

Psychometric properties of the Arabic version of the schizotypal personality questionnaire in Tunisian university students

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Propriétés psychométriques de la version arabe du questionnaire de personnalité schizotypique chez des étudiants tunisiens

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R É S U M É

Prérequis : Le trouble de la personnalité schizotypique est considéré comme un marqueur de vulnérabilité à la schizophrénie. Le questionnaire de personnalité schizotypique (SPQ) est un instrument conçu pour aider au diagnostic du trouble de la personnalité schizotypique qui est largement utilisé dans la littérature.

But : évaluer les propriétés psychométriques (cohérence interne, fiabilité test-retest et analyse factorielle) de la version arabe du SPQ dans un groupe d'étudiants Tunisiens.

Méthodes : L'étude a concerné 490 étudiants (145 hommes et 345 femmes, âge moyen : $20,4 \pm 1,4$ ans), de la faculté de médecine et de l'école des sciences de la santé de Monastir. Trente-trois étudiants ont participé à la deuxième évaluation par le SPQ, trois mois plus tard.

Résultats : Les coefficients (α) de cohérence interne de Cronbach étaient de 0,92 pour le SPQ total et de 0,62 à 0,75 pour les sous-échelles du SPQ. La fiabilité test-retest a été bonne avec des coefficients de corrélation de Pearson de 0,83 pour le SPQ total et 0,67 à 0,87 pour les sous-échelles du SPQ ($p < 0,0001$). L'analyse factorielle a indiqué que le modèle à trois facteurs (positif, négatif et désorganisé) et le modèle à quatre facteurs (cognitivo-perceptif, paranoïaque, interpersonnel et désorganisé) ont été conformes aux données, comptant respectivement, pour 70,7% et 77,3% de la variance totale de l'échelle.

Conclusion : Ces résultats ont montré que la version arabe du SPQ avait des propriétés psychométriques adéquates et ont confirmé la structure multidimensionnelle de la personnalité schizotypique dans les populations non cliniques.

S U M M A R Y

Background: The schizotypal personality disorder is considered as a marker of schizophrenia proneness. The schizotypal personality questionnaire (SPQ) is an instrument to help to the diagnosis of schizotypal personality disorder extensively studied in the literature.

Aim: To assess psychometric properties (reliability and factor structure) of the Arabic version of the SPQ in a sample of Tunisian university students.

Method: The sample included 490 students (145 males and 345 females; mean age: 20.4 ± 1.4 years), from the faculty of medicine and the health sciences school of Monastir. Thirty-three students participated in the second assessment of the SPQ three months later.

Results: Cronbach's (α) internal consistency reliability coefficients were 0.92 for the total SPQ and from 0.62 to 0.75 for the SPQ subscales. The test-retest reliability was good with the intraclass correlation coefficients equal to 0.83 for the total SPQ and from 0.67 to 0.87 for the SPQ subscales ($P < 0.0001$). Factor analysis indicated that the three-factor model (positive or cognitive-perceptual, negative or interpersonal, and disorganized) and the four-factor model (cognitive-perceptual, paranoid, interpersonal, and disorganized) have provided a good fit to the data, accounting for 70.7% and 77.3% of the total variance of the scale, respectively.

Conclusion: The results showed that the Arabic version of the SPQ had adequate psychometric properties and confirmed the multidimensional structure of the schizotypal personality in non-clinical populations.

Mots-clés

Schizotypie, personnalité schizotypique, vulnérabilité à la schizophrénie, fiabilité, analyse factorielle.

Key-words

Schizotypy, Schizotypal personality, Schizophrenia proneness, Reliability, Factor analysis.

The schizotypal personality disorder is considered as a marker of schizophrenia proneness [1-3]. Knowing the growing interest in the study of predisposition to psychosis and in the detection of its early stages [3-5], we looked for questionnaires which deal with schizotypy. Among many tools found we focused on the schizotypal personality questionnaire (SPQ). Raine [6] developed this questionnaire in order to provide an instrument to help to the diagnosis of schizotypal personality disorder. It's a self-administrated questionnaire assessing all nine features of this disorder. This questionnaire has been extensively studied in the literature. In fact, it was translated in many versions: Chinese [7], Italian [8], French [9], Dutch [10], Greek [11], Spanish [12] and Turkish [13]. Throughout our searches, an Arabic version of SPQ could not be found, raising the need of an Arabic adaptation of the questionnaire.

The issue of translation and adaptation of psychological questionnaires is a real challenge in every-day practice of psychiatrists and psychologists. This challenge deals specially with language and culture specificities of different populations facing a "standard" questionnaire. Some authors tried to investigate this cultural dimension in their studies [14,15].

The SPQ was statistically structured in different domains or factors. Every domain includes a number of subscales. The literature data show some controversies dealing with this issue. Different models were studied and statistically validated suggesting two, three or four-factor models [9-11, 16-21]. The suggested domains are the cognitive perceptual factor (or positive factor in the two and three-factor models), the interpersonal factor (or negative factor in the two or three-factor models), the disorganized factor (suggested in the three and four-factor models) and the paranoid factor suggested in the four factor model. The real interest of those models seems to be the way we can integrate them in clinical issues.

The aim of the study was the assessment of the psychometric properties (reliability and factor structure) of the Arabic version of the SPQ in a non-clinical sample of university students.

METHODS

Participants

We addressed a population of college students fulfilling their education in the faculty of medicine and the health sciences school of Monastir. After the courses, we informed the students about the study. Those who accepted to participate took the self-administrated questionnaire. 800 questionnaires were distributed. We collected 490 questionnaires correctly filled out, which corresponds to a response rate of 61.25%.

The sample included 490 students (145 males and 345 females) with a mean age of 20.4 ± 1.4 years. Among them, 99% of them were single, 97% were studying in the first three years of college.

Measures

After getting the approbation from Pr. Raine, the Arabic translation of the SPQ was made by a team of Tunisian psychiatrists (including AL, AM and LG). This task required a

specific translation of the different items which took into account some cultural specificity. A back translation into English was performed by an independent translator.

The SPQ is a self-administrated questionnaire [6] which consists of 74 items divided in 9 subscales: Ideas of reference (9 items), Odd beliefs or magical thinking (7 items), Unusual perceptual experiences (9 items), Paranoid ideation/suspiciousness (8 items), Excessive social anxiety (8 items), No close friends (9 items), Constricted affect (8 items), Odd or eccentric behavior (7 items) and Odd speech (9 items). The approximate duration of the assessment was 10 to 15 minutes. Three months later, thirty-three students (8 males and 25 females, with a mean age of 19.5 ± 0.6 years) participated in the second assessment of the SPQ.

Statistical analysis

All statistical analyses were carried out with SPSS 11.0 software. Descriptive statistics, internal consistency reliability (Cronbach's) coefficients and test-retest reliability coefficients of SPQ total and subscale scores were determined. A confirmatory factor analysis using principal component analysis as the extraction method of the nine SPQ subscales was conducted. Varimax rotation with Kaiser Normalization was then performed. We only considered the rotated factor loadings > 0.4 . This makes the output easier to read by removing the clutter of low correlations. Finally, inter-correlation coefficients among the derived SPQ factors were calculated.

RESULTS

Internal reliability

Cronbach's (α) internal consistency reliability coefficient for the total SPQ was 0.92, and internal consistency reliability coefficients for the SPQ subscales ranged from 0.62 to 0.75 (Table 1).

Table 1: Descriptive indices, Cronbach's alpha coefficients and test-retest reliability of the subscales and total SPQ

SPQ subscales	Cronbach's alpha coefficients	Test-retest coefficients	Mean (S.D.)
Ideas of reference	0.72	0.76	3.75 (2.32)
Excessive social anxiety	0.75	0.87	3.30 (2.26)
Odd beliefs or magical thinking	0.62	0.82	2.17 (1.72)
Unusual perceptual experiences	0.67	0.68	2.63 (2.10)
Odd or eccentric behavior	0.71	0.67	2.08 (1.83)
No close friends	0.68	0.69	3.47 (2.19)
Odd speech	0.72	0.70	4.16 (2.39)
Constricted affect	0.66	0.73	3.27 (1.97)
Paranoid ideation/suspiciousness	0.66	0.69	4.19 (2.04)
Total Score	0.91	0.83	28.97 (12.97)

SPQ, schizotypal personality questionnaire; S.D., standard deviation

Test-retest reliability

The test-retest reliability was good with the intra-class correlation coefficients equal to 0.83 for the total SPQ and ranged from 0.67 to 0.87 for the SPQ subscales ($P < 0.0001$) (Table 1).

Factor structure

A principal component analysis indicated that the three-factor model (positive or cognitive-perceptual, negative or interpersonal, and disorganized) and the four-factor model (cognitive-perceptual, paranoid, interpersonal and disorganized) have provided a good fit to the data, accounting for 70.7% and 77.3% of the total variance of the scale, respectively.

Dealing with the three-factor model, negative factor included: excessive social anxiety, no close friends, constricted affects and suspiciousness. Positive factor included: ideas of reference, odd beliefs and magical thinking, unusual perceptual experiences and suspiciousness. Disorganized factor included odd or eccentric behavior and odd speech.

The four-factor model in our study provides the following results: the interpersonal factor included: no close friends, constricted affect, social anxiety and suspiciousness. The cognitive-perceptual factor included ideas of reference, odd beliefs and magical thinking, unusual perceptual experiences and suspiciousness. The paranoid factor included ideas of reference, excessive social anxiety and odd speech. The disorganized factor included odd or eccentric behavior and odd speech. Some subscales were related to more than one dimension. In fact, in this four-factor model, the odd speech subscale loads on both the disorganization (0.57) and paranoid (0.48) factors. The ideas of reference subscale loads on both cognitive-perceptual (0.61) and paranoid (0.58) factors. Suspiciousness subscale loads on both interpersonal (0.55) and cognitive-perceptual factors (0.59). Social anxiety loads on both paranoid (0.78) and interpersonal (0.44) factors (Table 2).

Table 2: Factor loadings for the four-factor model*

SPQ subscales	SPQ-CP	SPQ-N	SPQ-P	SPQ-D
Ideas of reference	0.61	-	0.58	-
Excessive social anxiety	-	0.44	0.78	-
Odd beliefs or magical thinking	0.86	-	-	-
Unusual perceptual experiences	0.75	-	-	-
Odd or eccentric behavior	-	-	-	0.87
No close friends	-	0.87	-	-
Odd speech	-	-	0.48	0.57
Constricted affect	-	0.80	-	-
Paranoid ideation/suspiciousness	0.59	0.55	-	-

SPQ, schizotypal personality questionnaire; CP, cognitive perceptual factor; P, paranoid factor; N, negative or interpersonal factor; D, disorganized factor.

*Only the factor loadings > 0.4 were considered. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.

Mean scores for the cognitive-perceptual, paranoid, negative, and disorganized subscales were 12.7 ± 6.4 , 11.1 ± 5.6 , 14.1 ± 6.6 , and 6.2 ± 3.6 , respectively. Correlations between the four SPQ factors were quite high ($r = 0.55-0.80$), though it should be noted that the highest correlations were found between paranoid and others factors (Table 3).

Table 3: Inter-correlation coefficients between the four SPQ factors

	SPQ-P	SPQ-N	SPQ-D
SPQ-CP	0.73	0.55	0.60
SPQ-P	-	0.76	0.80
SPQ-N	-	-	0.62

SPQ, schizotypal personality questionnaire; CP, cognitive perceptual factor; P, paranoid factor; N, negative or interpersonal factor; D, disorganized factor.

DISCUSSION

The results show that the Arabic version of the SPQ has adequate psychometric properties and confirms the multidimensional structure of the schizotypal personality in non-clinical populations, in line with previous literature [9, 11, 13, 18-22]. In addition, these results confirm those already found with the French version of the SPQ in a Tunisian student population [23].

According to our results, several studies have shown an adequate internal consistency reliability of the SPQ total score and the nine subscales with Cronbach's α values ranging from 0.70 to 0.83 [19], 0.58 and 0.80 [23], 0.57 and 0.76 [9], and 0.71 to 0.78 [6,7].

We also found a good stability over time with test-retest correlation coefficients (0.83 for the total score and between 0.67 and 0.87 for the nine subscales). A high test-retest reliability for the SPQ ($r = 0.82$) was reported by Raine [6]. Stefanis et al. [24] found a moderate stability of the total SPQ score with a Pearson correlation of 0.53 for a time period of two years. Moreover, in this study, negative schizotypal features appeared to be more stable over time than positive ones.

Dealing with factor analysis, our results show many similarities with literature findings. In fact, our study confirms the possibility of different factor structures, statistically valid (Table 4). If we look at every model and compare our findings to those of the literature, we can notice many relevant facts. Dealing with the three-factor model, our analysis is very close to the factor structure found by Raine et al. [20] and recently by Badoud et al. [22]. However, we have found differences with three-factor models proposed by other authors [9, 21] dealing with some subscale such as odd beliefs or odd or eccentric behavior (Table 4).

The four-factor model seems to be the best model to fit the data in our study. This finding is consistent with other studies. Stefanis et al. [11] were the first to introduce a fourth domain to study the schizotypal personality. This has been confirmed by other authors [17, 19]. However, our four-factor analysis shows however more differences with the literature data (Table 4). A spot light has to be brought to the subscale of suspiciousness

which was not found in our study as a component of the paranoid factor. This surprising fact which does not match with both literature data and the common paranoid dimension can be explained by cultural facts. We can understand this by the difference of expressing the paranoid dimension in different cultures. We can suppose that in our culture with its predominant oral tradition, paranoid aspects were more obvious in a subscale such as "ideas of reference".

Those findings point out to the impact of cultures in our analysis of different tools of measurement in psychiatry. For the specific case of SPQ, this study proves it is generally adequate for Tunisian population. Some particularities still persist despite those efforts of standardization. Cultural facts must be integrated for a better understanding of the results. For example some commonly-shared beliefs in the Tunisian culture can be interpreted as magical and odd beliefs in the western way of thinking. In the same time some concepts such as "telepathy" are not very common to the sense of Tunisian way of thinking. We were aware of this fact since the translation and adaptation of the questionnaire. For example, item 47 was translated in Arabic with some specifications which match in our culture with the ideas of extra sensorial perceptions (such as evil eye). The other difference we can focus on is the belonging of the odd speech to the paranoid factor as well as to the disorganized factor. Also, the ideas of reference subscale loads on both cognitive-perceptual and paranoid factors. The correlations among the domains were more obvious in our study (0.55-0.80) than other literature data. Correlations reported by Compton ranged from 0.43 to 0.84. High correlations were found in our study between paranoid factor and disorganized and negative factors. Compton et al. [19] has also reported a high correlation between paranoid and negative domains (0.84) largely driven by overlap among two subscales (paranoid ideation/suspiciousness and excessive social anxiety).

The implication of this four-factor model in our view to schizophrenia is tricky. The advantage of the three-factor model is that it gives a good analogy to the analysis of the schizophrenia symptoms [10, 21]. In fact, it is now well established that schizophrenia symptoms can be divided into

positive, negative and disorganised symptoms. But considering the four-factor model, it would be difficult to identify a category of symptoms called "paranoid" independent from positive and negative symptoms of psychosis.

Some methodological limitations of our study are to acknowledge. Our studied sample is young highly educated, well familiarized with health considerations and predominately female. Those parameters may influence schizotypy [7, 12, 25]. Besides, those characteristics may not apply to the general population in Tunisia at least in terms of education and health knowledge. Another limitation of this study is that there was no detection of psychiatric disorders prior to the taking of the SPQ. This step would have brought more accuracy to our study, making the difference between personality disorders and psychiatric disorders of axis I in the DSM.

Those considerations being said, we can however notice that our study fits the new international data dealing with the pertinence of the four-factor model despite some differences in some subscales belongings. Future studies could use the Arabic version of the SPQ as a screening self-report for the detection of vulnerable subjects to the development of schizophrenia-spectrum disorders in the general population, in genetically high-risk samples and in clinical studies.

In summary, this study provides a new tool to study schizotypal personality in Arabic populations. It also provides a different point of view dealing with the expression of schizotypal features. It emphasises the fact that cultural contexts of different populations, even if it does not represent a limitation to the validity of questionnaires, still have to be taken into consideration while adapting those tools.

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