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ORIGINAL PAPER

Internalized Stigma and Stigma Resistance Among Patients with Mental Illness in Han Chinese Population

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Abstract Research suggests that accurate measurement is essential in evaluating internalized stigma and abilities to combat with stigma for treatment compliances and outcomes in individuals with mental illness. The purpose of this study was to assess the reliability and validity of the Chinese version of the Internalized Stigma of Mental Illness Scale (ISMIS-C), which is one of the few tools available to measure internalized stigma and stigma resistance (SR) simultaneously. A total of 160 outpatients with ($n = 103$) and without ($n = 57$) psychotic disorders were administrated with the ISMIS-C, and measures of self-esteem, self-efficacy, depression, and hopelessness. Overall, the 29-item ISMIS-C was presented to be internal reliable (Cronbach's alpha = 0.90), and reliable over time

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(intraclass correlation coefficients = 0.36–0.73). The construct validity of the ISMIS-C derived from the factor analysis was nearly identical to the original version. ISMIS-C dimension scores were well correlated with each other and measures of self-esteem, self-efficacy, depression, and hopelessness. Our data also demonstrated that psychotic patients experienced higher internalized stigma scores than those without psychotic diagnoses, but endorsed indifferently on SR scores. This scale can be used as an informative device when investigating "internalized stigma" and "SR" among individuals with or without psychotic disorders.

Keywords Internalized stigma · Stigma resistance · Internalized stigma of mental illness scale

Introduction

Internalized stigma (IS) [1–3], reflecting the degree to which a person has internalized socially endorsed stigmatizing beliefs about mental illness held by the general public, has been found to occur at the individual level when a person is diagnosed with a mental illness. On the basis of prior empirical work and theory, "three As" of IS for individuals with mental illness has been proposed: awareness, agreement, and application [4–6]. To endorse IS, one might not only be aware of the stereotype toward people with mental illness (e.g., they are weak and, therefore, are responsible for their disorder), but also agree with the stereotype. Overall, stigma towards mental illness represents an unignorable stress and burden on people with mental illness [7, 8] and thus becomes a major obstacle to the detection and treatment of mental disorders [9]. There is considerable evidence indicating that sociocultural beliefs influence the severity of stigma [10–12]. Although prevalent in all cultures, mental illness stigma is much more severe among Asians and Asian Americans than white Europeans or Americans [13]. Notably, stigma toward mental illness in Chinese societies is particularly pervasive and damaging [10, 14].

The severity of stigma seems to be varied according to the nature of the given mental disorder. Crisp and colleagues found that 75.7 % of respondents who were recruited from the community rated patients with schizophrenia as more dangerous than 23 % or less of those with other mental disorders, such as severe depression or eating disorders [15]. Moderate or high levels of IS are endorsed by one half of people with schizophrenia and more than one fifth of people with affective disorders, respectively [2, 16]. A numbers of studies on IS addressed that IS is positively related to greater levels of depressive symptoms [17–19] and hopelessness [20–22] as well as lower levels of self-esteem [6, 18, 23] and self-efficacy [5, 24, 25]. Taken together, internalizing stigmatizing beliefs commences when an individual endorses and agrees with negative public stereotyping and discriminatory behavior towards individuals diagnosed with mental illness and may have direct effects on psychological well-being.

It is unclear why some people with mental illness remain relatively unaffected by stigma whereas others perceive stigma as more stressful and demoralized, with serious clinical consequences [7, 8]. Therefore, identifying factors underlying vulnerability and conveying resilience for stigma may help individuals with schizophrenia and other mental illnesses reduce its impact. Several researchers [1, 19, 23] have offered a sounder theoretical basis for Stigma Resistance (SR), as an individual's capacity to counteract or

unaffected by mental illness stigma. Sibitz et al. [19] also found that SR may be closely linked to several protective factors for relapse prevention of mental illness, such as self-esteem, empowerment, and quality of life [19]. Over the past 10 years, there has been a substantial increase in research on IS [3, 26] while relatively few studies on SR toward mental illness have been reported [18, 19, 23].

To date, there were only three studies investigating the association between IS and quality of life [27, 28] and the experienced stigma and IS in patients with chronic schizophrenia [29] in Chinese society. However, little is known about how IS and SR endorsed by Chinese patients with schizophrenia or other mental disorders, nor is there a clear understanding of the relationship between IS, SR, depression, self-esteem, and self-efficacy. Therefore, this study addressed this issue in a sample of patients with schizophrenia and other mental disorders in Taiwan. We also compared the levels of IS or SR for patients with and without psychotic diagnoses.

Methods

Participants

This study was performed in accordance with the latest version of the Declaration of Helsinki. Prior to commencing this study, its performance approval was obtained from the local Research Ethics Committee. Following a comprehensive explanation of this study, informed consent was obtained from all of participants. Participation in the present study was strictly voluntary and anonymous.

A total of 170 Taiwanese outpatients (86 males, 84 females) were recruited from one psychiatric outpatient department of a general hospital located in Taipei, a city in the North of Taiwan between January, 2012 and February, 2013. We recruited participants diagnosed with a variety of mental disorders by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) [30] from the psychiatric outpatient department of one general hospital in Taiwan. These patients' age ranged between 18 and 65 years. All participants have been receiving ongoing outpatient treatment and been in a fairly stable clinical condition, as defined by the absence of hospitalizations or changes in medications within the last 3 months. All outpatients have been taking psychotropic medications at the time of testing. Participants who have showed evidence of mental retardation or organic brain pathology, including cerebral tumor, epilepsy, systemic disease, history of cranial trauma, brain surgery, or history of substance abuse or dependence, were excluded from this study. Of the 170 patients initially invited to participate in the study, ten (6 males, 4 females) patients did not complete the procedure, which left a pool of 160 participants who were available for analyses (94 % of the initial sample).

Measurements

Interview Instruments and Diagnosis

The clinical procedure used for this study involved the administration of the Structured Clinical Interview for DSM-IV-TR [30], a detailed medical history review, and a physical examination by psychiatrists. Demographic data consisted of gender, age, marital status (e.g., unmarried, married, divorced), and formal educational attainment. A semi-structured interview was conducted to determine the age of illness onset, the duration of illness, and

recurrence of previous hospitalizations. The age of illness onset is defined as the age when the patient met DSM-IV-TR criteria for the first time. The duration of the illness is defined as the time since the first psychotic episode.

IS and SR

The internalized stigma of mental Illness scale (ISMIS) [1] is a 29-item, self-administered questionnaire designed to assess subjective experience of IS and SR. It presents participants with first person statements and asks them to rate on a four point Likert scale regarding whether they agree or disagree with statements related to having a mental illness. Items were corresponded five subscales: Alienation, Stereotype Endorsement, Discrimination Experience, Social Withdrawal, and SR. According to Ritsher et al. [1] and Brohan et al. [16], each score of the ISMIS-C is calculated by adding the item scores together and then dividing by the total number of answered items. If any items are not answered, the total number to be divided is reduced. The resulting score should range from 1 to 4. Therefore, an average item mean cutoff of 2.5 (the "midpoint" ranging from 1 to 4) is selected when this midpoint score has been used in previous research [1, 19, 29]. The ISMIS usually takes approximately 10–15 min to complete. A higher score represents elevated levels of IS or reflects better SR. The original version of the ISMIS (29 items) had a high reliability in a US sample (Cronbach's alpha = 0.9, test–retest reliability = 0.92) [1].

Self-Esteem

The unidimensional self-report scale, Rosenberg self-esteem scale (RSES) [31], consists of 10 items that are coded with an identical four-point Likert scale as that on the ISMIS. Higher scores of the RSES represent high self-esteem levels. The Chinese version of RSES has good internal consistency, good test–retest reliability and adequate convergent validity [32]. The scale also demonstrates good internal consistency in this study (Cronbach's alpha = 0.90).

Self-Efficacy

Self-efficacy is a commonly understood as being domain-specific, which one can have more or less firm self-beliefs in different domains or particular situations of function [24]. The general self-efficacy scale (GSES) [33] is a self-administered and ten-item scale which measures the extent to which a person aims at a broad and stable sense of personal competence to deal effectively with a variety of stressful situation. Higher scores indicate perceptions of high levels of self-efficacy. The psychometric study of the Chinese version of GSES supported its cross-cultural application [34]. In our sample, the reliability (Cronbach's alpha) of the GSES was 0.89.

Depressive Symptoms

The Beck Depression Inventory (BDI-II) is a 21-item self-reported scale [35]. Items consist of four statements scored 0–3, with higher scores indicating increasing symptom severity. Respondents are instructed to describe the way they have been feeling during the past 2 weeks. The results are scored by summing the responses to each of the items to obtain a

total depression score (range 0–63). The psychometric properties of the Chinese version of BDI-II have been reviewed by Lu et al. [36].

Hopelessness

The Beck Hopelessness Scale (BHS) is a 20-item true–false self-report instrument and was used to assess the degree of pessimism exhibited by an individual [37]. Each of the 20 items is scored 0 or 1. Individual items are summed (range 0–20) such that higher scores indicate higher levels of hopelessness. The Chinese version of self-report scale showed good reliability and stability over time [38].

Statistical Analyses

Data from the ISMIS were analyzed separately using the Statistical Package for the Social Science (SPSS), version 15.0 for Windows, to examine its reliability and validity. All statistical analyses are conducted at a significance level of 0.05, and all tests are two-tailed whenever appropriate.

To examine whether SR is a separate construct or distinct from IS, as 2-factor structure shown by Sibitz et al. [19], we conducted an exploratory factor analysis (EFA) with an orthogonal (varimax) rotation on the correlation matrix of the ISMIS which contain 29 items. Furthermore, we excluded these SR items and performed EFA again with an oblique (promax) rotation on the remaining 24 items of the ISMIS-C to reflect our expectation that the underlying factors might be correlated [1, 19]. The SR items were excluded because several researchers suggested that SR subscale was conceptually different from the other subscales of the ISMIS [1, 19, 23]. Determination of the number of factors to retain in the final solution is based on a number of criteria. First, we inspected the scree plot of eigenvalues. In the scree test, we examined the eigenvalues of all the factors after each factor is extracted, until a large jump is observed, after which the factors that remained were retained [39, 40]. Second, we examined the percent of total variance explained by each factor solution. Finally, we extracted factors with eigenvalues greater than or equal to 1.0 and evaluate the ease of factor interpretability during the exploratory phase of this study.

Because we realized that the ISMIS is an ordinal scale and its IS and SR subscale scores are skewed in this study, Spearman's correlation analyses were conducted to investigate the relationships between IS and SR scores. We also used Spearman's correlations to assess the relationships of IS and SR to other psychiatric variables, including depressive symptoms, hopelessness, self-esteem, and self-efficacy in patients with or without psychotic diagnoses. To examine differences between psychotic and non-psychotic samples on non-normally distributed variables such as IS and SR scores, a nonparametric statistic, the Mann–Whitney *U*-test, was utilized. In addition, χ^2 analyses were performed whether diagnoses of psychosis were associated with IS or SR.

Results

Subjects' Characteristics

The demographic and psychiatric characteristics of the 160 outpatients (80 males, 80 females) are presented in Table 1. The mean age of the participants was 43.6 years

Table 1 Participants' characteristics ($n = 160$)

Variables	*N* (%) or Mean (SD)
Sex	
Male	80 (50 %)
Female	80 (50 %)
Age (years)	43.6 (11.76)
Marital status	
Unmarried/single	90 (56.3 %)
Married	47 (29.4 %)
Divorced	23 (14.3 %)
Education (years)	13.3 (2.74)
Age of mental illness onset (years)	30.0 (11.32)
Duration of mental illness (years)	13.5 (8.91)
DSM-V diagnoses	
Schizophrenia	50 (31.2 %)
Schizoaffective disorders	30 (18.7 %)
Bipolar disorders with psychotic features	23 (14.4 %)
Major depressive disorders, single episode or recurrent	17 (10.6 %)
Dysthymia disorders	20 (12.5 %)
Social phobia	10 (6.3 %)
Panic disorders	6 (3.8 %)
Obsessive compulsive disorders	4 (2.5 %)
Average RSES scores	25.6 (4.89)
Average GSES scores	23.8 (5.81)
Average BDI-II scores	17.0 (14.04)
Average BHS scores	7.6 (5.41)

RSES Rosenberg self-esteem scale, *GSES* general self-efficacy scale, BDI-II, Beck depression inventory, *BHS* Beck hopelessness scale

(SD = 11.76). Of the outpatients, eighty (49.9 %) were diagnosed with schizophrenia and schizoaffective disorder and sixty (37.5 %) were diagnosed with mood disorders. Only 20 (12.6 %) were diagnosed with anxiety disorders. The majority had at least completed secondary/high school education (96.3 %). Only forty-seven (29.4 %) participants have married. Over half (62.5 %) were disabled and not currently employed. All patients were taking at least one antipsychotic or other psychiatric medicine at the time of assessment.

Factor Analysis

Prior to the EFA, the Kaiser–Meyer–Olkin measure of sampling adequacy was at an acceptable level of 0.89, and Bartlett's test of sphericity was significant (2,448.56, $p < 0.001$), which indicated the adequacy of the data for applying the EFA.

According to the EFA of the total 29-item of the ISMIS-C, the first two eigenvalues were 9.92 and 2.87, which accounted for 43.1 % of the total variance. These eigenvalues indicated that two factors should be extracted and inspected for simple structure. The two-factor structure that was indicated by the analyses can most suitably be described as IS and SR subscales of the ISMIS-C (Table 2). In addition, the alpha coefficients of IS and SR for

Table 2 Factor analysis and Cronbach's alpha coefficients of 29 items of the ISMIS

Item (paraphrased)	IS	SR
Q12 Negative stereotypes against people with mental illness	0.79	−0.09
Q20 I stay away from social situations	0.75	0.01
Q9 I don't socialize as much as I used to	0.73	−0.17
Q8 I feel inferior to others	0.72	−0.20
Q5 I am embarrassed or ashamed	0.71	0.01
Q16 I am disappointed in myself	0.70	−0.13
Q28 Others think that I can't achieve much	0.70	−0.27
Q25 Nobody would be interested in getting close to me	0.69	−0.17
Q1 I feel out of place in the world	0.68	−0.01
Q22 People ignore me or take me less seriously	0.67	−0.19
Q13 Being around people who don't have a mental illness	0.67	−0.25
Q17 Mental illness has spoiled my life	0.67	−0.06
Q10 Cannot live a good, rewarding life	0.65	−0.11
Q3 People discriminate against me	0.65	−0.27
Q4 I avoid getting close to people who don't have a mental illness	0.63	−0.22
Q15 People often patronize me	0.55	−0.12
Q23 I can't contribute anything to society	0.52	−0.50
Q29 Stereotypes about the mentally ill apply to me	0.52	0.07
Q18 People can tell that I have a mental illness	0.51	−0.03
Q11 I don't talk about myself much	0.49	0.01
Q21 People without mental illness could not possibly understand me	0.49	−0.02
Q19 I need others to make most decisions for me	0.45	−0.17
Q6 Mentally ill people shouldn't get married	0.43	−0.36
Q2 Mentally ill people tend to be violent	0.43	−0.02
Q7 Important contributions to society	−0.07	0.83
Q27 I can have a good, fulfilling life	−0.08	0.81
Q24 Mental illness has made me a tough survivor	−0.06	0.75
Q26 In general, I am able to live life the way I want to	0.08	0.65
Q14 I feel comfortable being seen in public	−0.05	0.40
Eigenvalues	9.92	2.57
Percentage variance explained (%)	34.2	8.90
Cronbach's alpha coefficients	0.93	0.75

ISMIS the Internalized stigma of mental illness scale, *IS* internalized stigma, *SR* stigma resistance
Subscale inclusion in the corresponding columns are underlined

the whole sample were 0.93 and 0.75, respectively. Cronbach's alpha coefficients of IS and SR were 0.87 and 0.65 for psychotic sample and were 0.93 and 0.81 for non-psychotic sample. The test–retest reliability coefficients (intraclass correlation coefficients; ICC) of IS and SR subscales were 0.72 and 0.45 for the whole sample, 0.70 and 0.42 for psychotic sample, and 0.76 and 0.50 for non-psychotic sample.

According to the EFA of 24 items on four internalized stigma subscale of ISMIS-C for all 160 respondents, the overall four components, accounting for 59.8 % of the total variances, were suggested by both a scree plot test and the Kaiser-Guttman criterion (eigenvalues >1). The eigenvalues and percentage of variance accounted for by each

component are listed in Table 3 as are the loadings of each item on the four components. These four factors can best be described as the Social Withdrawal, Alienation, Discrimination Experience, and Stereotype Endorsement (Table 3). Furthermore, the internal consistency reliability for the four subscales of IS was adequate in the whole sample, ranging from 0.78 to 0.86 (Table 3). Similarly, the internal consistency reliabilities for the four subscales in psychotic or non-psychotic samples were also adequate (>0.7). The test–retest reliability coefficient (ICC) for the four subscales ranged from 0.46 to 0.76.

Relationship of IS and SR to Other Psychiatric Measures

We found significant correlations between SR scores and four IS subscale scores ($r = -0.16$ to -0.21) (Table 4). As revealed in these analyses, SR exhibited the highest correlations with the Alienation and Discrimination Experience subscales of ISMIS-C ($r = -0.21$) and the weakest correlations with weakest correlations with the Social Withdrawal subscale ($r = -0.16$).

Spearman's correlations of the measures of IS and SR with indices of depressive symptoms, hopelessness, self-esteem, and self-efficacy were also illustrated in Table 4. A greater degree of IS was associated with less self-esteem and self-efficacy, but was associated with greater levels of depressive symptoms and hopelessness (all $p < 0.01$). In contrast, SR was positively related to self-esteem and self-efficacy, but negatively related to depressive symptoms and hopelessness (all $p < 0.01$).

Comparisons of the IS or SR Scores Between Psychotic and Non-psychotic Samples

The IS levels were grouped using the method proposed by Lysaker et al. [18, 45]. For the 4 categories of overall score of IS in psychotic patients, ten (9.6 %) reported minimal, forty two (40.4 %) reported mild, forty (38.5 %) reported moderate, and twelve (11.5 %) reported severe IS. For the 4 categories of overall score of IS in non-psychotic patients, twenty three (40.4 %) reported minimal, twenty three (40.4 %) reported minimal reported mild, nine (15.8 %) reported moderate, and two (3.5 %) reported severe IS.

IS scores were compared between psychotic ($n = 103$) and non-psychotic ($n = 57$) outpatients according to DSM-IV-TR diagnoses. The method proposed by Ritsher et al. [1] and Brohan et al. [16] was used to describe high level of IS between two samples. In order to estimate the prevalence of high level of IS or SR, we chose to categorize groups as "high level of IS or SR" if the mean score was higher than 2.5. Overall, 44 % of the psychotic sample (45 out of 103 participants) had high IS scores and 76 % (77 out of 103) had high SR following this criterion, while 22 % of the non-psychotic sample (12 out of 57 participants) and 79 % (45 out of 57) had high IS or SR scores, respectively. The samples based on psychotic diagnoses were not similar with regard to IS ($\chi^2 = 13.74$, $p < 0.001$), but similar with regard to SR ($\chi^2 = 0.25$, $p = 0.62$).

The distributions of IS scores between psychotic and non-psychotic samples are illustrated in Table 5. The highest and lowest scoring was found on SR subscale (mean = 2.76) and Stereotype Endorsement (mean = 2.31), respectively, in patients with psychosis. The similar pattern was found in patients without psychosis. Mann–Whitney U tests showed significant differences between the two samples of patients on four IS subscale scores of the ISMIS (Social Withdrawal: $z = -3.67$, $p < 0.001$; Alienation: $z = -2.92$, $p < 0.001$; Discrimination Experience: $z = -3.10$, $p < 0.001$; Stereotype Endorsement: $z = -4.32$, $p < 0.001$). However, there was no significant difference of SR scores between psychotic and non-psychotic samples (all $p > 0.05$).

Table 3 Factor analysis and Cronbach's alpha coefficients of 24 items from the IS subscale of the ISMIS-C

Item (paraphrased)	Social withdrawal	Alienation	Discrimination experience	Stereotype endorsement
Q9 I don't socialize as much as I used to	0.89	−0.03	0.03	−0.02
Q20 I stay away from social situations	0.81	−0.08	0.07	0.11
Q13 Being around people who don't have a mental illness	0.77	0.11	−0.09	0.02
Q4 I avoid getting close to people who don't have a mental illness	0.64	−0.25	0.23	−0.04
Q11 I don't talk about myself much	0.63	0.27	0.11	−0.03
Q12 Negative stereotypes against people with mental illness	0.61	0.25	−0.10	0.07
Q29 Stereotypes about the mentally ill apply to me	0.54	0.24	−0.01	0.36
Q17 Mental illness has spoiled my life	−0.13	0.84	0.20	−0.15
Q16 I am disappointed in myself	0.11	0.77	−0.05	0.02
Q8 I feel inferior to others	0.15	0.73	−0.41	0.15
Q1 I feel out of place in the world	−0.29	0.69	0.41	−0.03
Q21People without mental illness could not possibly understand me	0.19	0.69	0.06	−0.02
Q5 I am embarrassed or ashamed	0.05	0.62	0.25	−0.06
Q23 I can't contribute anything to society	0.30	0.37	−0.61	0.34
Q22 People ignore me or take me less seriously	−0.03	−0.16	0.83	0.18
Q25 Nobody would be interested in getting close to me	0.14	−0.13	0.82	0.10
Q3 People discriminate against me	0.10	0.08	0.64	0.20
Q15 People often patronize me	−0.03	0.15	0.60	−0.35
Q28 Others think that I can't achieve much	−0.51	0.26	0.53	0.27
Q6 Mentally ill people shouldn't get married	−0.02	0.09	0.02	0.67
Q10 Cannot live a good, rewarding life	0.08	−0.16	0.35	0.60
Q2 Mentally ill people tend to be violent	0.20	0.13	0.05	0.50
Q19 I need others to make most decisions for me	0.16	0.14	0.07	0.44
Q18 People can tell that I have a mental illness	−0.03	0.10	0.30	0.40
Eigenvalues	5.58	3.52	1.86	1.20

Table 3 continued

Item (paraphrased)	Social withdrawal	Alienation	Discrimination experience	Stereotype endorsement
Percentage variance explained (%)	30.8	17.2	7.5	4.3
Cronbach's alpha coefficients	0.85	0.87	0.86	0.78

ISMIS-C Chinese version of the internalized stigma of mental illness scale, *IS* internalized stigma

Subscale inclusion in the corresponding columns are underlined

Table 4 Spearman correlations of IS and SR on the ISMIS-C and other psychiatric measures ($n = 160$)

	IS *subscale* scores				SR
	Social withdrawal	Alienation	Discrimination experience	Stereotype endorsement	
IS *subscale* scores					
Social withdrawal	–	–	–	–	−0.16*
Alienation	0.69**	–	–	–	−0.21**
Discrimination experience	0.69**	0.61**	–	–	−0.21**
Stereotype endorsement	0.66**	0.54**	0.65**	–	−0.18*
Self esteem (RSES)	−0.51**	−0.66**	−0.45**	−0.35**	0.41**
Self efficacy (GSES)	−0.49**	−0.63**	−0.48**	−0.43**	0.32**
Depressive symptoms (BDI-II)	0.50**	0.61**	0.35**	0.36**	−0.36**
Hopelessness (BHS)	0.53**	0.63**	0.37**	0.41**	−0.34**

ISMIS-C Chinese version of the internalized stigma of mental illness scale, *IS* internalized stigma, *SR* stigma resistance, *RSES* Rosenberg self-esteem scale, *GSES* general self-efficacy scale, *BDI-II* Beck depression inventory, *BHS* Beck hopelessness scale

* $p < 0.05$, ** $p < 0.01$

Table 5 Descriptive statistics for measures of IS and SR on the ISMIS-C between psychotic and non-psychotic samples ($n = 160$)

	Psychotic sample ($n = 103$)		Non-psychotic sample ($n = 57$)		Z
	Mean (SD)	Median	Mean (SD)	Median	
IS *subscale* scores					
Social withdrawal	2.44 (0.47)	2.43	2.13 (0.56)	2.14	−3.67**
Alienation	2.53 (0.52)	2.57	2.25 (0.58)	2.14	−2.92**
Discrimination experience	2.34 (0.53)	2.20	2.05 (0.66)	2.00	−3.10**
Stereotype endorsement	2.31 (0.41)	2.20	1.99 (0.41)	2.00	−4.32**
SR	2.76 (0.43)	2.80	1.79 (0.58)	2.80	−0.73

ISMIS-C Chinese version of the internalized stigma of mental illness scale, *IS* internalized stigma, *SR* stigma resistance

* $p < 0.05$, ** $p < 0.01$

Discussion

To the best of our knowledge, this is the first study to systemically analyze the endorsement of IS and SR and their relationship to the measures of depressive symptoms, hopelessness, self-esteem, and self-efficacy among patients with mental illness in Chinese populations.

In this study, we found that our psychotic sample reported higher mean scores of the IS than the other studies [19, 29, 41]. Using four categories developed by Lysaker et al. [18], 50 % of our psychotic participants showed evidence of currently moderate or high levels of internalized stigma, which was higher than that in Brohan et al. [16] study groups, which almost half (41.7 %) subjects across 14 European countries with a diagnosis of schizophrenia or other psychotic disorder reported moderate or high levels of internalized stigma. Furthermore, employing a cutoff score of 2.5, our study showed high IS (44 %), a percentage twice as high as in Lv et al.'s study (20 %) in Hong Kong [29]. Overall, the IS reported in our study was higher than that reported in other studies. Such dispersion might be caused by the differences in cultural background or the origins and sizes of the sample.

Although there are considerable differences between our study and earlier published investigations [19, 29, 41] with regard to the mean subscales of the ISMIS in individuals with psychosis, some apparent and interesting similarities exist. For all four ISMIS subscales scores measuring IS in the present study, the mean scores of stereotype endorsement subscale had lower ratings than other three subscales of ISMIS. In addition, the alienation subscale had higher mean scores than the other subscales of the ISMIS. The results are similar with to previous studies, reporting the lowest for the stereotype endorsement [1, 18, 19, 23, 29] and the highest for the alienation subscale [16, 19, 29].

In this study, more than two-thirds of participants (76 %) with psychosis reported high SR, a percentage twice as high as in previous study [1, 23]. It is consistent with other studies [19], investigating that 63.3 % participants with schizophrenia reported high levels of SR. High mean scores of SR (>2.5) were found in the present study, consistent with previous studies conducted in the developed [18, 19] or developing [41] countries.

Two factors, IS and SR, identified on the whole 29 items of the ISMIS-C, were the same as the factor structure of the original ISMIS reported by Sibitz et al. [44] using a sample of outpatients and inpatients with schizophrenia or schizoaffective disorder. These results

suggested that SR should be viewed as a separate construct to IS of the ISMIS. Cronbach's alpha of IS subscale of the ISMIS in our psychotic or non-psychotic samples exceeded 0.7, which indicated adequate internal consistency. These results are comparable to those of the original English version of the ISMIS [1] and highly similar to recent studies [25, 29, 42]. Meanwhile, the internal consistency of the SR subscale in our study was near adequate or adequate (0.75 for whole sample, 0.65 for psychotic sample, 0.81 for non-psychotic sample), which was higher than that of 0.58 of the original ISMIS [1], 0.18 reported by Ehrlich-Ben Or et al. [43] in psychotic and non-psychotic samples, or 0.55 reported by Brohan et al. [16] in the psychotic group. Our findings provided evidence supporting that both IS and SR subscales of the ISMIS serve as reliable measures among patients with mental illness. However, several recent reviews regarding the ISMIS excluded the SR subscale because its internal consistency was unacceptable [16, 42, 43] or poorly correlated with the other ISMIS subscales [16, 18]. The low to moderate coefficients alpha may be partially attributed to the severity of the patients' current metal status, especially for those patients with thought disturbances and concentration difficulties [44].

In terms of IS subscales of the ISMIS, our results supported the four-factor structure, which in accordance with previous studies [1, 46]. Although the number of components is the same as those in the American population, slight differences were observed in the overall factor structure of the 24 items between the Chinese and the US samples. Our analysis revealed that item 29 (Stereotypes about the mentally ill apply to me) and 23 (I can't contribute anything to society because I have a mental illness) were originally included in the Stereotype Endorsement subscale of the ISMIS [1] but had relatively larger factor loadings on the Social Withdrawal" and Alienation subscales, respectively. Nevertheless, these two items had their highest loadings on the "wrong" factor but had their second highest loading on the "expected" factor in the present study. Ritsher et al. [1] reported that the four theoretical factors were not exactly replicated by the factor analysis.

In the present study, SR negatively correlated with four IS subscale measures, including Alienation, Stereotype Endorsement, Social Withdrawal, and Discrimination Experience. This finding enhances the previous studies' suggestions [1, 19], which provides a much more detailed examination of SR as a separate construct in the ISMIS. Unlike this finding, a lack of correlation between Discrimination Experience and SR in patients with schizophrenia has been reported [18, 19, 23] and suggested that SR does not show any influence on the actual experience of discrimination, which is probably mainly influenced by environmental factors [19]. Whether SR exhibited direct associations with Discrimination Experience warrants further investigations.

Our findings indicated that both IS and SR might influence important factors affecting the recovery process. Mental illness patients, who endorse prejudicial beliefs, discrimination experience, and stereotypes to a greater extent, expect to be stereotyped by others more and to avoid social activities to a greater extent, as measured by the subscales of IS, tend to suffer from more depressed and hopeless mood, and experience diminished self-esteem and self-efficacy. These findings are in agreement with previous studies [1, 3, 19], which suggested that people with relatively lesser extent of IS or even denying stigmatizing public beliefs seem to be protective [19]. In contrast to IS, we found that people who endorsed a high SR reported better self-esteem or self-efficacy and lower levels of depression or hopelessness, which is in line with results obtained in previous studies [1, 19, 23]. This finding suggested that SR and IS are on opposing sides, which indicates that higher levels of SR in patients with mental illness can be used to fight a battle against stigmatizing beliefs. Accordingly, research on the cognitive construct of SR may lead to a better understanding of patients' perceived abilities to deflect stigma.

In this study, patients with psychotic disorders had greater levels of IS compared with non-psychotic patients. Our finding was similar to that of Yanos et al. [20], Lysaker et al. [45], and Assefa et al. [46], who reported an association between IS and increased severity of psychotic symptoms although several researchers did not find the association [29, 47]. Small sample sizes [29] and restriction of participants' gender and age characteristics [47] may partly account for the lack of the association. Unlike the finding for IS, there was no significant association between SR and psychotic symptoms in the present study, which is in agreement with the only one study examining the relationship [45]. The non-significant association may lie in the fact that patients who maintained outpatient treatment are less likely to emerge psychotic symptoms. Another possible reason for the non-significant finding may be due to lower levels of internal consistency of SR as compared those of IS in previous [1, 16, 42] and present studies. Negative or stigmatizing attitudes toward people with mental disorders are common [3, 12] and the levels were generally higher for schizophrenia than depression [48, 49]. Public stigma (the prejudice and discrimination endorsed by the general population that affects a person) toward schizophrenia, among mental illnesses, has been shown to be particularly prominent [50]. Therefore, these patients with psychotic diagnoses are often exposed to public prejudice or labels and they may consequently come to internalize negative attitudes about their mental illness, frequently leading to internalized stigma. Ritsher and Phelan [17] suggested that the harmful effects of public stigma may work through the internal perceptions, beliefs, and emotions of stigmatized person, even above and beyond the effects of direct discrimination by others.

Several methodological limitations should be considered when interpreting these findings. The participants recruited to the study used a convenient sample. Accordingly, these participants were not representative of all patients with mental illness. In addition, this study was cross-sectional in nature and should be replicated with a longitudinal design. Up to this point, however, there were few longitudinal studies of IS [3] and SR. Finally, all of the psychotic outpatients who participated in our study were not naïve to antipsychotics. In fact, most of them took atypical antipsychotics, and none of them was drug-free at the time of assessment. It has been found that treatment with antipsychotic medications may contribute to stigma experienced by individuals with serious mental illness such as schizophrenia, schizoaffective disorder or bipolar disorder [51]. Further research h in this area would benefit from the investigation of the influence of medication effects on IS or SR formation in psychosis.

Despite our encouraging results indicating the cross-cultural consistency with findings in Western countries, researchers should keep in mind that the development and use of psychometric screening assessments of IS and SR is still a work in progress, especially that SR is a new and promising concept. The present findings together with previous studies suggest that IS and SR toward mental illness may determine how patients seek help for mental health problems and the outcomes of their mental illness.

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Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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