

Assessing the Construct Validity of the Chinese-Version Schizotypal Personality Questionnaire-Brief on Male and Female Undergraduate Students

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ABSTRACT

Background: Screening for the schizotypal personality trait is one strategy to identify people who may be susceptible to early psychosis or be at high risk for prodromal psychosis. The Schizotypal Personality Questionnaire-Brief (SPQ-B) has been widely used to assess the schizotypal personality and has been translated into Chinese. However, the psychometric properties of the Chinese-version scale have yet to be evaluated.

Purpose: This study evaluates the construct validity of the Chinese-version SPQ-B on a sample of male and female undergraduate students in Taiwan.

Methods: A cross-sectional design with convenient sampling was used for this study. The data were collected using the Chinese-version SPQ-B between October 2008 and June 2009. Participants included 513 male and 675 female undergraduate students in Taiwan. The factor construct validity of the scale was examined by confirmatory factor analysis using structural equation modeling with SPSS AMOS version 17 software.

Results: The results show that the three-factor model fits the data better than the one-factor model for both male and female participants. The male participants scored significantly higher than their female counterparts in terms of total scale, interpersonal subscales, and disorganized subscales.

Conclusions/Implications for Practice: The Chinese version of the SPQ-B adequately achieves three-factor construct validity for undergraduate students. The scale may be used to screen for the schizotypal personality trait in both male and female college students to identify those at an elevated risk for mental illness.

KEY WORDS:

construct validity, instrument development, measures, schizotypal personality.

Introduction

The schizotypal personality has been defined as “a pattern of acute discomfort in close relationships, cognitive or perceptual distortions, and eccentricities of behavior” (American Psychiatric Association, 2000, p. 685). The 22 dichotomous items of the self-report Schizotypal Personality Questionnaire-Brief (SPQ-B) have been used widely to measure schizotypal personality traits (Raine & Benishay, 1995). The SPQ-B assesses three dimensions of the schizotypal personality trait, including cognitive-perceptual deficits, interpersonal deficits, and disorganization. The SPQ-B has shown adequate reliability and validity for the general population and clinical patients in numerous studies (Bora & Arabaci, 2009; Compton, Chien, & Bollini, 2010; Ito, Okumura, & Sakamoto, 2010).

The increasingly wide application of the SPQ-B for the measuring of schizotypal personality traits in research and clinical settings has highlighted the existence of gender-based differences in these traits. Men tend to earn higher scores on negative schizotypal personality traits than women (Guo, Collinson, Subramaniam, & Chong, 2011). In addition, men have earned higher scores for interpersonal factors and

Accepted for publication: December 12, 2013

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The authors declare no conflicts of interest.

Cite this article as:

Ma, W. F., Lane, H. Y., Chiang, L. C., Wu, P. L., Yang, S. J., & Tsai, G. E. (2015). Assessing the construct validity of the Chinese-version Schizotypal Personality Questionnaire-Brief on male and female undergraduate students. *The Journal of Nursing Research*, 23(2), 162-166. doi:10.1097/jnr.0000000000000068

disorganized factors than women (Mata, Mataix-Cols, & Peralta, 2005), whereas women have earned higher scores for cognitive perceptual factors (Bora & Arabaci, 2009). These gender-based discrepancies suggest that male and female populations be considered separately when using the psychometric properties of the SPQ-B to identify schizotypal personality traits.

The SPQ-B has previously been translated from English into Mandarin Chinese (CSPQ-B) for the purpose of identifying undergraduate students who are susceptible to psychosis (Ma et al., 2010). The study showed that the CSPQ-B is a reliable instrument during a 2-week trial. The CSPQ-B earned a sensitivity of 80.0% and a specificity of 85.9% (cutoff score = 17, odds ratio = 24.4, area under the receiver operating characteristic curves = 0.83). However, the factor construct validity of the CSPQ-B has not been estimated. This limitation suggests that the construct validity of CSPQ-B remains to be assessed using different gender populations. Therefore, this study aimed to evaluate the factor construct validity of the CSPQ-B for male and female undergraduate students.

Methods

Design and Participants

This study used a cross-sectional design. The participants were recruited by convenient sampling from undergraduate students enrolled at two medical universities in central Taiwan. The criteria for inclusion in this study were age of 18–30 years and willingness to participate. A total of 1,230 undergraduate students completed the CSPQ-B. After eliminating incomplete forms, the data from 1,188 students, including 513 (43.2%) men and 675 (56.8%) women, were included in analysis.

Instrument

Data were collected using the original CSPQ-B with two additional items: age and gender. The total possible range of scores for the CSPQ-B is 0–22. In a 2-week test–retest of the CSPQ-B using 54 college students, the intraclass correlation coefficient was .82, and in a separate test on 618 students, the internal consistency, as evaluated using the Kuder–Richardson formula 20, was .76 for all items of the CSPQ-B and .67–.73 for the three subscales (Ma et al., 2010).

Study Procedure and Ethical Considerations

The data were collected from October 2008 to June 2009 after the approval of the institutional review boards. The researchers explained to students the purpose of the study, the data collection procedures, the potential risks and benefits of participation, and the right of participants to withdraw from participation at any time and to not return the questionnaire during class. Those who agreed to participate signed an in-

formed consent form and then finished and returned the questionnaires.

Data Analysis

The characteristics of the sample were analyzed using descriptive statistics, gender-based differences in SPQB scores were examined using a *t* test, and internal consistency was evaluated using a Kuder–Richardson formula 20 analysis. All statistical analyses were calculated using the statistical package SPSS for Windows (Version 19.0).

Two measurement models were hypothesized, as suggested by Raine and Benishay (1995), based on the criteria for schizotypal personalities defined by the American Psychiatric Association (2000). Male and female participants were assessed as separate subgroups in this study. The two measurement models used were the single-factor model for the schizotypal personality factor (a latent variable) and the three-factor (three latent variables) model. The latter addresses the three subscales of CSPQ-B, which separately assess cognitive–perceptual, interpersonal, and disorganization factors. These three factors were hypothesized as endogenous and not affected by any other variables in the model (MacCallum, 1995).

Confirmatory factor analysis using the structural equation modeling and the maximum likelihood method was run on SPSS AMOS version 17 to examine the two hypothesized factor constructs of the CSPQ-B measurement models (Hoyle, 1995). The factor model fit was checked using chi-square (χ^2) analysis and five other indexes, including goodness-of-fit index (GFI), comparative fit index (CFI), the Akaike information criterion, the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR; Hoyle, 1995).

Results

Participant Characteristics and CSPQ-B Measures

The mean age of the 1,188 participants was 18.52 years ($SD = 1.16$ years) and ranged from 18 to 30 years. The mean CSPQ-B score was 6.32 ($SD = 3.69$) with a skewness of 0.81 and kurtosis of 0.93. The overall internal consistency for all items was .78 for all (male and female) participants. Male and female participants differed significantly in terms of the CSPQ-B total items as well as the CSPQ-B interpersonal subscale and disorganized subscale. Table 1 shows the mean and *t* test results for all participants and for each gender subgroup with regard to CSPQ-B scales. The cognitive–perceptual factor correlated significantly with the interpersonal factor ($r = .24, p < .001$) and the disorganization factor ($r = .51, p < .001$) for all participants. The three subscales were significantly correlated ($r = .17–.51$) in both genders.

TABLE 1.
Gender Differences in CSPQ-B Measures

Variable	Total				Male		Female		t
	Mean	SD	Skew	Kurtosis	Mean	SD	Mean	SD	
Cognitive-perceptual	2.85	1.77	0.42	-0.33	2.88	1.79	2.82	1.75	0.65
Interpersonal	2.60	1.90	0.70	-0.05	2.73	1.98	2.50	1.84	1.98*
Disorganized	0.88	1.26	1.58	2.13	1.01	1.38	0.78	1.15	3.04***
CSPQ-B total	6.32	3.69	0.81	0.93	6.62	3.97	6.10	3.45	2.36*

Note. CSPQ-B = Chinese version of the Schizotypal Personality Questionnaire-Brief.
p* < .05. **p* < .001.

Construct Structure Validity Testing

The two measurement models (the single-factor model and the three-factor model) were tested separately on all male and female participants. The single-factor model for the schizotypal personality factor involved all 22 items on the CSPQ-B. The three-factor model had eight items in the cognitive-perceptual deficit subscale (2, 4, 5, 9, 10, 12, 16, and 17), eight items in the interpersonal deficit subscale (1, 7, 11, 14, 15, 18, 21, and 22), and six items in the disorganization subscale (3, 6, 8, 13, 19, and 20).

The results showed that significant χ^2 analysis for the models earned *p* values that ranged from .000 to .006, indicating that none of models fit the data statistically. However, the three-factor model fits the data better than the one-single model because of well-fit indexes for both male ($\chi^2 = 20.84$, *p* < .002, GFI = .99, CFI = .98, SRMR = .03, RMSEA = .06) and female ($\chi^2 = 18.27$, *p* < .006, GFI = .99, CFI = .98, SRMR = .03, RMSEA = .05) participants. Details of the indices for these models are presented in Table 2.

Discussion

The results of χ^2 analysis indicate that none of the two hypothesized models adequately accounted for the data. The significance of the χ^2 outcomes for the models may be explained by a dichotomous scale for responses, which may have limited the model to fit the data (Bandalos & Finney, 2001). However,

the indices of SRMR, RMSEA, GFI, and CFI values in both male and female students suggest that the three-factor structure model provides an acceptable fit to the data. The values of GFI (.99 for both genders) and CFI (.98 for both genders) were above the acceptable level of .90 (Schumacker & Lomax, 2010) indicating that the model fits the data. Overall, the three-factor model represented the CSPQ-B factor structure adequately and confirmed the three-factor structure based on the above fit indexes. Similarly, a three-factor structure was found in studies conducted in the United States (Compton, Goulding, Bakeman, & McClure-Tone, 2009) and Japan (Ito et al., 2010).

An acceptable level of internal consistency for the CSPQ-B was found in this study as well as in other studies that were conducted on nonpsychiatric populations (Compton et al., 2010; Ito et al., 2010; Ma et al., 2010). In addition, the results of this study were similar to Ito et al. (2010) and Ma et al. (2010) in that male students scored significantly higher than female students on the overall CSPQ-B scale as well as its interpersonal and disorganization subscales. Possible reasons for this result may be attributable to differences in how the schizotypal personality trait is manifested in men and women (Ito et al., 2010; Ma et al., 2013; Mata et al., 2005). Meanwhile, an SPQ-B score of 17 has been suggested as the cutoff point for identifying people with schizotypal personality disorders (Raine & Benishay, 1995). When CSPQ-B is

TABLE 2.
Goodness-of-Fit Indexes and Variances for CSPQ-B Models

Model	χ^2	<i>p</i>	GFI	CFI	AIC	SRMR	RMSEA	[90% CI]
Total								
One-factor	1027.24	.000	.92	.77	1121.24	.06	.068	[0.049, 0.089]
Three-factor	39.14	.000	.99	.98	69.14	.03	.058	[0.054, 0.062]
Men								
One-factor	591.66	.000	.90	.77	685.66	.06	.070	[0.038, 0.103]
Three-factor	20.84	.002	.99	.98	50.84	.03	.060	[0.055, 0.066]
Women								
One-factor	663.21	.000	.91	.76	757.21	.06	.060	[0.053, 0.062]
Three-factor	18.27	.006	.99	.98	48.27	.03	.050	[0.027, 0.085]

Note. GFI = goodness-of-fit index; CFI = comparative fit index; AIC = Akaike information criterion; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; 90% CI = 90% confidence interval for RMSEA.

used to identify people with prodromal psychotic symptoms, the results of this study support the separate estimation of cutoff points for men and women.

Conclusions/Implications for Practice

This study suggests that the CSPQ-B adequately represents the three-factor construct validity for both male and female undergraduate students. Therefore, the CSPQ-B should be considered a useful tool for detecting the schizotypal personality trait in Taiwanese college students. Many patients with schizophrenia experience prodromal symptoms for a period before a diagnosis of psychotic illness (Addington, 2003). Finding individuals in the prodromal phase of psychosis may facilitate early treatment. Because the schizotypal personality shares traits that are prodromal psychosis, many studies have used measures developed to assess schizotypal personality to identify individuals who may be in the prodromal phase of mental illness (Seeber & Cadenhead, 2005). Therefore, the CSPQ-B may be a useful screening tool to identify Taiwanese college students at high risk for prodromal mental illness.

Acknowledgments

The study was supported by research grants from China Medical University (CMU102-S-19) and the National Science Council (NSC-102-2314-B-039-010-MY3), Taiwan.

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中文版簡短精神分裂型人格量表於男女大學生結構效度之檢測

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- 背景** 藉由精神分裂型人格特質來識別疑似高風險的精神疾病前驅期是一個篩檢的方法。精神分裂型人格簡短量表已被廣泛使用於測量此概念的工具，但其中文量表尚未經過心理測量學特性的檢驗。
- 目的** 針對男女大學生使用中文版精神分裂型人格簡短量表的結構效度之檢定。
- 方法** 本研究採方便取樣的橫跨性調查研究，資料收集從2008年10月到2009年1月，參與者共有513位男性及675位女性的台灣大學生。量表的結構效度以確認性因數分析，以結構方程模式採AMOS17版本的軟體分析。
- 結果** 本研究結果呈現出不論男女，三個結構的模型的配適度更佳。男學生的分數在總分、人際互動分數以及去統整組織分項分數都比女性學生高。
- 結論／實務應用** 本研究之中文版精神分裂型人格簡短量表對台灣大學生呈現出可被接受之結構效度。本量表適用於測量男性及女性大學生的精神分裂型人格特質，來達到早期發現心理健康高風險的個案的。

關鍵詞：結構效度、工具發展、測量、精神分裂型人格。

接受刊載：102年12月12日

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