TEMPS-A. J Affect Disord. 2005;85(1-2):113-25.
26. Martinova H, Ganev I, Milanova V, Voynov L, Kalaydjiev A, Vaseva V, et al. Standardization and approbation of the Bulgarian version of the TEMPS-A for temperament evaluation. An example of “delinquent temperament” assessment. Biotechnology & Biotechnological Equipment. 2016;30(3):562-73.
27. Rózsa S, Rihmer Z, Gonda X, Szili I, Rihmer A, Ko N, et al. A study of affective temperaments in Hungary: internal consistency and concurrent validity of the TEMPS-A against the TCI and NEO-PI-R. J Affect Disord. 2008;106(1-2):45-53.
28. Pugh ZH, Choo S, Leshin JC, Lindquist KA, Nam CS. Emotion depends on context, culture and their interaction: evidence from effective connectivity. Soc Cogn Affect Neurosci. 2022;17(2):206-17.
29. Engelmann JB, Pogosyan M. Emotion perception across cultures: the role of cognitive mechanisms. Front Psychol. 2013;4:118.
30. Khalili N, Panjalizadeh ME, Jahani Y. Validation of the brief Persian version of the Affective Temperament Auto-Questionnaire TEMPS-A. Iranian journal of psychiatry and clinical psychology. 2018;24(1):92-107.
31. Nabizadehchianeh G, Kazemitabar M, Walker DI, Wind S. Psychometric properties of the short version of temperament evaluation of Memphis, Pisa, Paris, and San Diego—Autoquestionnaire (TEMPS-A): Persian version. Journal of Affective Disorders Reports. 2023;12:100501.
32. Bazargan M, Dehghani A, Ramezani MA, Ramezani A. Prevalence of depression among Iranian children and adolescents: An updated systematic review and meta-analysis. Health Sci Rep. 2023;6(10):e1584.
33. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. J Am Coll Dent. 2014;81(3):14-8.
34. Tsang S, Royse CF, Terkawi AS. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. Saudi J Anaesth. 2017;11(Suppl 1):S80-s9.
35. Choi S, Yu H, Yoon J, Jang Y, Lee D, Park YS, et al. Korean Validation of the Short Version of the TEMPS-A (Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire) in Patients with Mood Disorders. Medicina (Kaunas). 2023;59(1).
36. Yuan C, Huang J, Gao K, Wu Z, Chen J, Wang Y, et al. Validation of the Chinese Version of the Short TEMPS-A and its application in patients with mood disorders. J Affect Disord. 2015;170:178-84.
37. Kochman FJ, Hantouche EG, Ferrari P, Lancrenon S, Bayart D, Akiskal HS. Cyclothymic temperament as a prospective predictor of bipolarity and suicidality in children and adolescents with major depressive disorder. J Affect Disord. 2005;85(1-2):181-9.
38. Toda H, Inoue T, Tsunoda T, Nakai Y, Tanichi M, Tanaka T, et al. The structural equation analysis of childhood abuse, adult stressful life events, and temperaments in major depressive disorders and their influence on refractoriness. Neuropsychiatr Dis Treat. 2015;11:2079-90.
39. Morishita C, Kameyama R, Toda H, Masuya J, Ichiki M, Kusumi I, et al. Utility of TEMPS-A in differentiation between major depressive disorder, bipolar I disorder, and bipolar II disorder. PLoS One. 2020;15(5):e0232459.
40. Toda H, Inoue T, Tanichi M, Saito T, Nakagawa S, Masuya J, et al. Affective temperaments play

an important role in the relationship between child abuse and the diagnosis of bipolar disorder. Psychiatry Res. 2018;262:13-9.
41. Takeshima M, Oka T. Comparative analysis of affective temperament in patients with difficult-to-treat and easy-to-treat major depression and bipolar disorder: Possible application in clinical settings. Compr Psychiatry. 2016;66:71-8.
42. Evans L, Akiskal HS, Keck PE, Jr., McElroy SL, Sadovnick AD, Remick RA, et al. Familiality of temperament in bipolar disorder: support for a genetic spectrum. J Affect Disord. 2005;85(1-2):153-68.
43. Vázquez GH, Gonda X, Lolich M, Tondo L, Baldessarini RJ. Suicidal Risk and Affective Temperaments, Evaluated with the TEMPS-A Scale: A Systematic Review. Harv Rev Psychiatry. 2018;26(1):8-18.
44. Goto S, Terao T, Hoaki N, Wang Y. Cyclothymic and hyperthymic temperaments may predict bipolarity in major depressive disorder: a supportive evidence for bipolar II1/2 and IV. J Affect Disord. 2011;129(1-3):34-8.
45. Solmi M, Zaninotto L, Toffanin T, Veronese N, Lin K, Stubbs B, et al. A comparative meta-analysis of TEMPS scores across mood disorder patients, their first-degree relatives, healthy controls, and other psychiatric disorders. J Affect Disord. 2016;196:32-46.
46. Mendlowicz MV, Akiskal HS, Kelsoe JR, Rapaport MH, Jean-Louis G, Gillin JC. Temperament in the clinical differentiation of depressed bipolar and unipolar major depressive patients. J Affect Disord. 2005;84(2-3):219-23.
47. Matsumoto S, Akiyama T, Tsuda H, Miyake Y, Kawamura Y, Noda T, et al. Reliability and validity of TEMPS-A in a Japanese non-clinical population: application to unipolar and bipolar depressives. J Affect Disord. 2005;85(1-2):85-92.
48. Mazzarini L, Pacchiarotti I, Colom F, Sani G, Kotzalidis GD, Rosa AR, et al. Predominant polarity and temperament in bipolar and unipolar affective disorders. J Affect Disord. 2009;119(1-3):28-33.