

Reliability, Validity and Factor Structure of Fenigstein Paranoia Scale Urdu Version

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Abstract

Background: Paranoia, the mistrust of others' motives, is a common sign of many psychological disorders. The Fenigstein Paranoia Scale Urdu (FPSU) is widely used for identifying paranoia in both clinical and non-clinical populations. Its Urdu version is widely used and cited in the context of paranoia research in Pakistan. Although it is widely used, no studies have evaluated the factor structure of the scale, which could further validate it.

Objective: The objective of this study is to evaluate the reliability, validity, and factor structure of the Urdu version of the FPSU for clinical and research purposes in Pakistan.

Methods: This psychometric study was conducted at the University of Karachi, Karachi, Pakistan, in June 2024. Validity was established by inter item correlation and factor analysis and the reliability was assessed by Cronbach's alpha, Spearman Brown coefficient and split half. The correlation between two halves was adequate ($r = 0.69$). Validity was calculated through inter item correlation and factor analysis. Principal component analysis revealed five factors, which correspond to the aspects of paranoia identified in the original scale development study. Factor B accounted for 24.68% of the variance and was therefore the dominant factor of paranoia measured by the FPSU. The scale was found to be theoretically consistent and valid.

Results: The research was conducted on a purposive sample of 600 participants (317 males, 283 females). The sample's mean age was 24.73 years ($SD = 8.30$). The Cronbach's alpha value was .83, indicating a good degree of internal consistency. The Spearman-Brown coefficient was 0.81, and the Guttman split-half coefficient was also 0.81. The split half reliability for 1st half ($r = 0.70$) and 2nd half ($r = 0.73$) of this scale were noted.

Conclusion: The FPSU demonstrated excellent construct validity, split-half reliability, and internal consistency. The factor structure of the scale demonstrates its strength as a reliable, theoretically consistent, and valid measure of paranoia. The FPSU is a highly relevant measure of paranoia that can be utilized by both clinicians and researchers.

Key words: Paranoid disorders, factor analysis, statistical, primary health care, Pakistan.

Introduction

Like hysteria, the term 'paranoia' has transitioned from the lexicon of psychiatry into everyday language. When used by a layman, it refers to a state of persecutory delusions, wherein an individual falsely believes, without reasonable cause, that others are covertly attempting to harm them.

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Authors Contribution

FK conceptualized the project, did the data collection, literature search, performed the statistical analysis and drafting, revision & writing of manuscript.

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Some researchers define paranoia as an unwarranted and pervasive mistrust of others; this concept has a long historical background.¹ The word 'paranoia' comes from a Greek term that roughly translates to 'out of mind'. However, it was not recognized as a medical term until the 18th century. Prior to the 19th century, individuals exhibiting paranoia were typically diagnosed with melancholia. At the start of the 19th century, it developed into a modern clinical construct. In 1818, German psychiatrist Heinroth was the first to associate paranoia with delusional states and corresponding behaviors.²

Paranoia has historically been considered an abnormality and has been included in all major diagnostic manuals for psychological disorders. In the latest edition, the DSM-5-TR³, although there is no specific diagnosis labeled 'paranoia,' paranoid symptoms manifest across various conditions, including schizophrenia spectrum disorders,

delusional disorder, paranoid personality disorder, and to some extent, depressive and anxiety disorders.

According to Shapiro⁴, the assumption that paranoid conditions are inherently or nearly psychotic is mistaken. According to him, persecutory ideas do occur within non-clinical populations. Paranoid symptoms are highly distressing for individuals who suffer from them, significantly impairing their social and occupational functioning due to a constant fear and mistrust of others.⁵

Regarding the measurement of paranoia, while several inventories historically included paranoia subscales, the 20-item Paranoia Scale⁶ is the most widely used tool for identifying paranoid symptoms in both clinical and non-clinical populations.⁷⁻⁹ This scale was translated, adapted, and normalized in Urdu¹⁰ and is widely used and cited within the context of paranoia research in Pakistan.¹¹⁻¹³ The original translation, adaptation, and norming study⁶ was conducted on a sample of 350 participants.

The current study was conducted 13 years after the original study and aims to further evaluate the scale's reliability, validity, and factor structure using a larger and more diverse sample to extend the psychometric validation of this important tool. Furthermore, because a factor analysis was omitted in the original study, evaluating the factor structure is a novel contribution of the present research. Additionally, several recent studies have artificially imposed two- or three-factor models on the Paranoia Scale. The present study was conducted to critically evaluate the validity of these structural conclusions.⁷⁻⁹

The objective of this study is to evaluate the reliability, validity, and factor structure of the FPSU for use in research and clinical settings in Pakistan.

Methods

This psychometric study falls under the broader framework of correlational research. However, it is exploratory in nature, as it lacks formal hypotheses and focuses on a single variable: paranoia. Ultimately, the primary objective of this investigation is to evaluate the psychometric efficacy of the instrument under study.

The study was conducted at the Department of Psychology, University of Karachi, Pakistan, in June 2024. The researchers selected a purposive sample of 600 participants (317 males, 283 females) from Karachi, Pakistan. A portion of the sample was collected at the University of Karachi, while the remaining data were gathered from various corporate

offices. The questionnaire was self-administered, but the researcher was present to clarify any questions raised by the participants. This sample size was sufficient, as a minimum of 385 participants was required to represent the population of Pakistan at a 95% confidence level, a 5% margin of error, and a 50% population proportion. The sample's mean age was 24.73 (SD=8.30). As the measure is intended for the general population, the sole inclusion criterion was the ability to read the Urdu language. The sample was diverse in terms of profession and education, and the age range was wider than that of the original study. The participants who agreed to take part in the research completed a demographic data sheet alongside an informed consent form, followed by the FPSU.¹⁰ The demographic data sheet captured basic information, including gender, age, education, and occupation.

The FPSU¹⁰ scale is the Urdu translation and adaptation of the 20-item Paranoia Scale.¹⁰ The measure consists of 20 items rated on a 5-point Likert-type scale, which indicates the degree to which each statement applies to the participant. All items are forward-scored, with higher scores indicating a greater degree of paranoia. The Urdu version was developed using a systematic process of forward- and back-translation followed by reconciliation. The authors reported high temporal stability and internal consistency for the Urdu version of the scale.¹⁰ Any completed form containing missing data was discarded and excluded from scoring. Only complete forms were taken for analysis.

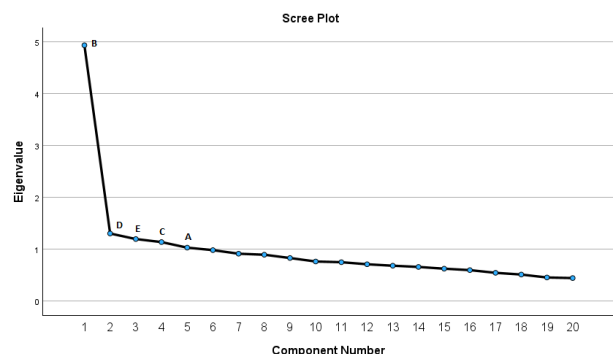


Figure: Scree plot of the factor analysis.

The data was collected on printed forms and in classroom or office settings. The data were scored and tabulated, and statistical analyses were performed using SPSS version 29.0(2.0).¹⁴ The statistical analyses included descriptive statistics, item-total correlations, Cronbach's alpha, an inter-item correlation matrix, a scree plot, χ^2 -tests, and factor analysis (Figure).

The validity was established via inter item correlation and factor analysis. The item total correlations were calculated prior to factor analysis. The lowest level of correlation to keep any item for factor analysis was >0.5 . The entire set of items was found significantly and positively correlated to the total ($p < 0.05$). All Inter item correlations were also positive with minimum 0.038 and maximum 0.445 with a mean value of 0.201.

Kaiser Meyer-Olkin (KMO) measure of sample adequacy was found to be .876 and Bartlett test of sphericity were highly significant ($p < 0.00$), that indicated sufficient items for factor analysis. Therefore, it was recommended to go for factor analysis. A five factor solution was revealed by the analysis of principal components, the exploratory factor analysis with Varimax rotation. The eigen values were set at higher than 1. The five identified factors align with the original dimensions of paranoia used to develop the scale items⁶;

- A. A belief that people and external forces are trying to influence one's behaviour or control ones thinking.
- B. A belief that people are against one in various ways.
- C. A belief that some people talk about, refer to or watch one.
- D. Suspicion or mistrust of others motives.
- E. Feeling of ill will, resentment and bitterness.

Table 1: Factor loadings (FL), mean (M), standard deviation (SD) and item total correlations (ITC) for FPSU obtained through principal component factor analysis (Items = 20, N = 600).

Item #	FL					M	SD	ITC
	A	B	C	D	E			
1.		.45				1.66	.98	.36
2.		.49	.42			1.52	.92	.40
3.		.53				2.17	1.19	.42
4.		.58				2.19	1.32	.48
5.		.48			.41	1.78	1.22	.39
6.		.50			.32	2.36	1.35	.42
7.		.49			.35	1.60	1.12	.40
8.	.53				.30	2.19	1.37	.33
9.		.43		.38		2.43	1.26	.36
10.		.41		.40		2.71	1.41	.34
11.		.55	.32			2.07	1.28	.46
12.	.41			.47		3.04	1.42	.26
13.		.57				2.02	1.29	.47
14.		.57				2.63	1.35	.49
15.		.45			.30	2.30	1.38	.37
16.		.49		.36		2.75	1.38	.33
17.		.53				1.96	1.29	.44
18.		.58				2.74	1.38	.56
19.		.48	.61			2.00	1.29	.32
20.		.50				2.22	1.36	.46
Eigenvalue 1								
Factors are described in methods section								

The most amount of variance accounts for factor B that is the core belief of paranoia. The factor analysis confirmed that the paranoia scale is a multidimensional instrument capable of measuring distinct facets of the construct. Eigenvalue was not manipulated and set at greater than 1 to see the real factor structure of the scale (Table). This multidimensionality is theoretically consistent with the model of paranoia selected in the original study.

Results

Out of 600 participants, 317 were male (52.83%) and 283 were female (47.17%) The sample had a wide age range from 17-64 years (mean age, 24.73 and SD, 8.30). The entire sample belonged to Karachi, Pakistan.

Overall, 152 participants (25.33%) were professionals while 448 participants (74.66%) were full time students. The students were from BS first year to PhD level and the professionals belonged to a diverse range of professions. The educational level of professionals ranged from 10th standard to PhD. The psychometric properties of the scale were established by validity and reliability analyses. Cronbach's alpha and split half were calculated to establish the reliability of the scale.

Reliability analysis for this scale was done through split half reliabilities and Cronbach's alpha. The scale demonstrated good internal consistency, with a Cronbach's alpha of .833. "The split-half reliability coefficients were $r = .70$ for the first half and $r = .73$ for the second half, with a strong correlation between the two halves ($r = .69$). The Spearman- Brown coefficient was 0.81. Similarly the split half coefficient (Guttman) was also 0.81. Females scored slightly higher on the paranoia scale than males, but this difference was not statistically significant.

An exploratory factor analysis, utilizing principal component analysis and Varimax rotation, yielded a five-factor solution. The eigenvalues were set at higher than 1.

Discussion

The current study extended the reliability and validity of the Fenigstein paranoia scale Urdu version (FPSU). The present study also aimed to evaluate the factor structure of the scale, which was omitted during the initial Urdu translation, adaptation, and norming study. As this is the most frequently used measure of paranoia in Pakistan, the convergent and discriminant validities as well as many correlations are already established for this measure.¹¹⁻¹³

It is relevant to note here that the Cronbach's alpha value of current study is very close to the Cronbach's alpha value of another study¹⁵ (that is .827) that used the original English version of the scale. This indicates the strength of the Urdu version of the scale.

As established in the methods and results sections, all inter-item correlations were positive and within an acceptable range. Furthermore, the scale demonstrated strong internal consistency, satisfactory split-half reliability, and adequate sample size, as indicated by the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity. Consequently, an exploratory factor analysis with Varimax rotation was conducted. Eigenvalue was set at greater than 1 and it revealed 5 factors. Factors represent latent variables revealed through statistical analysis; however, the researcher must qualitatively label them. All factors were examined in detail by evaluating item loadings to determine the underlying construct measured by each subscale. These dimensions correspond to the theoretical framework established in the original validation research in which it was noted that scale items were designed to target the core dimensions of the construct:

Items have to relate to at least [one] of the following aspects of paranoia: (a) a belief that people or external forces are trying to influence one's behavior or control one's thinking; (b) a belief that people are against one in various ways; (c) a belief that some people talk about, refer to, or watch one; (d) suspicion or mistrust of others' motives; and (e) feeling of ill will, resentment or bitterness.⁶

Each item was evaluated based on its content and factor loading. Consequently, the identified factors aligned precisely with the core dimensions of paranoia established during the scale's initial development. So the factors were marked accordingly. Factor B accounted for the largest proportion of total variance, though all remaining factors contributed meaningfully to the model (Table). This multidimensional model of paranoia is very much in line with how paranoia was defined by the researchers in the development study. Paranoia is a multifaceted concept. Any self-report measure of paranoia cannot be single dimensional. This factor analysis increases the validity of the scale as it measures what it purports to measure i.e. 5 aspects of paranoia. It is relevant to note here that factor B, is by definition the most important aspect of paranoia and is most dominant in this factor analysis and if the eigenvalue is increased to greater than 2 it will remain as the only factor and all the items are to some degree loaded positively to it. But such a tactic would be

considered artificial in the context of exploratory factor analysis and ignore the other factors that are present.

Current study is unique in the aspect that it is the only study after the original developmental study that found the five factors of paranoia. This is in line with the theoretical model of paranoia.

It is relevant to note here that recently in some international translation and adaptation researches of Fenigstein paranoia scale, a two dimensional⁷⁻⁸ or three dimensional model⁹ of paranoia is presented by factor analysis. Previous research often relied on inflated eigenvalues or utilized a predefined number of factors. This approach introduces a confirmation bias and overlooks the original theoretical foundation of the scale. Such studies are misleading because due to them a theoretically inconsistent model of paranoia is presented to the readers.

Fundamentally, paranoia is a set of symptoms and has several causes. Any measure that attempts to measure paranoia will be measuring various aspects of thoughts and behaviors. While one specific aspect may predominate, as demonstrated by our findings, paranoia remains inherently multidimensional. Constraining items to a single subscale overlooks the fact that some items measure multiple aspects of paranoia, a reality demonstrated by cross-loadings in factor analytic studies.⁷⁻⁹ So it can be said that paranoia according to the definition used in this scale has 5 factors and the most prominent factor is B and the scale is a strong measure of this factor as well as other 4 factors of paranoia. This factor B i.e., a belief that people are against one in various ways, is considered as the main defining factor of paranoia by many theorists.^{1,16,17}

Conclusion

The adapted Urdu version of the Fenigstein Paranoia Scale (FPSU) demonstrated robust psychometric properties, including strong construct validity, internal consistency, and split-half reliability. Most notably, the current research elucidated a five-factor structure that is theoretically consistent, confirming the scale's utility as a valid multidimensional instrument. This study opens new avenues of research, helps psychologists and psychiatrists in identification of paranoia related symptoms in their clients, especially when the clinical presentations are subtle or subclinical. This scale is a very relevant Urdu language measure of paranoia that can be used by both clinicians and researchers.

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Availability of Data: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval: The Institutional Bioethical Committee of University of Karachi, Karachi approved the study via letter no. IBCKU-423/2024 dated 07/06/2024.

Conflict of Interest: None declared.

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