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Reliability and Validity of a Chinese version of the Diagnostic Interview for Borderlines-Revised (DIB-R)

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Abstract

Background—Borderline personality disorder (BPD) is the most studied of the Axis II disorders. One of the most widely used diagnostic instruments is the Diagnostic Interview for Borderline Patients - Revised (DIB-R). The aim of this study was to test the reliability and validity of DIB-R for use in the Chinese culture.

Methods—The reliability and validity of the DIB-R Chinese version were assessed in a sample of 236 outpatients with a probable BPD diagnosis. The Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) was used as a standard. Test/re-test reliability was tested at 6 months later with 20 patients and inter-rater reliability was tested on 32 patients.

Results—The Chinese version of the DIB-R showed good internal global consistency (Cronbach's alpha of 0.916), good test-retest reliability (Pearson correlation of 0.704), good inter-raters reliability (ICC of 0.892 and Kappa of 0.861). When compared to the DSM-IV diagnosis as measured by the SCID-II, the DIB-R showed relatively good sensitivity (0.768) and specificity (0.891) at the cutoff of 7; moderate diagnostic convergence (Kappa of 0.631), as well as good discriminating validity.

Conclusion—The Chinese version of the DIB-R has good psychometric properties, which renders it a valuable method for examining the presence, the severity and component phenotypes of BPD in Chinese samples.

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Keywords

borderline personality disorder; Diagnostic Interview for Borderlines-Revised (DIB-R); Reliability; Validity

1. Introduction

Borderline personality disorder (BPD) is a complex and serious mental disorder characterized by a pervasive pattern of instability in regulation of emotion, interpersonal relationships, self-image, and impulse control. In the United States, the prevalence of BPD has been estimated at 1.6% (Lenzenweger et al., 2007) to 5.9% (Grant et al., 2008) of the general population, 10% of psychiatric outpatients, and 20% of inpatients (American Psychiatric Association., 1994). After decades of controversy and research, a clinical consensus had formed that considered BPD as a valid disorder (Gunderson, 2009; Skodol et al., 2011; Paris, 2005; Morey & Zanarini, 2000), since it has characteristic clinical presentation (Gunderson et al., 2011), some known neurobiological (De la Fuente et al., 2011; Torgersen et al., 2000; Zanarini et al., 1994; Torgersen et al., 1984) and environmental etiology (Goodman et al., 2004; Hill et al., 2000; Melchert et al., 2000; Boney-McCoy & Finkelhor, 1996; Links & van Reekum, 1993; Herman et al., 1989), as well as effective treatments (Bateman & Fonagy, 1999; Linehan, 1993; Linehan, 1991). For these considerations, the diagnosis of BPD will be retained in DSM-V..

In China, however, the BPD construct has not been uniformly accepted. There is no BPD diagnosis in the third Edition of the Chinese Classification of Mental Disorders (CCMD-3), although a different diagnostic category of impulsive personality disorder (IPD) overlaps extensively with BPD (Zhong & Leung, 2007). Limited available studies in recent years have provided preliminary support for the construct validity of BPD in Chinese population (Leung & Leung, 2009; Yang et al., 2002). For most Chinese clinicians, their knowledge about BPD is still limited. We had investigated clinician's diagnoses for 178 BPD patients who had been diagnosed by Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) in previous study, and found that none had been diagnosed with BPD, only 13 (7.3%) had been given the diagnosis of personality disorder without specifying which type, 21 (12.7%) recorded that the diagnosis unknown. and remaining 144 (80.9%) had been diagnosed with Axis I disorders (Wang et al., 2007). The clinical heterogeneity of BPD, its frequent comorbidity with other personality disorders and periodic appearance of Axis I disease make it difficult to establish a diagnosis. This has hampered further research and clinical practice on BPD in China. Valid and reliable assessment instruments for measuring BPD features are needed.

One of the most widely used diagnostic instruments is the Diagnostic Interview for Borderline Patients (DIB) (Gunderson et al., 1981). The criteria and the cutoff that have defined BPD in DSM-III and IV were derived from it (Gunderson & Kolb, 1978). DIB evaluated five areas of BPD's characteristics: social adaptation, impulsive action patterns, affects, psychosis and interpersonal relationships. The DIB was shown to be the best to identify DSM-III-R BPD, when compared with Kernberg's Structural Interview, with the

Borderline Syndrome Index (BSI) and with the Million Clinical Multiaxial Inventory (MCMI) (Lewis & Harder, 1991). To improve its ability to discriminate BPD from other personality disorders, a revised version, the DIB-R appeared in 1989. It is a semistructured interview comprising 105 items and 22 summary statements for assessing the persistence of symptoms of BPD over the course of the past two years and offers a more comprehensive characterization of BPD, such as affective, behavioral, interpersonal, and cognitive phenotypes (Siever & Davis, 1991; Gunderson & Lyons-Ruth, 2008). Zanarini subsequently reported that the DIB-R had good sensitivity and specificity vs other personality disorders and had good inter-rater reliability and test-retest reliability (Zanarini et al., 2002). Therefore, this interview which offers a considerably more detailed account of BPD psychopathology than does the DSM-IV criteria, has been widely implemented as a diagnostic tool in BPD studies in many cultures. A recent report showed that when the BPD is established by the DIB-R, it is more familial and more heritable than when the DSM-IV diagnosis is used (Gunderson et al., 2011).

The present study was designed to assess the reliability and validity of a Chinese version of DIB-R in order to introduce an effective and useful tool to assess BPD and extend the understanding about BPD in China.

2. Methodology

Adaptation methodology

To develop the Chinese version of the DIB-R, the translation and back translation procedure has been completed. The original interview was translated by two bilingual psychologists. One senior psychiatrist revised the language to make it convenient for clinical interview. The translations were discussed until reaching a consensus. Then, the first version was re-translated into English by another translator. This version was sent to the DIB-R authors, John Gunderson and Mary Zanarini, who verified that the adaptation accurately reflected the original text.

Raters

Two psychiatrists with experience in the use of interviews in the area of personality evaluation had been trained for rating. One of these two raters is an attending psychiatrist who has been involved in the study of personality disorders for almost 8 years. The other is the associate chief psychiatrist who has been engaged in study of bipolar disorder for many years. Both of them have previously used the SCID-II interview in their studies. For this training in use of the DIB-R, one of the raters had taken part in discussion meetings on the use of the criteria and the observation of interviews, which were held by senior psychologists, Dr. Jie Zhong and Prof. Freedom Leung, who were experts in the use of the original instrument. Then, the other rater was trained by the first rater through discussion of criteria, observing interviews, and conducting interviews with patients.

Subjects

The sample was made up of 236 out-patients, who had been screened by MSI – BPD (see description below) for score above seven. The inclusion criterion was: age from 18 to 60

years. The exclusion criteria were: a diagnosis of schizophrenia with acute psychotic symptoms and inability to cooperate with the study procedures; mental retardation, dementia, or intellectual impairment due to other reasons; acute post-traumatic personality changes; severe medical disease, and difficulties in verbal communication and understanding which prevented participation. The study was approved by the Ethics Committee of Shanghai Mental Health Center and all participants provided signed informed consent.

Instruments

Three instruments had been used in this study:

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) (Zanarini et al., 2003): this is a self-report screening measure for DSM-IV BPD, with good sensitivity (0.81) and specificity (0.85), at a cutoff of 7. Two recent studies have revised and examined its reliability for use among college and adolescent Chinese samples (Leung & Leung, 2009; Wang et al., 2008). One study reported that MSI-BPD had good internal consistency reliability (0.781) and correlated with Diagnostic Interview for Chinese Personality (0.706) when it had been used in Chinese psychiatric samples (Chen et al., 2011).

Diagnostic Interview for Borderlines-Revised (DIB-R): it is a semistructured interview comprising 127 items for assessing the symptoms of BPD in the past two years, from which 22 summary statements (SS) which can have 3 values (0: no; 1:probable; 2: yes) are derived. The SS give rise to the 4 area scores (AS): affects, cognition, impulse action patterns and interpersonal relations. The AS determines the overall score on a scale ranging from 0 to 10. The cutoff score for a DIB-R BPD diagnosis is 8 or higher. This interview takes approximately one hour to administer.

Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II): it is a semistructured diagnostic interview of Axis II disorders. It determines whether criteria are met for the 10 DSM-IV Axis II personality disorders, as well as depressive personality disorder and passive-aggressive personality disorder. The SCID-II has been used extensively in the English-speaking world (Hilsenroth et al., 2003). The Chinese version has been shown to have good reliability and validity (Dai et al., 2006). Therefore, SCID-II is used as a “gold standard” for the BPD diagnosis in this study.

Procedure

All the participants, who got a score on the MSI - BPD above 7, were interviewed with DIB-R and with the borderline personality disorder part of the SCID-II. To establish the inter-rater reliability of the instrument, two psychiatrists jointly assessed 32 patients. When one performed the interview, the second independently evaluated the patient according to this interview. The remaining subjects were interviewed by one rater. Another research assistant arranged the schedule for subjects to be reviewed according to subjects' will, so the order of interviews might not influence the result. After 6 months, 20 subjects were re-interviewed by the DIB-R by the same interviewer.

Statistical analysis

The data were analyzed by SPSS 13.0 statistic program. Estimation of homogeneity or internal consistency of the interview was evaluated with Cronbach's alpha coefficient. The test-retest reliability was analyzed by paired sample T test. The inter-rater reliability was analyzed using the intraclass correlation coefficient (ICC). By comparing the DIB-R and SCID-II interview, criterion validity (kappa index), sensitivity and specificity were established. The cut-off selection was determined by the receiver operating characteristic curves (ROC curves).

3. Results

Sociodemographic characteristics

A total of 236 subjects screened by MSI for tendency of BPD finished the DIB-R evaluation, and 234 of them finished the SCID-II for BPD part evaluation, between January and November 2011. Among them, there were 99 men and 137 women with a mean age of 27.95 years (SD 6.837, rang 18–57). Table 1 shows the main sociodemographic variables.

Reliability

Internal consistence of the DIB-R and its component phenotypes—The result shows that the Cronbach's alpha for internal global consistency is 0.916. Table 2 shows that the Cronbach's alpha obtained in each component phenotype is in the extension from 0.816 to 0.885.

Test-retest reliability of the DIB-R and its component phenotypes—Twenty subjects were re-interviewed by DIB-R after about 6 months. Paired sample T test shows that there is no significant difference of the mean scores between the first test and re-test ($p>0.05$) (in Table 3). The Pearson correlation between these tests ranges from 0.633 to 0.840, with significant positive correlation.

Inter-raters reliability of the DIB-R and its component phenotypes—Thirty two subjects were rated by two psychiatrists together. The intraclass coefficient (ICC) obtained in global DIB-R interview is 0.892 (in table 4) and in each phenotype is in the extension from 0.588 to 0.972.

Validity

Sensitivity and specificity—To compare the diagnostic concordance between the SCID-II and DIB-R, we used ROC curve to establish an optimum discrimination between BPD and non-BPD subjects diagnosed by SCID-II. Figure 1 shows the ROC curve, which indicates that the DIB-R has a global functioning with an area under the curve of 0.910 ($p<0.001$). The optimum cut-off would be 7, since it shows relatively good sensitivity (0.768) and specificity (0.891). With this cut-off as diagnostic criteria, the diagnostic convergence between DIB-R and SCID-II is Kappa of 0.631, and the diagnostic consistency between raters is Kappa of 0.861.

Discriminating validity—We obtained the discriminating validity of the DIB-R by comparing the mean score of each phenotype and global DIB-R interview between 142 BPD and 92 non-BPD subjects, which had been diagnosed with SCID-II. The table 5 shows that the means of each phenotype and global interview in BPD group are significant higher than non-BPD group.

4. Discussion

BPD is by far the most studied and well validated of the personality disorders, yet there is no Chinese version of semistructured interviews specific for BPD. The DIB-R is particularly valuable because it gives the most detailed portrait of BPD psychopathology and provides continuity with prior BPD research and defines the clinical entity for which effective treatments exist. The absence of adequate psychometric tools in the research and clinical practice in China leads to the difficulty identifying BPD patients effectively. This study has made it possible to obtain the Chinese version of the DIB-R.

The results of this study have shown that the Chinese version of DIB-R has good reliability and validity index, which are comparable with those obtained in other studies of the original instrument. We found the global internal consistency of the Chinese version of DIB-R was excellent ($\alpha=0.916$) and the internal consistency of each phenotype was in good range from 0.816 to 0.885. This indicates noticeable homogeneity and interdependence among items of each section as well as the global interview. For test-retest reliability, we found it was good with Pearson correlations of all four component phenotypes and the global interview in the range of 0.633 to 0.843, which suggests that the syndromal and subsyndromal phenomenology of BPD obtained by the Chinese version of DIB-R were stable over time, which comparable to the original one (Zanarini et al., 2002). For inter-rater reliability index, in our study we found the intraclass correlation coefficients for global interview was good (0.892), and for affect, impulsive behavioral pattern, interpersonal relationship these phenotypes were excellent with the range of 0.857 to 0.972, while, for cognitive phenotype, the result was compromised (0.588). The divergence between two raters largely derived from ratings of the cognitive phenotype; specifically, the Odd thinking/ Unusual perceptual experiences, such as the items of magic thinking, the six sense, telepathy, overvalued ideas, depersonalization, and derealization. For these questions, patients reported difficulty in understanding and gave unclear answers during the interview, which might result in the divergent judgement between interviewers. This problem had not been reported for the original DIB-R (Zanarini et al., 2002). So the compromised result in cognitive phenotype in our study might indicate that we need revise the language of some items to make it more understandable and suitable for patients from different educational levels.

In regards to validity index, the value of sensitivity, specificity and discriminating validity obtained in this study indicates the Chinese version of DIB-R is effective to determine the presence of BPD in Chinese clinical samples. The DIB-R had been shown to have a sensitivity of 0.82, a specificity of 0.80, a positive predictive power of 0.74, and a negative predictive power of 0.87, at a cutoff of 8, when using clinical diagnoses as standard (Zanarini et al., 1989). In this study, we used SCID-II as the standard and found a moderate diagnostic overlapping (Kappa of 0.631), relatively lower sensitivity (0.768) and good

specificity (0.891) at the cutoff of 7. Compared with the original version of DIB-R, the Chinese version has been shown a relatively lower sensitivity and different cutoff value in our study. The reason for this might be that we used SCID-II instead of clinical diagnoses as standard. We did so for the following considerations: firstly, there is not BPD diagnosis in CCMD system and usually clinicians do not give diagnosis of BPD, so we can not get samples with diagnosis of BPD from clinicians. Secondly, clinicians are not familiar with BPD, so it might be more convincing to identify samples by SCID-II interview rather than clinical diagnosis. In our study we got a moderate diagnostic overlapping between DIB-R and SCID-II interview, the reason for this might be related to the properties of these two interview instruments. SCID-II was developed to diagnose all the DSM personality disorders, based on atheoretical approach (APA. 2000). While, DIB-R was based on psychoanalytic orientation (Gunderson et al. 1981) to only diagnose BPD. Additionally, they use different scoring methods. SCID-II includes the nine DSM polythetic criteria set for BPD, which often leads to a heterogeneous group of patients being diagnosed with BPD. While, DIB-R uses a pyramidal scoring system to recognize the limitation of and minimize the weight of any piece of information (Gunderson et al., 1981). Spanish version of DIB-R also showed moderate convergent validity of the diagnosis with the SCID-II (Kappa=0.59) (Szerman et al., 2005). It had been reported that SCID-II showed less validity when compared with the DIB-R's more rigorous clinical criteria and which tends to be more sensitive than specific in the case of BPD (Zanarini et al., 1991). Meantime, we found it required more detailed and greater severity of symptoms to obtain a diagnosis of BPD with DIB-R than SCID-II, which might have lowered the sensitivity while elevated the specificity of the diagnosis of BPD with DIB-R. While, it is necessary to maintain a good specificity in such a heterogeneous disorder as BPD in research and clinical practice.

We need to point out that our study had some limitations which might have influenced the results. Firstly, the method used in this study, that two raters evaluated patients jointly, might have reduced divergence between raters, since it is possible that when one interviewer guide the interview the second evaluator might be influenced by her tone or explanation. Secondly, twenty subjects who got retest were not selected randomly, but those who were reachable after six month, which might have weaken the representation of the results of retest index. With the awareness of these limitations, we can draw the conclusion carefully that when used in Chinese clinical samples, the Chinese version of DIB-R has good psychometric properties, which is equivalent to the original one. Compared with SCID-II, the Chinese version of DIB-R is more rigorous and helpful to elevate the specificity of the diagnosis of BPD, and it might be useful to determine the presence, the severity and component phenotypes of BPD in Chinese samples. In order to make it adapt to Chinese background better, some items need to be improved.

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ROC Curve of the DIB-R

Figure 1.
Logistic regression analysis.

Table 1

Sociodemographic variables

		N(%)
Gender	Male	99(41.9)
	Female	137(58.1)
Marital status	Unmarried	136(57.6)
	Married	76(32.2)
	Separate-Divorced	17(7.2)
	Remarried	7(3.0)
Occupation	Students	53(22.4)
	Employed	144(60.8)
	Unemployed	38(16.0)
Education	<9 years	2(0.8)
	9 years	22(9.3)
	12 years	44(18.6)
	>12 years	168(71.2)

Table 2

Internal consistency of the DIB-R and its component phenotypes

Phenotypes	Cronbach's alpha
Affect	0.856
Cognition	0.824
Impulsive behavior pattern	0.816
Interpersonal relationship	0.885
Global	0.916

Table 3

Test-retest reliability of the DIB-R and its component phenotypes after 6 months

Phenotypes	Fist test (mean±SD)	Re-test (mean±SD)	Pearson correlation
Affect	1.80± 0.41	1.85±0.37	0.840 ^{**}
Cognition	1.30±0.66	1.15±0.75	0.656 ^{**}
Impulsive behavior pattern	1.70±1.34	1.75±1.37	0.786 ^{**}
Interpersonal relationship	2.05±1.28	2.10±1.17	0.633 ^{**}
Global	6.85±1.95	6.85±2.28	0.704 ^{**}

^{**}: correlation is significant at the 0.01 level (2-tailed).

Table 4

Inter-rater reliability of DIB-R and its component phenotypes

Phenotypes	ICC	<i>F</i>	<i>p</i>
Affect	0.972	71.710	<0.001
Cognition	0.588	3.850	<0.001
Impulsive behavior pattern	0.957	45.291	<0.001
Interpersonal relationship	0.857	12.966	<0.001
Global	0.892	17.457	<0.001

Table 5

Discriminating validity of DIB-R

Phenotypes	BPD (n=142)	Non-BPD (n=92)	<i>t</i>	<i>P</i> (2-tailed)
Affect	1.80±0.48	1.38±0.68	5.199	<0.001
Cognition	1.42±0.66	1.02±0.80	4.188	<0.001
Impulsive behavior pattern	1.95±1.16	0.67±1.05	8.520	<0.001
Interpersonal relationship	2.60±0.79	1.24±1.27	9.180	<0.001
Global	7.77±1.63	4.32±1.88	14.895	<0.001