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Self-stigma versus stigma resistance in schizophrenia: Associations with resilience, premorbid adjustment, and clinical symptoms

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ABSTRACT

Self-stigma is regarded as a barrier to recovery from schizophrenia and the identification of factors protecting from its development may help identify vulnerable patients and subsequently, implement effective preventive and therapeutic interventions. Hence, this study aimed to assess whether resilience, premorbid adjustment, and psychopathology might differently impact self-stigma and stigma resistance among 54 regular attendees of a specialized outpatient clinic. There was no significant association between sociodemographic variables and self-stigma/stigma resistance, while resilience was negatively correlated with self-stigma and positively correlated with stigma resistance. In addition, we detected a negative correlation between self-stigma and both academic and social functioning during late adolescence. Most residual symptoms correlated with self-stigma, while no association was found between stigma resistance and psychopathology, except for depressed symptoms. These data provide evidence that future self-stigma reduction interventions may consider to focus on the improvement of resilience in order to promote schizophrenia patients' stigma resistance. In addition, the improvement of depressive symptoms as well as interventions focusing on the strengthening of social adjustment during the prodromal phase may be effective in preventing self-stigma.

1. Introduction

Albeit antistigma approaches have been shown to have positive effects on reducing public stigma for people with mental illness (Corrigan et al., 2012) stigmatizing attitudes towards them are still found across all levels of society (Babic, 2010). These attitudes tend to be stronger towards people suffering from schizophrenia compared to those with affective disorders (Jorm and Griffiths, 2008) or with physical disabilities (Hasson-Ohayon et al., 2014).

Generally, stigma is a multifaceted construct that involves feelings, attitudes and behaviors. It comprises three main components: negative stereotypes, prejudice, and discrimination (Rüsch and Thornicroft, 2014). As a consequence of public stigma people with mental illness may develop self-stigma, i.e., they may apply negative stererotypes and stigmatizing attitudes to themselves (Corrigan and Rao, 2012) and may exhibit behaviors like secrecy and withdrawal to cope with this discrimination. Up to 20% of people may even discontinue treatment prematurely (Corrigan et al., 2014).

In individuals suffering from schizophrenia, the weighted prevalence of self-stigma has been suggested to range from 26.8 to 52.6% (Gerlinger et al., 2013). Self-stigma has been associated with poorer treatment adherence (e.g., Yilmaz and Okanlı, 2015; Kamaradova et al., 2016) and with negative outcomes, including reductions in self-esteem (e.g., Hofer et al., 2016; Picco et al., 2016), hope (e.g., Hofer et al., 2016; Berry and Greenwood, 2018) empowerment (e.g., Brohan et al., 2010; Sibitz et al., 2011), quality of life (e.g., Picco et al., 2016; Lien et al., 2018), and social and vocational functioning (e.g., Lysaker et al., 2007; Yanos et al., 2012). One of our recent studies, for example, revealed moderate to large inter-correlations between self-stigma, resilience, self-esteem, and hopelessness among people with schizophrenia from Austria and Japan (Hofer et al., 2016), and Yanos and coworkers have demonstrated that the degree to which a person internalizes common negative stereotypes influences vocational outcomes (Yanos et al., 2010).

Self-stigma has also been associated with an increased severity of positive (e.g., Lysaker et al., 2007; Vrbova et al., 2018), negative (e.g., Hill and Startup, 2013; Chan et al., 2017), and depressive symptoms (e.g., Sibitz et al., 2011; Lagger et al., 2018). Presumably, residual symptoms may be misunderstood as signs of danger or incompetence or lead to an assumption of insensibility due to a supposed lack of

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compassion by others, which may have a negative impact on interpersonal relationships, thereby resulting in social distance, discrimination and self-stigmatizing beliefs. On the other hand, not everyone who is aware of public stigma suffers from self-stigma (Rüsch et al., 2006) and the identification of factors protecting from its development may therefore help identify vulnerable individuals and may facilitate the implementation of effective preventive and therapeutic interventions. The above mentioned issues known to be meaningful in this context, e.g. self-esteem and hope, have previously been suggested to be associated with both resilience (e.g., Hofer et al., 2016) and premorbid adjustment (e.g., Romm et al., 2011), which, in turn, are relevant for clinical outcome and psychosocial functioning of individuals suffering from schizophrenia (e.g., Hofer et al., 2006; Mizuno et al., 2016; Ayesa-Arriola et al., 2013; Wartelsteiner et al., 2016). Accordingly, the primary objective of the current study was to investigate whether these issues might also be associated with self-stigma/stigma resistance.

Resilience has been conceptualized in different ways and can be viewed as a personal trait, a dynamic process involving interaction with the environment, an outcome, or an acquirable skill (Herrman et al., 2011). Masten defined it as "the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability or development" (Masten, 2011). Accordingly, resilience has been suggested to be relevant for coping with mental illness (Reddy et al., 2014). Premorbid adjustment, in turn, has been hypothesized to constitute a reliable measure of cognitive reserve (Amoretti et al., 2016), defined as "individual differences in how people process tasks which allow some to cope better than others with brain pathology" (Stern, 2002). Accordingly, both resilience and premorbid adjustment may be considered as potential targets to combat the development of self-stigma. The current study therefore attempted to examine the associations between resilience, premorbid adjustment, and psychopathology and self-stigma/stigma resistance among regular attendees of a specialized schizophrenia outpatient clinic. We hypothesized that low resilience, poor premorbid adjustment as well as more severe symptoms would be associated with high self-stigma and low stigma resistance.

2. Methods

We performed a cross-sectional study including 54 consecutive persons aged between 18 and 65 years, who regularly attended a specialized outpatient clinic at the Department of Psychiatry, Psychotherapy and Psychosomatics of the Medical University Innsbruck. Diagnosis was confirmed by using the Mini International Neuropsychiatric Interview (M.I.N.I.) (Sheehan et al., 1998). At the time of study inclusion, subjects had to be clinically stable for at least six months, i.e., they had to be treated as outpatients without any modification of the treatment regimen. A brief medical screening interview was used to exclude subjects with any physical or neurological illness or any condition affecting neural or cerebrovascular function. The study received approval by the ethics committee of the Medical University Innsbruck. All participants were native German speakers and signed informed consent. Study procedures were performed by a trained research team consisting of psychiatrists and master level clinical psychologists.

2.1. Self-stigma/stigma resistance

Self-stigma/stigma resistance was assessed with the German version (Sibitz et al., 2013) of the Internalized Stigma of Mental Illness (ISMI) scale (Ritsher et al., 2003), which uses a 4-point Likert scale and consists of 29 items grouped into five subscales: Alienation, Stereotype Endorsement, Discrimination Experience, Social Withdrawal, and Stigma Resistance. Internal consistency and rest-retest correlation of the German version of the scale are high (Cronbach's $\alpha = 0.92$, $r = 0.90$) (Sibitz et al., 2013).

Research has determined that stigma resistance is a separate construct, theoretically (Ritsher et al., 2003) and psychometrically (Sibitz et al., 2011) distinct from self-stigma. Accordingly, the current study measured *stigma resistance* using the Stigma Resistance subscale and measured *self-stigma* by summing the averages of the remaining four subscales of the ISMI. Previous studies applied a cut-off point at 2.5 and above on the mean item scores to define high stigma resistance and self-stigma, respectively, and less than 2.5 for low stigma resistance/self-stigma (e.g., Sibitz et al., 2011; Lau et al., 2017).

2.2. Resilience

Resilience was measured using the German version (Schumacher et al., 2005) of the Resilience Scale (RS-25) (Wagnild and Young, 1993). This instrument consists of 25 items divided into two categories: "acceptance of self and life" (8 items) and "personal competence" (17 items). The subscale "acceptance of self and life" highlights features such as adaptability, tolerance, flexibility, and balance, whereas the subscale "personal competence" summarizes features such as self-reliance, independence, determination, mastery, perseverance, invincibility and resourcefulness. Since the 2-factor structure could not be identified in the German version (Schumacher et al., 2005) we considered only the total score for our study (Cronbach's $\alpha = 0.95$). All items are scored on a 7-score item scale ranging from 1 = strongly disagree to 7 = strongly agree, with possible scores ranging from 25 to 175. The overall RS-25 score is categorized into 3 levels: scores below 125 reflect low resilience, scores between 126 and 145 indicate moderately low to moderate levels of resilience, and scores of 146 and higher indicate high resilience (Wagnild, 2009).

2.3. Premorbid adjustment

Premorbid adjustment was assessed retrospectively through the Premorbid Adjustment Scale (PAS) (Cannon-Spoor et al., 1982), which measures two discrete areas of premorbid functioning - academic functioning (achievements in school and adaption to school) and social functioning (sociability/withdrawal, peer relationships, and ability to form interpersonal and sexual relationships [starting at age 12]) - at each of four developmental stages: childhood (up to age 11), early adolescence (age 12–15), late adolescence (age 16–18), and adulthood (age 19 and older). The original edition of the PAS includes a general section, however, due to concerns regarding the validity of this section (van Mastrigt and Addington, 2002) we decided not to use it.

Estimation of the reliability of the German version of the PAS subscales with one another have high positive values of Cronbach's α between 0.81 and 0.93 (Krauss et al., 1998). Items are scored on a scale from 0 (normal adjustment) to 6 (severe impairment). The range of scoring for each developmental period is the same, allowing for comparison of scores across developmental periods. According to scale instructions, adulthood was not assessed in persons with illness onset prior to or at 19 years of age.

2.4. Psychopathology

Symptom severity was assessed using the Structured Clinical Interview for the Positive and Negative Syndrome Scale (SCI-PANSS) (Kay et al., 1987). For statistical analysis, the PANSS was divided into five factors according to Wallwork et al. (2012): positive, negative, disorganized/concrete, excited, and depressed.

2.5. Statistical methods

Prior to the analysis, all continuous variables were checked for deviations from normality by means of the Shapiro–Wilk test. The course of premorbid academic and social functioning from childhood to

late adolescence (measured by the PAS) was analyzed by means of the Friedman test as the majority of the PAS subscales showed significant departures from normality. Associations of self-stigma/stigma resistance with sociodemographics, symptoms, premorbid adjustment, and resilience were analyzed by Spearman rank correlations since a considerable proportion of the variables involved was non-normally distributed.

The combined effects of resilience, premorbid adjustment and symptoms on self-stigma/stigma resistance (ISMI) were investigated by multiple linear regression analysis. Prior to the analysis, non-normally distributed subscales of the ISMI were subjected to a normalizing transformation, e.g., square root. Independent variables considered in the regression analyses were the five subscales of the PANSS (Wallwork factors), the RS-25 total score and the PAS scores for social functioning and academic functioning. The latter two scores were formed as the average of the PAS subscales for childhood, early adolescence and late adolescence functioning in order to reduce the number of independent variables in the regression analysis. Significant predictors were identified by means of the backward variable selection method retaining all significant ($p < 0.05$) and nearly significant variables ($p < 0.10$) in the model. For completeness, additional regression analyses were performed where important patient characteristics (age, sex, education, and duration of illness) were added to the above mentioned list of independent variables.

2.6. Power analysis

The following power analysis is based on standard assumptions regarding type-one error and power (two-sided $\alpha = 0.05$, 1-$\beta = 0.8$). The sample size of $N = 54$ is sufficiently large to detect in a Pearson or Spearman correlation analysis correlation coefficients, r, with $|r| \geq 0.37$. This is a medium to large correlation according to Cohen's classification, where $r = 0.3$ is considered a medium and $r = 0.5$ a large correlation (Cohen, 1992). In a multiple regression analysis the sample size of $N = 54$ allows detection of an additional predictor (with one degree of freedom) as statistically significant if the corresponding increase in R^2 exceeds a size of $\Delta R^2 = 0.132$ or, equivalently, $f^2 = 0.152$. This is a medium effect size according to Cohen.

3. Results

3.1. Sample characteristics

Demographic and clinical characteristics of the study sample are summarized in Table 1. Participants had a mean age of approximately 44 years and a mean duration of illness of 14.8 years. Sex distribution was balanced, symptomatology (PANSS total score) was mild. In terms of the Wallwork five factor model, negative symptoms showed the highest mean score followed by depression and disorganization, while the scores regarding positive symptoms and excitement were generally low. Most participants were treated with new-generation antipsychotics.

The sample presented with a moderate RS-25 mean score (132.1 ± 21.6) and a relatively high Stigma Resistance mean score (2.94 ± 0.52), whereas the self-stigma mean score (1.96 ± 0.60) was relatively low. 81.5% of participants had a mean score higher than 2.5 on the 5-item ISMI subscale Stigma Resistance (=high stigma resistance), and 16.7% had a mean score higher than 2.5 on the other ISMI subscales (= high self-stigma).

Premorbid academic functioning, as measured by the PAS, deteriorated significantly from childhood (1.32 ± 1.01) to early adolescence (1.73 ± 1.01, $p = 0.018$) and again from early to late adolescence (2.25 ± 1.32, $p = 0.025$). There was no significant change of premorbid social functioning from childhood (1.29 ± 1.34) to early (1.27 ± 1.22) and late adolescence (1.19 ± 1.32).

Table 1
Demographic and clinical characteristics of 54 patients.

Age, mean ± SD, years	43.9 ± 10.5
Sex, %, Female/Male	50/50
Education, mean ± SD, years	12.3 ± 3.0
Duration of illness, mean ± SD, years	14.8 ± 10.4
PANSS score, mean ± SD	
Total score	56.2 ± 17.9
Positive symptoms (7 items)	12.4 ± 5.0
Negative symptoms (7 items)	15.7 ± 7.0
General symptoms (16 items)	28.1 ± 8.8
PANSS Wallwork factors[a]	
Positive factor (4 items)	1.89 ± 1.06
Negative factor (6 items)	2.26 ± 1.06
Disorganized/concrete factor (3 items)	2.06 ± 0.98
Excited factor (4 items)	1.18 ± 0.31
Depressed factor (3 items)	2.10 ± 1.00
Antipsychotic treatment, N (%)	
FGA (monotherapy)	4 (7.4)
NGA (monotherapy)	45 (83.3)
NGA + NGA (combined treatment)	5 (9.3)
Concomitant medication, *N* (%)	
Antidepressants	6 (11.1)
Mood stabilizers	14 (25.9)
Benzodiazepines	10 (18.5)
Housing, *N* (%)	
With original family	3 (5.6)
With own family	11 (20.4)
Alone	34 (63.0)
In a small group home	2 (3.7)
Other	4 (7.4)
Partnership status, *N* (%)	
Single	34 (63.0)
Married/stable partnership	10 (18.5)
Widowed	1 (1.9)
Divorced	7 (13.0)
Unknown	2 (3.7)
Employment (yes/no), *N* (%)	12 (22.2)/44 (77.8)

Abbreviations: PANSS, positive and negative syndrome scale; FGA, first-generation antipsychotic; NGA, new-generation antipsychotic.

[a] PANSS components were defined according to the Wallwork 5-factor model (Wallwork et al., 2012) and scored on a 1 (=no symptom) to 7 (=extremely severe symptom) scale.

3.2. Association of self-stigma/stigma resistance with sociodemographics, resilience, premorbid adjustment, and psychopathology

There was no significant association between sociodemographic variables (age, sex, education, age of onset and duration of illness) and self-stigma/stigma resistance, while resilience (RS-25 total score) was negatively correlated with self-stigma ($r = -0.430$, $p = 0.001$) and positively correlated with stigma resistance ($r = 0.513$, $p < 0.001$).

We did not find any significant correlation between self-stigma/stigma resistance and premorbid adjustment during childhood and early adolescence. On the other hand, there was a negative correlation between self-stigma and both academic ($r = -0.319$, $p = 0.024$) and social functioning ($r = -0.372$, $p = 0.007$) during late adolescence (i.e., lower probability of self-stigma with better academic and social functioning). There was no association between premorbid adjustment and stigma resistance.

Correlations of psychopathology and self-stigma/stigma resistance are summarized in Table 2. Generally, there were distinct associations between residual symptoms of the illness and self-stigma, while no association was found between stigma resistance and psychopathology, except for depressed symptoms (negative correlation).

3.3. Prediction of self-stigma/stigma resistance by resilience, premorbid adjustment, and psychopathology: results of regression analysis

The combined effect of resilience, premorbid adjustment, and symptoms on self-stigma/stigma resistance was investigated by

Table 2
Spearman rank correlations of self-stigma/stigma resistance and psychopathology.

PANSS dimension	Self-stigma	Stigma resistance
Total score	0.470**	−0.166
Positive symptoms	0.391**	−0.185
Negative symptoms	0.427**	−0.068
General symptoms	0.375**	−0.167
PANSS Wallwork factors[a]		
Positive	0.357**	−0.217
Negative	0.343*	−0.081
Disorganized/concrete	0.407**	−0.045
Excited	0.111	−0.137
Depressed	0.431**	−0.275*

Abbreviations: PANSS, positive and negative syndrome scale; ISMI, internalized stigma of mental illness scale.
[a] According to Wallwork et al. (2012).
* $p < 0.05$.
** $p \leq 0.008$.

multiple regression analysis (see Table 3). Higher levels of self-stigma were associated with higher PANSS depression scores ($p = 0.004$) and, at a trend level, poorer premorbid social functioning ($p = 0.062$). Higher levels of stigma resistance were significantly related to higher resilience scores ($p = 0.001$), whereas neither premorbid adjustment nor symptomatology significantly contributed to stigma resistance once the effect of resilience had been taken into account. No significant effect of age, sex, education, age of onset or duration of illness was found in any of the regression analyses.

4. Discussion

Regarded as a barrier to recovery from schizophrenia (e.g., Lysaker et al., 2012), several groups have investigated factors associated with self-stigma/stigma resistance, however, to our knowledge, this is the first study exploring the relevance of resilience and premorbid adjustment in this regard. As PANSS scores and sociodemographic data show, we recruited a group of chronically and mildly ill attendees of a specialized outpatient clinic, thereby targeting an important group of patients when evaluating the long-term management of individuals with schizophrenia. However, this approach neglects a considerable number of persons who chose not to take advantage of specialized services regularly. Selecting a sample in this way clearly limits the generalizability of the collected data.

In the current study, more than 80% of participants indicated high stigma resistance, while less than 20% showed high self-stigma. In a previous Pan-European study, by contrast, high stigma resistance and high self-stigma were detected in about 50% and 40% of participants, respectively (Brohan et al., 2010). The variability in levels of self-stigma/stigma resistance between different studies is very likely determined by selection processes in the populations assessed. In the Brohan et al. (2010) study, for example, significant between-country variations were recorded. A large number of participants completed a postal survey sent through member organizations of a patient lead organization and diagnoses were self-reported. Symptom severity was not assessed and information on patients' circumstances at the time of study inclusion is limited. The present study, in turn, investigated a mildly ill (Leucht et al., 2005), small sample living in a stable social environment. Diagnoses were confirmed using a structured interview and symptom severity was assessed by means of the PANSS. Furthermore, as mentioned above, participants regularly attended a specialized outpatient clinic.

Research has consistently reported on external attributions in individuals with schizophrenia (e.g., Mondragón-Maya et al., 2017), i.e., they tend to perceive life as being a consequence of fate or powerful others and not of their own behavior. In line with this assumption, a recent study showed deficits in the self-concept of own competences in persons affected by this disorder, i.e. the extent they perceive themselves as capable of acting in new, difficult or ambiguous situations (Surmann et al., 2017). Such deficits have previously been related to more negative and less positive coping strategies (Schmidt et al., 2014), which together can lead to weaker resilience (Nuechterlein and Dawson, 1984). Notably, in the Surmann et al. study, a weaker self-concept of own competences was a strong predictor of self-stigmatization. Similarly, in our study resilience was negatively correlated with self-stigma and strongly predicted stigma resistance. In line with Surman et al. (2017) we therefore hypothesize that strategies focusing on individual treatment goals (e.g., resource oriented psychotherapy) could increase a person's self-concept of own competences and subsequently strengthen resilience, which, in turn, could decrease self-stigmatization and increase stigma resistance. This possible effect should be investigated in future studies.

Subjects included in this study presented with deteriorating premorbid functioning, which is a common feature of schizophrenia. Remarkably, this pattern of premorbid functioning has previously been associated with conversion to psychosis in individuals at clinical high risk (CHR) of psychosis (e.g., Tarbox et al., 2013; Lyngberg et al., 2015) and with poor clinical outcome and psychosocial functioning among both those at CHR and with full-blown psychosis (e.g., Addington and Addington, 2005; Lyngberg et al., 2015). In our sample, poor premorbid social functioning was associated with self-stigma (trend-level significance). A recent meta-analysis did not find a significant effect of self-stigma interventions in individuals with schizophrenia (Wood et al., 2016), however, it remains to be seen, whether the implementation of such interventions in CHR individuals may protect them from the development of self-stigma and whether the pattern of premorbid functioning may be relevant in this regard.

Consistent with previous findings (e.g., Sibitz et al., 2011; Chan et al., 2017), we found a positive association between residual

Table 3
Results of multiple linear regression analyses.

Dependent variable	Model information Independent variables[a]	Beta[b]	*F*	d.f. (df1,df2)	*p*-value	R^2 adjusted
Self-stigma[c]	Final model		7.71	2,49	0.001	0.208
	PANSS depressed	0.382	9.06	1,49	0.004	
	PAS social functioning	0.243	3.66	1,49	0.062	
Stigma resistance	Final model		17.23	1,50	<0.001	0.241
	RS-25 total score	0.506	17.23	1,50	<0.001	

Abbreviations: ISMI, internalized stigma of mental illness scale; PANSS, positive and negative syndrome scale; RS-25, resilience scale; PAS, premorbid adjustment scale.
[a] Only those independent variables are shown which were retained in the final model, i.e., statistically significant ($p < 0.05$) or nearly significant ($p < 0.10$) predictors. The following independent variables were tested: age, sex, duration of illness, all PANSS Wallwork factors (positive, negative, disorganized, excited, and depressed), PAS academic functioning, PAS social functioning, and RS-25 total score.
[b] Standardized beta.
[c] Self-stigma was square-root transformed to obtain an approximately normal distribution.

symptoms of the illness and self-stigma with depression being of particular relevance in this context. It should be noted, however, that the PANSS is not the ideal rating scale to investigate depression in schizophrenia. Future studies should use a specific instrument for the assessment of depressive symptoms in this patient group and they may also consider exploring the stigma coping mechanisms in depressed individuals with schizophrenia to develop specific interventions for the building of stigma resistance.

In summary, our data provide evidence that future self-stigma reduction interventions may consider to focus on the improvement of resilience in order to promote stigma resistance in individuals suffering from schizophrenia. In addition, the improvement of depressive symptoms as well as interventions focusing on the strengthening of social adjustment during the prodromal phase may not only be effective in promoting recovery (Calvo et al., 2018) but also in preventing self-stigma. Despite the implications of these findings, there are several limitations that have to be mentioned. First, we employed a cross-sectional design and included a relatively small sample of chronically ill, stable subjects who were compliant with medication and psychological treatment. Selecting a sample in this way limits the generalizability of the obtained results, as there may be a variety of other relevant factors in this context and clearly, longitudinal designs allow a more rigorous investigation of potentially causal relationships between the assessed variables and their influence on self-stigma/stigma resistance. Moreover, the sample size of $N = 54$ is not large enough to allow the detection of fairly small effects. Secondly, the RS-25, which is the only resilience scale validated in German language, only investigates personal traits, while resilience is also seen as a dynamic concept. Thirdly, study participants may not have remembered correctly premorbid functioning and we did not have any collateral information from family members in this regard. However, persons with schizophrenia have been shown to be as reliable as healthy subjects when reporting on premorbid functioning (Brill et al., 2007). Fourthly, next to premorbid functioning both self-stigma/stigma resistance and resilience were self-reported, which can result in social desirability bias. Fifthly, one has to consider that the constructs of resilience and stigma resistance as well as their measurement clearly overlap. For instance, a few items of the scales used in this study have a similar construct, e.g., ``*In general, I am able to live my life the way I want to*" or ``*I can have a good, fulfilling life, despite my mental illness"* from the ISMI and ``*I can get through difficult times because I've experienced difficulty before*" or ``*I usually manage one way or another*" from the RS-25. Lastly, we did not have information on neuro- and sociocognitive functioning, stress, and social support, all of which likely have an influence on the investigated issues.

Notwithstanding these limitations, this study substantially extends the insight into the underlying mechanisms of the development of self-stigma among individuals with schizophrenia. It has to be seen, whether newly developed interventions to increase resilience such as the Individual Resiliency Training from the NAVIGATE treatment model for persons with first episode psychosis which includes a focus on resilience and an approach to address self-stigma (Meyer-Kalos et al., 2015) or interventions focusing on the strengthening of social adjustment during the prodromal phase may prevent self-stigma and may thereby improve the outcome of individuals suffering from schizophrenia. Another important next step could be to repeat these analyses with CHR and first episode populations to see if the findings can be replicated and can support the need to address self-stigma early in the illness process.

Conflict of interest

The authors declare no conflict of interest related to the subject of this report.

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