Stigma Resistance in Stable Schizophrenia: The Relative Contributions of Stereotype Endorsement, Self-Reflection, Self-Esteem, and Coping Styles

Résistance aux stigmates dans la schizophrénie stable : les contributions relatives de l'acceptation des stéréotypes, de l'introspection, de l'estime de soi, et des styles d'adaptation

Yu-Chen Kao, MD, MPH[1,2], Yin-Ju Lien, PhD[3], Hsin-An Chang, MD[2,4], Nian-Sheng Tzeng, MD[2,4], Chin-Bin Yeh, MD, PhD[2,4], and Ching-Hui Loh, MD, PhD[5]

Abstract

Objective: Stigma resistance (SR) has recently emerged as a prominent aspect of research on recovery from schizophrenia, partly because studies have suggested that the development of stigma-resisting beliefs may help individuals lead a fulfilling life and recover from their mental illness. The present study assessed the relationship between personal SR ability and prediction variables such as self-stigma, self-esteem, self-reflection, coping styles, and psychotic symptomatology.

Method: We performed an exploratory cross-sectional study of 170 community-dwelling patients with schizophrenia. Self-stigma, self-esteem, self-reflection, coping skills, and SR were assessed through self-report. Psychotic symptom severity was rated by the interviewers. Factors showing significant association in univariate analyses were included in a stepwise backward regression model.

Results: Stepwise regressions revealed that acceptance of stereotypes of mental illness, self-esteem, self-reflection, and only 2 adaptive coping strategies (positive reinterpretation and religious coping) were significant predictors of SR. The prediction model accounted for 27.1% of the variance in the SR subscale score in our sample.

Conclusions: Greater reflective capacity, greater self-esteem, greater preferences for positive reinterpretation and religious coping, and fewer endorsements of the stereotypes of mental illness may be key factors that relate to higher levels of SR. These factors are potentially modifiable in tailored interventions, and such modification may produce considerable improvements in the SR of the investigated population. This study has implications for psychosocial rehabilitation and emerging views of recovery from mental illness.

Abrégé

Objectif : La résistance aux stigmates (RS) est récemment devenue un aspect proéminent de la recherche sur le rétablissement de la schizophrénie, en partie parce que des études ont suggéré que le développement de croyances de résistance

[1] Department of Psychiatry, Tri-Service General Hospital Songshan Branch, Taipei, Taiwan
[2] Department of Psychiatry, National Defense Medical Center, Taipei, Taiwan
[3] Department of Health Promotion and Health Education, National Taiwan Normal University, Taipei, Taiwan
[4] Department of Psychiatry, Tri-Service General Hospital, Taipei, Taiwan
[5] School of Medicine, National Defense Medical Center, Taipei, Taiwan

Corresponding Author:
Yin-Ju Lien, PhD, Department of Health Promotion and Health Education, National Taiwan Normal University, No. 162, Heping East Road Section 1, Taipei, Taiwan, Republic of China.
Emails: yjlien@ntnu.edu.tw; yjlien@ntu.edu.tw

aux stigmates peut aider les personnes à mener une vie satisfaisante et à se rétablir de leur maladie mentale. La présente étude a évalué la relation entre la capacité personnelle de RS et les variables de prédiction comme l'auto-stigmatisation, l'estime de soi, l'introspection, les styles d'adaptation, et la symptomatologie psychotique.

Méthode : Nous avons mené une étude transversale exploratoire de 170 patients souffrant de schizophrénie et habitant dans la communauté. L'auto-stigmatisation, l'estime de soi, l'introspection, les styles d'adaptation et la RS ont été évalués par des auto-déclarations. La gravité des symptômes psychotiques a été estimée par des intervieweurs. Les facteurs indiquant une association significative dans les analyses univariées ont été inclus dans un modèle de régression pas à pas descendante.

Résultats : Les régressions pas à pas ont révélé que l'acceptation des stéréotypes de la maladie mentale, l'estime de soi, l'introspection, et seulement deux stratégies d'adaptation (la réinterprétation positive et l'adaptation religieuse) étaient des prédicteurs significatifs de la RS. Le modèle de prédiction représentait 27,1% de la variance du score à la sous-échelle de la RS dans notre échantillon.

Conclusions : Une plus grande capacité de réflexion, une plus grande estime de soi, des préférences plus marquées pour la réinterprétation positive et l'adaptation religieuse, et moins d'acceptation des stéréotypes de la maladie mentale peuvent être des facteurs clés qui sont en lien avec des niveaux plus élevés de RS. Ces facteurs sont potentiellement modifiables dans des interventions personnalisées, et ces modifications peuvent produire des améliorations considérables de la RS dans la population investiguée. Cette étude a des implications pour le rétablissement psychosocial et de nouvelles visions du rétablissement de la maladie mentale.

Self-stigmatisation is highly prevalent among individuals with schizophrenia.[1,2] It occurs when people with mental illnesses agree with and internalise negative stereotypes and is typically associated with the shame and distress people feel at having a mental illness.[3-5] The clinical interest in this construct stems from its relationship with inadequate adherence to medication and psychological treatment, which often results in inferior treatment outcomes, high relapse rates, increased symptom severity, and impaired psychosocial functioning.[6,7] As an initial step in investigating these psychological processes, Ritsher and colleagues[8] developed the Internalized Stigma of Mental Illness (ISMI) Scale, which is a self-report measure with 2 dimensions: self-stigma and stigma resistance (SR). Research has determined that SR is a separate construct, theoretically[7-10] and psychometrically[11,12] distinct from self-stigma.

In more recent years, substantial evidence of the favourable effects of SR has been produced. For example, higher SR is associated with higher levels of self-esteem, empowerment, metacognitive capacity, and quality of social connections but also with lower levels of self-stigma and severities of depressive, positive, and negative symptoms.[9-12] Furthermore, evidence exists that high SR may lead to individuals from stigmatised groups experiencing greater self-esteem and empowerment as well as a higher quality of life.[13,14] Research has suggested that exploring certain possible relationships of SR with sociodemographic and other clinical characteristics may explain why some patients develop SR, whereas others do not.[9-15] An inconsistent link between SR and psychotic symptoms has been identified; several studies have reported that higher SR is related to lower positive or negative symptom levels, whereas other studies have identified no relationship.[10] To date, research on the relationship between SR and sociodemographic variables has been limited and has suggested that no relationship exists between SR and sociodemographic variables (e.g., age and education).[9,11]

Reduced self-esteem has been proposed as a main consequence of mental illness or mental illness stigma.[6] Lower self-esteem may also contribute to greater social alienation.[16] This vicious cycle relegates many people with severe mental illness to a lifetime of social segregation and isolation. Studies have reported that elevated self-esteem can reduce self-stigma as well as its harmful effects.[17,18] Furthermore, self-esteem is reportedly closely connected to SR.[9-12]

Self-reflection, considered a metacognitive process,[19] refers to the processes through which people focus on their feelings, emotions, thoughts, and experiences to gain insight, learn from their mistakes, and improve themselves.[20,21] Individuals with schizophrenia generally have compromised capacity for self-reflection,[22,23] which has been linked to symptoms,[24] impaired insight,[20,23] high self-stigma,[25] maladaptive coping,[26,27] learning difficulties,[28,29] and inferior psychosocial functioning.[30,31] Although greater reflective processing capacity has been reported to be related to greater insight into illness, it can also imply a greater chance of adapting stigmatising labels and internalising stigmas.[25] For these reasons, studies on self-reflection in people with schizophrenia have attracted increasing attention. However, at present, the relationship between self-reflection and SR in patients with schizophrenia is still unclear.

Being diagnosed with a severe mental illness is typically a stressful and unsettling experience. Coping with the broader implications of a mental illness is a difficult and often life-long process.[32,33] Individuals with schizophrenia often report and demonstrate significant difficulty coping with life stresses.[34-36] People with schizophrenia, compared with

people without a mental illness, often employ a more limited range of coping strategies, which are characterised by a preference for avoidance and passive coping rather than help-seeking or active problem-solving approaches.[34,37,38] Because of the need to identify the conditions and patient coping strategies that intensify the SR process, how coping strategies relate to SR among patients experiencing internalising stigma should be characterised. Coping preferences may be another individual difference that distinguishes high levels of SR from lower levels of SR in patients with schizophrenia. Nevertheless, this relationship remains to be empirically investigated.

After reviewing the aforementioned studies, we aspired to ascertain the relative importance of these multiple associations, because how these factors are associated with SR remains unclear. Furthermore, most studies have been limited to Western populations. Thus, we conducted exploratory research to investigate the effects of sociodemographic and clinical variables on SR among Chinese individuals diagnosed as having schizophrenia. We hypothesised that self-stigma, self-esteem, self-reflection, and coping strategies significantly predict SR. Specifically, we expected that individuals with lower self-stigma levels, higher self-esteem levels, greater reflective capacity, and more favourable coping preferences would more effectively resist stigma. We used multivariate regression analysis with backward-stepwise elimination, which is a set of approaches for evaluating the order of importance of variables and for selecting useful subsets of variables; the approaches are therefore suited to managing exploratory data.[39,40] Finally, this article outlines the practical implications of SR interventions.

Participants

Power analysis for multiple regression using 25 observed variables, a medium effect size of 0.2, and a probability of 0.05 yielded a recommended minimum sample size of 134 and a power of 0.8.[41,42] A convenience sample of 190 participants was recruited to ensure an adequate sample size. All outpatients diagnosed as having schizophrenia or schizoaffective disorder according to the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (*DSM-IV-TR*),[43] were recruited consecutively in 2013 and 2014 from 2 hospitals' outpatient psychiatric clinics. Participants were receiving ongoing outpatient treatment and were in a stable clinical condition, which was defined as no hospitalisations or changes in medication within the preceding 6 months. Participants were excluded if they 1) were younger than 18 years or older than 65 years, 2) had a history of brain trauma or neurological disease, 3) presented with symptoms of alcohol or substance abuse and dependence in the 12 months prior to participation, or 4) could not provide informed consent. Ethical approval was obtained from the Institutional Review Board of the Tri-service General Hospital, National Defense Medical Center, Taiwan (ID: SS100-05). After comprehensively explaining the study methodology and procedures for protecting confidentiality, the participants were asked to provide written informed consent. We initially invited 190 individuals to participate in this study; 5 respondents refused to participate, and 15 did not meet the study's eligibility criteria. Ultimately, 170 respondents (response rate: 89%) accepted our invitation. Data on sociodemographic characteristics (e.g., age, sex, and education) and self-reported illness duration were documented.

Measures

Self-Stigma and SR

The ISMI scale is a 29-item self-administered questionnaire for measuring the self-stigma and SR associated with mental illness.[8] Each scale item was rated on a 4-point Likert scale, and high scores indicated high self-stigma or SR levels. The ISMI scale contains 5 subscales: alienation, stereotype endorsement, discrimination experience, social withdrawal, and SR. The Chinese version of the ISMI scale has favourable internal consistency, favourable test-retest reliability, and adequate convergent and construct validity.[12] In the present study, satisfactory internal consistency was identified (0.70-0.88).

Self-Reflection

To evaluate the subjects' self-reflection, we used the self-reflectiveness subscale of the Beck Cognitive Insight Scale (BCIS).[44] The BCIS is a 15-item self-report scale, with items rated from *do not agree at all* (scored 1) to *agree completely* (scored 4). Kao et al.[45] validated a Chinese version of the BCIS and reported that it has adequate psychometric properties. The self-reflection subscale (9 items) assesses willingness to accept fallibility and external feedback as well as recognising dysfunctional reasoning style, for which a higher score indicates higher levels of self-reflection. In the present study, the Cronbach's α for this subscale was 0.78.

Self-Esteem

The unidimensional self-report Rosenberg Self-esteem Scale (RSES) comprises 10 items that are coded using a 4-point Likert scale identical to that used in the ISMI scale.[46] Higher scores on the RSES indicate higher self-esteem levels. In a previous study, the Chinese version of the RSES exhibited high internal consistency and adequate convergent validity.[47] The scale also exhibited high internal consistency in this study (Cronbach's α = 0.92).

Coping Styles

The COPE is a multidimensional coping inventory that assesses how an individual manages difficult situations.[48] The COPE scale comprises 53 items measuring 14 strategies, split into overarching domains of adaptive and maladaptive

strategies. The adaptive domain averages the following sub-scales: 1) positive reinterpretation, 2) venting of emotions, 3) use of instrumental social support, 4) active coping, 5) religious coping, 6) restraint, 7) use of emotional social support, 8) acceptance, 9) suppression of competing activities, and 10) planning. The maladaptive domain averages the following subscales: 1) mental disengagement, 2) denial, 3) behavioural disengagement, and 4) substance use. The Chinese version of the self-report scale was reported to exhibit favourable reliability.[49] Each item in the COPE is scored using a 5-point Likert scale from *not at all* to *very much*, indicating how much people engage in each type of activity when they encounter a difficult, upsetting, or stressful situation. In our sample, all subscales demonstrated acceptable internal consistency (0.70-0.82). The adaptive and maladaptive domains were recalculated accordingly and demonstrated excellent reliability in our sample (Cronbach's α = 0.88 and 0.84, respectively).

Psychotic Symptomatology

Psychotic symptom severity was assessed using the Positive and Negative Syndrome Scale (PANSS),[50] Chinese version.[51] The PANSS is a 30-item semistructured interview scale and was developed to comprehensively assess the symptoms of schizophrenia.[50] For the purposes of this study, 2 of 3 analytically derived components were used: positive and negative symptoms.[51] They contain 7 items each with possible overall scores ranging from 7 to 49, in which a higher score indicates a higher severity of psychotic symptoms.

Statistical Analysis

The data were analysed using Statistical Product and Service Solutions, version 15.0 (SPSS, Inc., an IBM Company, Chicago, IL). Descriptive analysis included calculation of means, standard deviations (SDs), skewness, and the kurtosis of the indicator variables. Compared with the normal distribution, all variables remained under the critical value of 7 for kurtosis and 2 for skewness.[52] Independent *t* tests were used to assess between-sex differences in the main variables. In each case, the ISMI-SR score was entered as the dependent variable, and all sociodemographic and clinical variables were entered as independent variables.

Selection of variables in the stepwise multiple regression model was based on the exploratory univariate linear regressions conducted in the present study between SR and prediction variables with assumed clinical importance. All variables that were significantly associated with SR in the univariate analyses at a $P < 0.05$ level were included as independent variables and subsequently subjected to stepwise multiple regression to search for their contribution to SR. The fit of the model was tested after elimination of each variable to ensure that the model still adequately fit the data. When no more variables could be eliminated from the model, the analysis was complete.[38]

Results

Of the 170 participants, 93 (55%) were men and 147 (86%) were unmarried or single. Most participants were unemployed ($n = 125$, 73.5%). The average age of the patients was 44.4 years (SD = 10.1; range, 19-65), and their mean duration of formal education was 12.3 years (SD = 2.69; range, 6-18). The mean age of illness onset was 26.4 years (SD = 7.26; range, 14-50). The mean illness duration was 17.9 years (SD = 10.0; range, 2-45). The descriptive statistics for the measures are presented in Table 1. The results revealed no difference between the main variables between the sexes except for in 2 adaptive subscales: venting of emotion and acceptance ($t = -3.34$ and -2.68, respectively; both $P < 0.01$).

We performed univariate regressions for ISMI-SR scores with any of the sociodemographic and clinical variables assessed. These analyses provided a preliminary screening of appropriate candidate variables for entry into a stepwise multiple regression model, as described hereinafter. On the basis of these preliminary univariate associations, $P < 0.05$ was adopted for inclusion in the regression model. The following variables were selected for the ISMI-SR model: ISMI stereotype endorsement ($\beta = -0.31$, $P < 0.001$), ISMI alienation ($\beta = -0.28$, $P < 0.001$), ISMI social withdrawal ($\beta = -0.18$, $P = 0.02$), ISMI discrimination experience ($\beta = -0.19$, $P = 0.01$), BCIS self-reflection ($\beta = 0.18$, $P = 0.02$), RSES self-esteem ($\beta = 0.37$, $P < 0.001$), and all COPE adaptive strategies ($\beta = 0.20$-0.38, all $P < 0.05$). Some sociodemographic (i.e., age and education) and clinical (i.e., illness duration, psychotic symptom severities, and all maladaptive coping strategies) variables were nonsignificantly related to the dependent variable in the univariate analysis (Table 2). Hence, we did not include these variables in the subsequent analyses.

To identify the most significant variables connected to SR, backward-stepwise multiple-regression analysis was performed using the ISMI-SR score as the dependent variable and various psychological measures showing a significant correlation in the univariate linear regression analyses as independent variables. We also performed stepwise regression to determine which adaptive coping strategies were significantly associated with SR. After backward selection of variables, the combination of 5 predictor variables provided the best-fit ISMI-SR model to the data. This regression model was significant ($F = 12.2$; $df = 5$, 164; $P < 0.001$), accounting for 27.1% of the variance in SR. Only 2 adaptive coping strategies, positive reinterpretation ($\beta = 0.15$, $P = 0.04$) and religious coping ($\beta = 0.17$, $P = 0.03$), were significantly associated with SR. Furthermore, acceptance of the stereotypes of mental illness ($\beta = -0.23$, $P = 0.004$), self-reflection ($\beta = 0.16$, $P = 0.04$), and self-esteem ($\beta = 0.20$, $P = 0.02$) accounted for a significant amount of variance in SR among the patients with schizophrenia. No other variables were significant (Table 3).

Table 1. Descriptive Statistics of All Indices Related to Stigma Resistance, Self-Stigma, Self-Reflectiveness, Self-Esteem, Coping Styles, and Psychotic Symptoms (n = 170).

Variable	Total Mean (SD)	Range	Skew	Kurtosis	Male Mean (SD)	Female Mean (SD)	t
ISMI stigma resistance	2.78 (0.50)	1.0-4.0	−0.38	1.16	2.81 (0.45)	2.74 (0.56)	0.89
ISMI stereotype endorsement	2.26 (0.52)	1.0-4.0	−0.09	0.48	3.24 (0.76)	3.06 (0.68)	1.62
ISMI alienation	2.47 (0.60)	1.0-3.4	−0.34	0.09	2.14 (0.52)	2.10 (0.51)	0.42
ISMI social withdrawal	2.39 (0.61)	1.0-3.4	0.16	0.33	2.06 (0.54)	2.04 (0.51)	0.22
ISMI discrimination experience	2.33 (0.61)	1.0-3.8	−0.05	−0.15	2.33 (0.61)	2.32 (0.61)	0.15
BCIS self-reflectiveness	23.9 (4.87)	9-36	−0.10	−0.03	23.4 (4.70)	24.5 (5.03)	−1.50
RSES self-esteem	27.0 (5.47)	12-40	0.16	0.11	27.2 (5.35)	26.6 (5.63)	0.72
COPE adaptive strategies							
Positive reinterpretation	12.0 (2.97)	4-16	−0.38	−0.55	11.8 (2.78)	12.3 (3.16)	−1.28
Venting of emotion	10.2 (2.71)	4-16	0.30	−0.29	9.61 (2.27)	10.8 (3.00)	−3.34[a]
Use of instrumental social support	11.1 (2.95)	4-16	−0.06	−0.88	10.7 (2.87)	11.5 (3.00)	−1.71
Active coping	12.1 (2.95)	4-16	−0.37	−0.55	12.2 (2.76)	12.1 (3.19)	0.19
Religious coping	10.6 (4.00)	4-16	−0.16	−1.16	10.1 (3.72)	11.1 (4.27)	−1.63
Restraint	12.0 (2.86)	4-16	−0.44	−0.40	12.1 (2.59)	11.9 (3.17)	0.29
Use of emotional social support	10.9 (2.88)	4-16	−0.04	−0.59	11.6 (2.62)	11.4 (3.12)	−1.86
Acceptance	12.1 (2.70)	4-16	−0.32	−0.55	11.6 (2.62)	12.7 (2.68)	−2.68[a]
Suppression of competing activities	12.1 (2.61)	4-16	−0.25	−0.55	11.9 (2.49)	12.4 (2.74)	−1.06
Planning	11.7 (2.89)	4-16	−0.21	−0.83	11.8 (2.65)	11.7 (3.17)	0.19
COPE maladaptive strategies							
Mental disengagement	10.2 (2.71)	4-16	0.06	−0.34	10.0 (2.45)	11.4 (2.98)	−0.94
Denial	9.48 (3.13)	4-16	0.33	−0.44	9.13 (2.91)	9.90 (3.35)	−1.58
Behavioural disengagement	9.66 (2.96)	4-16	0.16	−0.55	9.26 (2.81)	11.1 (3.08)	−1.91
Substance abuse	1.72 (0.99)	1-4	1.09	−0.14	1.73 (0.96)	1.71 (1.05)	0.11
PANSS positive symptoms	18.3 (7.15)	7-38	0.40	−0.79	19.1 (7.53)	17.2 (6.56)	1.71
PANSS negative symptoms	19.5 (8.17)	7-38	0.24	−1.27	20.4 (8.27)	18.4 (7.96)	1.61

BCIS, Beck Cognitive Insight Scale; ISMI, Internalized Stigma of Mental Illness; PANSS, Positive and Negative Syndrome Scale; RSES, Internalized Stigma of Mental Illness.
[a]P < 0.01.

Discussion

This is the first study, to our knowledge, to systematically analyse the role of self-stigma, self-esteem, self-reflection, and 2 different coping strategies (adaptive and maladaptive) in SR among patients with schizophrenia. Our exploratory clinical study revealed 5 main findings. First, consistent with our hypothesis and previous studies,[9,11,12] we determined that self-stigma was inversely related to SR. Second, also consistent with our hypothesis and the literature,[9-12] self-esteem was positively associated with SR. Third, as expected, our results confirmed that self-reflection correlated positively with SR. Fourth, the results revealed that adaptive coping strategies, but not maladaptive coping strategies, were positively related to SR. We noted that the stepwise regression results showed that greater SR was linked with less self-stigma but greater self-reflection and self-esteem. The results further showed that greater SR was related to a more adaptive coping style and, specifically, that greater use of the adaptive strategies of positive reinterpretation and religious coping was significantly associated with higher SR. Finally, in line with previous findings,[9,11,15] the present study discovered no significant differences in the relationship of the ISMI-SR subscale

score with sociodemographic and clinical variables (e.g., age, education, and positive and negative symptoms).

The findings of this study indicate that self-esteem is both a product of socially constructed experiences[53] and a factor that shapes an individual's indices of distress.[54] Self-esteem may also contribute to higher success motivation.[55] In addition, it may increase the ability to achieve goals, manage emotions, and cope with problems, whereas low self-esteem may lead to avoidance.[56,57] For example, higher self-esteem may increase motivation to engage in self-care behaviours that ultimately reduce symptoms, and it may improve coping skills, thereby reducing stigma and increasing a person's capacity to counteract the stigma of mental illness.

The past decade has seen an increase in research on the correlates and consequences of inadequate self-reflective capacity. In particular, self-reflective processing is essential for evaluating personal behaviour[58] and developing emotional intelligence.[59] Performing reflective practice with a professional helps people avoid excessive negative emotions, such as defensiveness or regret.[60] Thus, our findings relate to the relationship of SR with emotion regulation and are consistent with those of a recent study.[61] Rajj et al.[61] demonstrated a relationship between the brain circuitry for emotional regulation and resistance toward the stigma of

Table 2. Exploratory Univariate Regression between Stigma Resistance and Sociodemographic and Clinical Characteristics.

Variable	B	SE (B)	β	t	95% CI	P Value
Sociodemographic characteristics						
Age	<.001	0.01	0.01	0.08	−0.01 to 0.01	0.93
Education	0.01	0.01	0.02	0.23	−0.03 to 0.03	0.82
Clinical characteristics						
Illness duration	<.001	0.01	0.01	0.07	−0.01 to 0.08	0.94
PANSS positive symptoms	0.01	0.01	0.07	0.86	−0.01 to 0.02	0.39
PANSS negative symptoms	0.01	0.01	0.09	1.20	−0.01 to 0.02	0.23
ISMI stereotype endorsement	−0.04	0.01	−0.31	−4.21	−0.06 to −0.02	<0.001
ISMI alienation	−0.04	0.01	−0.28	−3.81	−0.06 to −0.02	<0.001
ISMI social withdrawal	−0.03	0.01	−0.18	−2.30	−0.04 to −0.01	0.02
ISMI discrimination experience	−0.03	0.01	−0.19	−2.54	−0.06 to −0.01	0.01
BCIS self-reflectiveness	0.02	0.01	0.18	2.36	0.01 to 0.04	0.02
RSES self-esteem	0.04	0.01	0.37	5.13	0.02 to 0.05	<0.001
COPE adaptive strategies						
Positive reinterpretation	0.06	0.01	0.38	5.27	0.04 to 0.09	<0.001
Venting of emotion	0.03	0.01	0.20	2.50	0.01 to 0.06	0.02
Use of instrumental social support	0.06	0.01	0.33	4.51	0.03 to 0.08	<0.001
Active coping	0.04	0.01	0.26	3.50	0.02 to 0.07	0.001
Religious coping	0.04	0.01	0.29	3.86	0.02 to 0.05	<0.001
Restraint	0.04	0.01	0.22	2.98	0.01 to 0.07	0.003
Use of emotional social support	0.05	0.01	0.29	3.98	0.03 to 0.08	<0.001
Acceptance	0.05	0.01	0.29	3.86	0.03 to 0.08	<0.001
Suppression of competing activities	0.04	0.02	0.21	2.78	0.01 to 0.07	0.01
Planning	0.04	0.01	0.25	3.39	0.02 to 0.07	0.001
COPE maladaptive strategies						
Mental disengagement	0.01	0.01	0.04	0.47	−0.02 to 0.04	0.64
Denial	0.02	0.01	0.11	1.40	−0.02 to 0.05	0.10
Behavioural disengagement	−0.01	0.01	−0.05	−0.64	−0.03 to 0.02	0.53
Substance abuse	0.01	0.04	0.13	0.17	−0.07 to 0.08	0.87

BCIS, Beck Cognitive Insight Scale; CI, confidence interval; ISMI, Internalized Stigma of Mental Illness; PANSS, Positive and Negative Syndrome Scale; RSES, Internalized Stigma of Mental Illness.

Table 3. Multiple Regression with a Backward Stepwise Procedure for Specific Adaptive Coping Strategies: Contributors to Stigma Resistance.

Variable	B	SE (B)	β	t	95% CI	P Value	Adjusted R^{2*}
ISMI stereotype endorsement	−0.03	0.01	−0.23	−2.91	−0.05 to −0.01	0.004	0.271
BCIS self-reflectiveness	0.02	0.01	0.16	2.05	0.001 to 0.03	0.04	
RSES self-esteem	0.02	0.01	0.20	2.39	0.003 to 0.03	0.02	
COPE adaptive strategies							
Positive reinterpretation	0.03	0.01	0.15	2.02	0.001 to 0.05	0.04	
Religious coping	0.02	0.01	0.17	2.10	0.002 to 0.04	0.03	

BCIS, Beck Cognitive Insight Scale; ISMI, Internalized Stigma of Mental Illness; PANSS, Positive and Negative Syndrome Scale; RSES, Internalized Stigma of Mental Illness.
* = Adjusted R^2 for the entire model.

schizophrenia in the rostral-ventral medial prefrontal cortex and suggested that enhanced emotion regulation directly contributes to SR in addition to an individual's ability to interact socially and benefit from social support. Because current data suggest that evidence-based psychoeducational and cognitive remediation programs improve aspects of self-reflection,[62,63] this study's findings indicate that clinicians and researchers working with people with schizophrenia must develop tailored adjunctive interventions that can be administrated alongside these evidence-based programs,

attending to the recovery of patients. However, studies have suggested that an unexpected effect of intervention benefits is that more self-reflection leads to higher stigma levels.[24,25,62,64,65] These findings suggest that self-reflection is a double-edged sword for people with schizophrenia and complicates researchers' understanding of the impact of self-reflection on clinical outcomes. Increased reflection allows individuals to be not only cognisant of the stigmatising beliefs that are caused by their illness but also the need to combat these stigmatising beliefs. Nevertheless, future

studies must clarify which other factors play key roles in influencing self-reflection related to self-stigma and SR.

Identifying the coping strategies most central to SR may help highlight the most relevant cognitive techniques for stigmatised individuals. The results of this study suggested that a greater preference for using 2 adaptive coping strategies—namely, positive reinterpretation and religious coping—were independent correlates of SR in schizophrenia. Carver et al.[48] suggested that the value of positive reinterpretation is that it not only reduces distress but also can be used to reappraise a stressful situation and see it more positively. According to Cooke et al.,[66] finding meaning in this coping is a vital strategy that helps patients reframe their unusual mental experiences by attributing to them a spiritual meaning. Thus, employing a positive coping strategy such as reinterpretation, rather than a denial coping strategy, may substantially reduce distress.[66] The neuropsychological model supports that the median prefrontal cortex is partly comparable with the brain regions key to positive reappraisal and optimism,[67,68] and this fits with the view of SR as encompassing different but related elements such as enhancing emotion regulation or eliciting positive emotions. Another adaptive coping strategy, religious coping, was also determined to be positively related to SR in schizophrenia. The role of religion in coping strategies for responding to stressful events has been empirically studied in patients with schizophrenia.[69-72] Our findings suggested that religion is relevant when treating individuals with schizophrenia because it helps reduce symptom severity, enhances adaptive coping, and fosters recovery.[69-72] Religious coping enhances patients' personal resilience and self-efficacy, which are vital for coping with illness experiences such as residual symptoms and stigma.[11,72,73]

Increasingly, researchers have reported that cultural factors influence a range of phenomena in schizophrenia.[37,74] Culture shapes various aspects of the self, including feelings of self-esteem,[75,76] self-stigma,[77] and coping styles.[78] In China, traditional cultural values include collectivistic and sociocentric cultural components in which people from birth onward are integrated into cohesive groups, long-term relationships, and extended family structures, which may provide buffering mechanisms against the occurrence of distress by improving self-esteem in people with severe mental illness[37,75] or may devalue individual instincts by tending to lower self-esteem.[76] In addition, Chinese culture may lead to intensified stigma.[77,79]

Several limitations may have affected this study. First, generalisation of our findings is limited by the sample origin and illness stage of the participants. Second, the present study was cross-sectional in nature, so clear causal associations between SR and predictors could not be determined and should be elucidated by longitudinal studies. Third, although validated for use in studies on schizophrenia,[7,8,12] the validity of the construct of the SR subscale should be discussed, considering its relatively low internal reliability compared with the other 4 subscales of the ISMI scale.

Finally, the self-reflectiveness subscale of the BCIS that was used in this study was originally developed for assessing cognitive insight. This subscale includes different elements from the other measures of self-reflection that have been widely used. Thus, more finely tuned or widely accepted measures of self-reflection such as the Metacognitive Assessment Scale,[80] Metacognitive Assessment Scale–Abbreviated,[81] Meta-Cognitions Questionnaire,[82] or self-reflectiveness task[23,83] are necessary to replicate and confirm the importance of our findings.

Conclusions

Although our findings may be tentative, this study substantially extended the insight into the underlying mechanisms of SR development among people with schizophrenia. To date, several interventions have been developed to directly address self-stigma, and many are in the early stages of development with limited effectiveness information available.[84] By advancing the understanding of stigmatisation's multifaceted pathways and the components and factors that affect these pathways, we hope that the contributions in this article assist readers in precipitating the dismantling of self-stigma. With replication across broader samples and using longitudinal designs, our findings may have crucial clinical implications for designing psychoeducational programs to fight stigma.

References

1. Livingston JD, Boyd JE. Correlates and consequences of internalized stigma for people living with mental illness: a systematic review and meta-analysis. Soc Sci Med. 2010;71(12): 2150-2161.

2. Fung KM, Tsang HW, Cheung WM. Randomized controlled trial of the self-stigma reduction program among individuals with schizophrenia. Psychiatry Res. 2011;189(2):208-214.

3. Evans-Lacko S, Brohan E, Mojtabai R, et al. Association between public views of mental illness and self-stigma among individuals with mental illness in 14 European countries. Psychol Med. 2012;42(8):1741-1752.

4. Rusch N, Lieb K, Bohus M, et al. Self-stigma, empowerment, and perceived legitimacy of discrimination among women with mental illness. Psychiatr Serv. 2006;57(3):399-402.

5. Rusch N, Holzer A, Hermann C, et al. Self-stigma in women with borderline personality disorder and women with social phobia. J Nerv Ment Dis. 2006;194(10):766-773.

6. Corrigan PW, Larson JE, Rusch N. Self-stigma and the "why try" effect: impact on life goals and evidence-based practices. World Psychol. 2009;8(2):75-81.

7. Boyd JE, Adler EP, Otilingam PG, et al. Internalized Stigma of Mental Illness (ISMI) scale: a multinational review. Compr Psychiatry. 2014;55(1):221-231.

8. Ritsher JB, Otilingam PG, Grajales M. Internalized stigma of mental illness: psychometric properties of a new measure. Psychiatry Res. 2003;121(1):31-49.

9. Nabors LM, Yanos PT, Roe D, et al. Stereotype endorsement, metacognitive capacity, and self-esteem as predictors of stigma resistance in persons with schizophrenia. Compr Psychiatry. 2014;55(4):792-798.

10. Firmin RL, Luther L, Lysaker PH, et al. Stigma resistance is positively associated with psychiatric and psychosocial outcomes: a meta-analysis. Schizophr Res. 2016;175(1-3):118-128.

11. Sibitz I, Unger A, Woppmann A, et al. Stigma resistance in patients with schizophrenia. Schizophr Bull. 2011;37(2):316-323.

12. Lien YJ, Kao YC, Liu YP, et al. Internalized stigma and stigma resistance among patients with mental illness in Han Chinese population. Psychiatr Q. 2015;86(2):181-197.

13. Thoits PA. Resisting the stigma of mental illness. Social Psychol Q. 2011;74(1):6-28.

14. Thoits PA, Link BG. Stigma Resistance and wellbeing among people in treatment for psychosis [published online June 30, 2015]. Soc Ment Health. 2015.

15. Lysaker PH, Davis LW, Warman DM, et al. Stigma, social function and symptoms in schizophrenia and schizoaffective disorder: associations across 6 months. Psychiatry Res. 2007;149(1-3):89-95.

16. Zhang L, Li W, Liu B, et al. Self-esteem as mediator and moderator of the relationship between stigma perception and social alienation of Chinese adults with disability. Disabil Health J. 2014;7(1):119-123.

17. Corrigan PW, Rao D. On the self-stigma of mental illness: stages, disclosure, and strategies for change. Can J Psychiatry. 2012;57(8):464-469.

18. Lysaker PH, Roe D, Ringer J, et al. Change in self-stigma among persons with schizophrenia enrolled in rehabilitation: associations with self-esteem and positive and emotional discomfort symptoms. Psychol Serv. 2012;9(3):240-247.

19. Buchy L, Stowkowy J, MacMaster FP, et al. Meta-cognition is associated with cortical thickness in youth at clinical high risk of psychosis. Psychiatry Res. 2015;233(3):418-423.

20. van der Meer L, Costafreda S, Aleman A, et al. Self-reflection and the brain: a theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. Neurosci Biobehav Rev. 2010;34(6):935-946.

21. Harrington R, Loffredo DA. Insight, rumination, and self-reflection as predictors of well-being. J Psychol. 2011;145(1):39-57.

22. Bedford NJ, David AS. Denial of illness in schizophrenia as a disturbance of self-reflection, self-perception and insight. Schizophr Res. 2014;152(1):89-96.

23. van der Meer L, de Vos AE, Stiekema AP, et al. Insight in schizophrenia: involvement of self-reflection networks? Schizophr Bull. 2013;39(6):1288-1295.

24. Riggs SE, Grant PM, Perivoliotis D, et al. Assessment of Cognitive Insight: a qualitative review. Schizophr Bull. 2012;38(2):338-350.

25. Mak WWS, Wu CFM. Cognitive insight and causal attribution in the development of self-stigma among individuals with schizophrenia. Psychiatr Serv. 2006;57(12):1800-1802.

26. Aldwin CM, Yancura LA, Boeninger D. Coping across the lifespan. In: Freund A, Lamb M, editors. Handbook of lifespan developmental psychology. New York (NY): John Wiley; 2010.

27. Skinner EA, Zimmer-Gembeck MJ. The development of coping. Annu Rev Psychol. 2007;58:119-144.

28. Lew MDN, Schmidt HG. Self-reflection and academic performance: is there a relationship? Adv Health Sci Educ Theory Pract. 2011;16(4):529-545.

29. Tas C., Brown EC, Esen-Danaci A, et al. Intrinsic motivation and metacognition as predictors of learning potential in patients with remitted schizophrenia. J Psychiatr Res. 2012;46(8):1086-1092.

30. Kukla M, Lysaker PH, Salyers MP. Do persons with schizophrenia who have better metacognitive capacity also have a stronger subjective experience of recovery? Psychiatry Res. 2013;209(3):381-385.

31. Lysaker PH, Dimaggio G. Metacognitive capacities for reflection in schizophrenia: implications for developing treatments. Schizophr Bull. 2014;40(3):487-491.

32. Jalbrzikowski M, Sugar CA, Zinberg J, et al. Coping styles of individuals at clinical high risk for developing psychosis. Early Interv Psychiatry. 2014;8(1):68-76.

33. Nitzburg GC, Russo M, Cuesta-Diaz A, et al. Coping strategies and real-world functioning in bipolar disorder. J Affect Dis. 2016;198:185-188.

34. Lysaker PH, Campbell K, Johannesen JK. Hope, awareness of illness, and coping in schizophrenia spectrum disorders: evidence of an interaction. J Nerv Ment Dis. 2005;193(5):287-292.

35. Lysaker PH, Bryson GJ, Marks K, et al. Coping style in schizophrenia: associations with neurocognitive deficits and personality. Schizophr Bull. 2004;30(1):113-121.

36. Brenner K, St-Hilaire A, Liu A, et al. Cortisol response and coping style predict quality of life in schizophrenia. Schizophr Res. 2011;128(1-3):23-29.

37. Xu ZY, Zu S, Xiang YT, et al. Associations of self-esteem, dysfunctional beliefs and coping style with depression in patients with schizophrenia: a preliminary survey. Psychiatry Res. 2013;209(3):340-345.

38. Montemagni C, Castagna F, Crivelli B, et al. Relative contributions of negative symptoms, insight, and coping strategies to

quality of life in stable schizophrenia. Psychiatry Res 2014; 220(1-2):102-111.

39. Whittingham MJ, Stephens PA, Bradbury RB, Freckleton RP. Why do we still use stepwise modelling in ecology and behaviour? J Anim Ecol. 2006;75(5):1182-1189.

40. Mundry R, Charles N. Stepwise model fitting and statistical inference: turning noise into signal pollution. Am Nat. 2009; 173(1):119-123.

41. Cohen J, Cohen P, West SG, et al. Applied multiple regression/correlation analysis for the behavioral sciences. 3rd ed. Mahwah (NJ): Lawrence Erlbaum; 2003.

42. Soper DS. A-priori sample size calculator for multiple regression [Software]; 2007. Cited April 7, 2017. Available from: http://www.danielsoper.com/statcalc.

43. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, text revision. 4th ed. Washington (DC): American Psychiatric Association; 2000.

44. Beck AT, Baruch E, Balter JM, et al. A new instrument for measuring insight: the Beck Cognitive Insight Scale. Schizophr Res. 2004;68(2-3):319-329.

45. Kao YC, Wang TS, Lu CW, et al. Assessing cognitive insight in nonpsychiatric individuals and outpatients with schizophrenia in Taiwan: an investigation using the Beck Cognitive Insight Scale. BMC Psychiatry. 2011;11:170.

46. Rosenberg M. Conceiving the self. New York (NY): Basic Books; 1979.

47. Cheng ST, Hamid PN. An error in the use of translated scales: the Rosenberg Self-Esteem Scale for Chinese. Percept Mot Skills. 1995;81(2):431-434.

48. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. J Pers Soc Psychol. 1989;56(2):267-283.

49. Hsu WY, Chen MC, Wang TH, et al. Coping strategies in Chinese social context. Asian J Soc Psychol. 2008;11(2): 150-162.

50. Kay SR, Fiszbein A, Opler LA. The Positive and Negative Syndrome Scale (PANSS) for schizophrenia. Schizophr Bull. 1987;13(2):261-276.

51. Cheng JJ, Ho H, Chang CJ, et al. Positive and Negative Syndrome Scale (PANSS): establishment and reliability study of a Mandarin Chinese language version. Taiwanese J Psychiatry. 1996;10(3):251-258.

52. Kline RB. Principles and practice of structural equation modeling. 3rd ed. New York (NY): Guilford; 2011.

53. Leary MR, MacDonald G. Individual differences in self-esteem: a review and theoretical integration. In: Leary MR, Tangney JP, editors. Handbook of Self and Identity. New York (NY): Guilford Press; 2005.

54. Davis L, Kurzban S, Brekke J. Self-esteem as a mediator of the relationship between role functioning and symptoms for individuals with severe mental illness: a prospective analysis of Modified Labeling theory. Schizophr Res. 2012;137(1-3): 185-189.

55. Pang Y, Tong Y, Tian L. Relationship between self-esteem, learning motivation and academic achievement. J Univ. 2011; 25(3):327-330.

56. Hendy HM, Eggen Gustitus DC, McLeog K, et al. Decision to leave scale: perceived reasons to stay in or leave violent relationships. Psychol Women Q. 2003;27(2):162-173.

57. Mauss IB, Bunge SA, Gross JJ. Automatic emotion regulation. Soc Pers Psychol. 2007;1(1):146-167.

58. Atkinson RL, Robinson NM. Paired-associate learning by schizophrenic and normal subjects under conditions of personal and impersonal reward and punishment. J Abnorm Soc Psychol. 1961;62:322-326.

59. Koven NS, Roth RM, Garlinghouse MA, et al. Regional gray matter correlates of perceived emotional intelligence. Soc Cogn Affect Neurosci. 2011;6(5):582-590.

60. Axelrod SD. "Self-awareness": at the interface of executive development and psychoanalytic therapy. Psychoanal Inq. 2012;32(4):340-357.

61. Raij TT, Korkeila J, Joutsenniemi K, et al. Association of stigma resistance with emotion regulation—functional magnetic resonance imaging and neuropsychological findings. Compr Psychiatry. 2014;55(3):727-735.

62. Pijnenborg GH, Van der Gaag M, Bockting CL, et al. REFLEX, a social-cognitive group treatment to improve insight in schizophrenia: study protocol of a multi-center RCT. BMC Psychiatry. 2011;11:161.

63. Gale C, Schroder T. Experiences of self-practice/self-reflection in cognitive behavioural therapy: a meta-synthesis of qualitative studies. Psychol Psychother. 2014;87(4):373-392.

64. Crapanzano K, Vath RJ, Fisher D. Reducing stigma towards substance users through an educational intervention: harder than it looks. Acad Psychiatry. 2014;38(4):420-425.

65. Teixeira ME, Budd GM. Obesity stigma: a newly recognized barrier to comprehensive and effective type 2 diabetes management. J Am Acad Nurse Pract. 2010;22(10):527-533.

66. Cooke M, Peters E, Fannon D, et al. Insight, distress and coping styles in schizophrenia. Schizophr Res. 2007;94(1-3):12-22.

67. Kringelbach ML. The human orbitofrontal cortex: linking reward to hedonic experience. Nat Rev Neurosci. 2005;6(9):691-702.

68. Sharot T, Riccardi AM, Raio CM, et al. Neural mechanisms mediating optimism bias. Nature. 2007;450(7166):102-105.

69. Mohr S, Brandt PY, Borras L, et al. Toward an integration of spirituality and religiousness into the psychosocial dimension of schizophrenia. Am J Psychiatry. 2006;163(11):1952-1959.

70. Huguelet P, Mohr S, Borras L, et al. Spirituality and religious practices among outpatients with schizophrenia and their clinicians. Psychiatr Serv. 2006;57(3):366-372.

71. Nolan JA, McEvoy JP, Koenig HG, et al. Religious coping and quality of life among individuals living with schizophrenia. Psychiatr Serv. 2012;63(10):1051-1054.

72. Grover S, Davuluri T, Chakrabarti S. Religion, spirituality, and schizophrenia: a review. Indian J Psychol Med. 2014;36(2): 119-124.

73. Chen CKP, Lo PHY, Chen EYH, et al. Coping with illness experiences in patients with schizophrenia: the role of peacefulness. J Schizophr Res. 2015;2(1):1007.

74. Stefanovics EA, Elkis H, Zhening L, et al. A cross-national factor analytic comparison of three models of PANSS symptoms in schizophrenia. Psychiatry Res. 2014;219(2):283-289.

75. Young KW. Spirituality and self-esteem for Chinese people with severe mental illness. Soc Work Ment Health. 2010;8(5):455-468.

76. Zhai H, Yang Y, Sui H, et al. Self-esteem and problematic drinking in China: a mediated model. PLoS One. 2015; 10(10):e0140183.

77. Yang LH, Purdie-Vaughns V, Kotabe H, et al. Culture, threat, and mental illness stigma: identifying culture-specific threat among Chinese-American groups. Soc Sci Med. 2013;88:56-67.

78. Chin WC, Chao KY, Chang HL, et al. Coping strategies of Taiwanese children with autism spectrum disorders [published online December 21, 2016]. J Clin Nurs.

79. Tang IC, Wu HC. Quality of life and self-stigma in individuals with schizophrenia. Psychiatr Q. 2012;83(4):497-507.

80. Semerari A, Carcione A, Dimaggio G, et al. How to evaluate metacognitive function in psychotherapy? the metacognition

assessment scale and its applications. Clin Psychol Psychother. 2003;10(4):238-261.

81. Lysaker PH, Carcione A, Dimaggio G, et al. Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. Acta Psychiatr Scand. 2005;112(1):64-71.

82. Cartwright-Hatton S, Wells A. Beliefs about worry and intrusions: the meta-cognitions questionnaire and its correlates. J Anxiety Disord. 1997;11(3):279-296.

83. Tan S, Zhao Y, Fan F, et al. Brain correlates of self-evaluation deficits in schizophrenia: a combined functional and structural MRI study. PLoS One. 2015;10(9):e0138737.

84. Lucksted A, Drapalsji A. Self-stigma regarding mental illness: definition, impact, and relationship to societal stigma. Psychiatr Rehabil J. 2015;38(2):99-102.