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The Independent Relationships of Metacognition, Mindfulness, and Cognitive Insight to Self-Compassion in Schizophrenia

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Abstract

The debilitating nature of psychosis may be exacerbated by societal stigma and feelings of social isolation over and above positive (*e.g.*, hallucinations) and negative (*e.g.*, flat affect) symptoms. Thus, recovery may be facilitated by increasing self-compassion, the ability to respond with a nonjudgmental attitude of kindness toward oneself as a result of connecting with one's own inadequacies and suffering. We conducted a stepwise regression in individuals with schizophrenia-spectrum disorders ($n = 92$) to determine the unique contributions of cognitive variables in predicting self-compassion, such as metacognition (the ability to form complex and integrated ideas about oneself and others), mindfulness, and cognitive insight. Results indicated that increased metacognitive awareness of others and mindfulness uniquely predicted greater self-compassion (*i.e.*, self-kindness), whereas increased cognitive insight predicted greater lack of self-compassion (*i.e.*, self-judgment). These findings suggest the potential for mindfulness and metacognitive interventions to increase positive self-compassion and promote recovery in psychosis.

Keywords

Schizophrenia; self-compassion; metacognition; mindfulness; cognitive insight

Compassion refers to a complex process by which a person is able to recognize suffering and its universality (Strauss et al., 2016), mindfully tolerate that suffering, and be motivated to respond to that suffering with kindness and encouragement (Neff, 2003a). Thus, an individual with high self-compassion has the ability to connect with their own inadequacies and suffering as a part of the larger human experience (Neff, 2003a). Self-compassion is strongly associated with psychological well-being (Hall et al., 2013; Krieger et al., 2013; Neff and Dahm, 2015; Phillips, 2018). In individuals with schizophrenia, lower levels of

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self-compassion have been linked to lesser levels of well-being (Ascone et al., 2017; Collett et al., 2016; Gumley et al., 2010; Waite et al., 2015) and higher symptomatology (Braehler et al., 2012; Dudley et al., 2017; Eicher et al., 2013). Self-compassion may be particularly important to address in treatment of psychosis due to a critical view of oneself that may develop from societal stigma and social isolation (Gumley et al., 2010). Preliminary randomized-controlled interventions directed at increasing self-compassion in individuals experiencing psychosis have shown promising results. Specifically, such interventions have increased self-reassurance and happiness (Ascone et al., 2017) and reduced depression and perceived social marginalization (Braehler et al., 2012).

While the literature supporting the value of self-compassion in schizophrenia continues to expand, less is known about its antecedents. Namely, what predisposes or influences persons with schizophrenia to be more or less self-compassionate? It is possible that if researchers can achieve a better understanding of the phenomena that support self-compassion, clinicians can tailor treatments to incorporate those factors and consequently promote illness recovery.

One set of potential antecedents of self-compassion in schizophrenia involves how persons are able to think about themselves in general. These antecedents include metacognitive capacity, mindfulness, and cognitive insight. Metacognition refers to a range of mental processes that a person uses to form an integrated understanding of themselves and other people and to effectively negotiate with challenges in the world (Lysaker et al., 2019b; Lysaker and Dimaggio, 2014; Lysaker and Klion, 2017). Crucially, metacognition in this context is developed through an intersubjective process such that a complex understanding of the self is built in part through understanding others (Hasson-Ohayon et al., 2017). Mindfulness refers to the process of deliberately bringing one's attention to the present moment with openness and without judgment (Baer et al., 2006; Bishop et al., 2004). Cognitive insight has some conceptual overlap with mindfulness and metacognition (Van Camp et al., 2017), but it is a distinct construct in its scope and method of assessment. Cognitive insight specifically involves the ability to take a critical distance from one's own thoughts and accept them as potentially fallible. In contrast, metacognition and mindfulness do not necessarily involve determining whether a specific thought is accurate or not. Overall, deficits in metacognition, mindfulness, and cognitive insight, as well as each of their components, are well-established in schizophrenia (Cooke et al., 2010; Lysaker et al., 2018b; Tabak et al., 2015; Van Camp et al., 2017; Vohs et al., 2016). Growing theoretical and empirical evidence suggests that these variables may be related to self-compassion.

From a theoretical perspective, engaging in self-compassion requires a metacognitive process (Neff, 2003b), mindful awareness (Neff and Dahm, 2015), as well as cognitive insight (Neff, 2003b). To engage in self-compassion, an individual must be aware of and reflect upon his or her own emotional experience (Neff and Dahm, 2015). Furthermore, this self-reflection would necessitate accurate self-appraisal (Leary et al., 2007). To have compassion for others, an individual must be able to not only recognize that others are capable of suffering but also when they are experiencing it (Strauss et al., 2016). In the integrated model of metacognition (Lysaker et al., 2018a), this corresponds to levels of Awareness of the Mind of the Other and Decentration, in which an individual can recognize

that other people have experiences and motivations that do not directly relate to the self. Mastery, a component of the integrated model that describes the mental processes involved in responding to psychological problems, may help articulate a functional difference between compassion and empathy. At low levels of Mastery, a person with a high degree of empathy might become overwhelmed by suffering or simply avoid it. In contrast, a compassionate response to suffering involves an ability to tolerate the discomfort and having it motivate action to relieve that suffering (Strauss et al., 2016). Mindfulness may be regarded as a "core component" (Neff and Dahm, 2015) of self-compassion, and it has clear conceptual overlap. However, the mindfulness that is part of self-compassion is only one aspect of mindfulness, which is a broad construct. Mindfulness refers to the relationship a person has with thoughts or perceptions, whereas compassion is related to the person (Neff and Dahm, 2015). Mindfulness does not require a response other than acceptance, whereas compassion elicits a desire or action. Mindfulness helps guide that motivation. Theoretically, cognitive insight should be a precursor to self-compassion because cognitive insight involves the ability to reflect upon one's own thoughts as potentially fallible (Van Camp et al., 2017). Self-compassion cannot be present without the ability or willingness to see the self as having flaws (Neff, 2011).

Emerging empirical evidence supports the relationship of these cognitive processes with self-compassion. Allen and colleagues (Allen et al., 2017) found that higher levels of compassion significantly predicted better scores on a theory of mind task in a healthy sample. Emotional intelligence, which involves the ability to identify and regulate one's own emotions and the emotions of others, has been found to strongly correlate to higher levels of self-compassion in samples of adolescents (Castilho et al., 2017) and nurses (Heffernan et al., 2010). Two studies by Gilbert and colleagues (Gilbert et al., 2011, 2013) found that alexithymia (difficulty identifying and distinguishing one's own emotions) was positively correlated with "fears of compassion" or hesitancy to see oneself as worthy of the compassion of others due to excessive self-criticism in a student and clinical depression sample, respectively. Another study (Duarte and Pinto-Gouveia, 2017) found that higher ratings of alexithymia were correlated with lower levels of self-compassion and decentering. Several studies have found that the practice of mindfulness increases self-compassion (Campos et al., 2016; L'Estrange et al., 2016; Neff and Pommier, 2013; Tirch, 2010) or compassion in general (Chan et al., 2018). Independent studies have also found self-compassion as a mediator of mindfulness and well-being (Evans et al., 2018; Hollis-Walker and Colosimo, 2011). Overall, these findings demonstrate established relationships between self-compassion and constructs of mindfulness, cognitive insight, and metacognition. However, these relationships warrant further investigation in individuals with schizophrenia.

Of note, there is an ongoing debate over the factor structure of the assessment commonly used to measure self-compassion, the Self-Compassion Scale (SCS; Neff, 2003b). Some researchers (Cleare et al., 2018; Neff, 2015; Neff et al., 2017, 2019) argue that using the total score of the SCS is valid and psychometrically sound. Others (Brenner et al., 2017; Costa et al., 2016, López et al., 2015, Muris and Petrocchi, 2016) contend that the SCS consists of two factors: the positively worded items of self-kindness, common humanity, and mindfulness; and the negatively worded items of self-judgment, isolation, and overidentification with thoughts. A single, higher-order factor of self-compassion seems to

fit well in nonclinical samples, but the model fit seems to consistently weaken in the presence of psychopathology. The present study therefore considered the positive and negative factors of the SCS separately, particularly due to the importance of capturing levels of self-criticism that may be prevalent in psychosis.

To further examine the relationship between the positive and negative factors of self-compassion with these cognitive processes, we gathered concurrent assessments of self-compassion, metacognition, mindfulness, and cognitive insight in individuals with schizophrenia-spectrum disorders. To rule out the potential effects of severity of psychopathology and to limit the role of biased responding, we included additional assessments of symptoms and socially desirable responding, respectively. We predicted that overall greater levels of metacognitive capacity, mindfulness, and cognitive insight would be predictive of higher levels of positive self-compassion. We expected that the relationships of metacognition, mindfulness, and cognitive insight with self-compassion would be independent of one another and would persist regardless of symptom severity. We also expected that higher symptom ratings would predict higher endorsement of the negative factor of self-compassion. Of note, the scales used for each construct contain multiple subscales; in the cases in which subscales were used, we considered the correlation of each to be more exploratory in nature.

METHODS

Sample

Participants were 92 individuals (79 male; 13 female) recruited from a Midwestern Veterans Affairs medical center or community mental health center to take part in a study on metacognition as detailed in a previous study (Eicher et al., 2013). The participants' mean age was 49.42 years (SD = 8.6) and years of education was 12.76 (SD = 1.81). All participants had an SCID-confirmed *DSM-IV* diagnosis (Spitzer et al., 1994) of schizophrenia ($n = 53$) or schizoaffective disorder ($n = 39$). Of the 92 participants, 49 were African American, 42 were white, and 1 was identified as "other."

Procedure

All procedures were approved by the appropriate institutional review board, and participants underwent an informed consent process before beginning the study. All participants had a schizophrenia-spectrum diagnosis (schizophrenia or schizoaffective disorder) confirmed by a clinical psychologist using the SCID-IV (Spitzer et al., 1994). Participants were administered a battery of self-report questionnaires and assessments of neurocognition and metacognition.

Measures

The SCS (Neff, 2003b) is a 26-item self-report questionnaire in which responders rate statements on a Likert-type scale of 1 to 5. The scale corresponds to Neff's model of self-compassion as a construct composed of three interrelated factors: self-kindness, feelings of common humanity, and mindfulness. The scale also has three negatively worded factors that correspond to the positive ones: self-judgment, isolation, and overidentification with

thoughts. Mean scores are calculated for each of the subscales. The negatively worded items are typically reverse-scored, and then all six subscales are summed to form a self-compassion total score. However, in the present study, the positively and negatively worded items were examined separately as positive self-compassion (SCS-pos) and negative or lack of self-compassion (SCS-neg). A coefficient alpha of 0.86 was found for the current sample for positive self-compassion subscale, whereas a coefficient alpha of 0.89 was found for the negative self-compassion subscale.

The Metacognition Assessment Scale–Abbreviated (MAS-A; Lysaker et al., 2005) is a rating scale used to assess a patient's metacognitive capacity from a narrative elicited by the Indiana Psychiatric Illness Interview (Lysaker et al., 2002). The MAS-A is based on the integrative model of metacognition that frames metacognitive processes as essential for persons to have available to themselves a sense of the self and others needed to respond to psychosocial challenges (Lysaker et al., 2019b). It is composed of four rating scales. Self-reflectivity refers to the complexity with which an individual represents their own mental state. Awareness of the mind of other (referred to as "Other") measures the comprehension of other peoples' mental states. Decentration measures the ability to recognize that other people and the world exist independently of the self. Mastery refers to a person's ability to respond flexibly to psychological or social challenges. For this study, the Decentration scale was omitted due to range restriction. Evidences of acceptable reliability and validity have been reported across diverse samples (Lysaker et al., 2018a).

The Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a 39-item self-report measure assessing dispositional mindfulness. Items are rated on a five-point Likert-type scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The questionnaire measures five dimensions of mindfulness: 1) observing, 2) describing, 3) acting with awareness, 4) nonjudging of inner experience, and 5) nonreactivity to inner experience. The present study used a total score formed by summing the five subscales. A coefficient alpha of 0.84 was found for the current sample.

The Beck Cognitive Insight Scale (BCIS; Beck et al., 2004) is a 15-item self-report measure intended to assess both an individual's ability to self-reflect and overconfidence in his or her beliefs. Each item is rated on a Likert-type scale from 0 (do not agree at all) to 3 (agree completely). For the present study, the nine items of the self-reflectivity subscale were used (BCIS-sr). Coefficient alpha of 0.68 was originally reported for this subscale (Beck et al., 2004), whereas a coefficient alpha of 0.69 was found for the current sample.

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987) is a 30-item semistructured interview that was performed by trained raters. Each item is rated on a seven-point scale, with higher numbers reflecting greater psychopathology. This study summed the items used in the five-factor structure composed of positive symptoms, negative symptoms, cognitive disorganization, excitement/hostility, and emotional discomfort/depression to form a general measure of psychosis severity (Bell et al., 1994). Acceptable reliability and validity have been reported elsewhere (Bell et al., 1994).

The Marlowe-Crowne Social Desirability Scale (MCSD; Crowne and Marlowe, 1960) is a 33-item self-report questionnaire that measures an individual's tendency to respond to questions about the self in a manner that is seen as socially desirable but is unlikely to be accurate. For example, "I never hesitate to go out of my way to help someone in trouble." All responses are answered as true or false. A coefficient alpha of 0.88 was originally reported (Crowne and Marlowe, 1960).

Data Analyses

After determining that the data did not contain outliers and were within acceptable limits of normality, we conducted a series of zero-order bivariate correlations to clarify associations between the study variables. Nonparametric Spearman's rho coefficients were calculated for correlations with the MAS-A scales due to the ordinal nature of the measure, and Pearson correlation coefficients were calculated for the rest of the variables. Next, we conducted stepwise regressions for the Positive and Negative Self-Compassion Scales separately. For both regression models, age, sex, and the MCSD scale were entered in the first step as covariates. In the second step, the MAS-A Self-Reflectivity, Other, and Mastery subscale scores, the FFMQ total score, the PANSS total score, and the BCIS-sr were entered. The variable with the largest significant contribution to variance is selected in the second step. Subsequent steps are taken when adding a variable predicts significantly greater variance in the model. Correlation and stepwise regression predictors were considered significant at a threshold of $p < 0.05$.

RESULTS

Descriptive and Correlational Analyses

Descriptive statistics and correlations between the variables are detailed in Table 1. To summarize, the Other and Mastery scales of the MAS-A were positively correlated with SCS-pos but not with SCS-neg. The SCS-pos factor had moderate positive correlations with the FFMQ total score and with the MCSD scale. The SCS-neg factor had moderate negative correlations with the FFMQ total score and MCSD scale and a moderate positive correlation with the BCIS-sr. The PANSS total score negatively correlated with the SCS-pos factor and positively correlated with the SCS-neg factor.

Regression Analyses

The SCS-pos and SCS-neg scales were examined separately via stepwise multiple regressions. In each regression, variables found significantly correlated with self-compassion were allowed to enter. For both regression models, age, sex, and the MCSD scale were entered first into the model as control variables.

The MCSD was a significant predictor of the SCS-pos factor, accounting for 15.8% of the variance, and with the addition of sex and age ($R^2 = 0.16$, $F(3,88) = 5.53$, $p < 0.005$; see Table 2). The second step of the regression entered the FFMQ total into the model ($R^2 = 0.11$; $F(4,87) = 7.8$; $p < 0.001$; 95% confidence interval [CI], 0.1–0.32; $t = 3.53$). The third step of the model entered the Other scale of the MAS-A ($R^2 = 0.06$; $F(5,86) = 8.3$; $p < 0.001$; 95% CI, 0.84–4.95; $t = 2.8$). The SCS-pos scale was independently predicted by the

FFMQ total and Other scale of the MAS-A, contributing an additional 11% and 6% of the variance, respectively.

In the first step of the regression predicting the SCS-neg scale, sex and the MCSD were significantly associated with SCS-neg ($R^2 = 0.32$; $F(3,88) = 13.98$; $p < 0.001$). In the second step of the regression, only the BCIS-sr was independently predictive of SCS-neg ($R^2 = 0.06$; $F(4, 87) = 13.04$; $p < 0.001$; 95% CI, 0.18–1.24; $t = 2.69$), accounting for 6% of additional variance (see Table 2). None of the remaining variables contributed sufficient variance to trigger an additional step in the regression.

DISCUSSION

This study sought to explore whether self-compassion and lack of self-compassion in schizophrenia were uniquely predicted by metacognition, cognitive insight, and dispositional mindfulness. As predicted, we found that higher levels of mindfulness and metacognition were independently related to having higher levels of true self-compassion. Contrary to our expectations, cognitive insight did not significantly predict SCS-pos. Furthermore, although lack of self-compassion was significantly related to cognitive insight, it was not uniquely linked with metacognition, mindfulness, or psychotic symptoms assessed by the PANSS.

Although the cross-sectional nature of this study precludes drawing causal conclusions, results may offer important hypotheses for future research. It is possible that a specific metacognitive capacity must be reached before a person can develop genuine self-compassion, regardless of clinical or cognitive insight. For example, it may be that, with heightened levels of metacognition, persons can form and hold on to a positive sense of themselves without full awareness of their limitations and challenges. It is also possible that the ability to decenter and regard the self without judgment as measured by the FFMQ is a prerequisite for engaging in self-compassion. Previous work has metacognition with awareness of oneself as facing difficult and potentially painful psychosocial challenges (Lysaker et al., 2019a). This work extends these findings and suggests that metacognitive abilities are also related to awareness of having aspects of oneself that should be positively regarded, potentially independently of any existing personal challenges. Importantly, rival hypotheses cannot be ruled out including that self-compassion itself is a cause of heightened metacognition.

There were also unexpected findings. The MAS-A subscale of Awareness of the Other people had the strongest relationship with positive self-compassion, whereas other aspects of metacognition did not predict any more unique variance beyond that subscale. It might be expected that the MAS-A Self-Reflectivity scale would be a stronger predictor due to the focus on thoughts about the self. However, this finding may be consistent with research suggesting that individuals with schizophrenia have more distress associated with compassion for the self than with cultivating compassion toward others (Martins et al., 2017).

It was also unexpected that cognitive insight was linked with the SCS-neg subscale but not the SCS-pos subscale. This may suggest that cognitive insight may affect or be affected by

negative appraisals of oneself. This is consistent with the original study of the BCIS (Beck et al., 2004), which found higher BCIS-sr ratings among inpatients with major depression in comparison to inpatients with a schizophrenia diagnosis. It may also be that the BCIS is in part measuring cognitive styles related to depression, such as rumination (Carse and Langdon, 2013). In addition, positive self-compassion and mindfulness both relate to the ability to assess one's thoughts objectively, presumably also being measured by the BCIS. However, neither the SCS-pos nor the FFMQ were significantly correlated with the BCIS-sr, which may suggest that it reflects a measure of valence in relation to a person's thoughts.

Interestingly, sex was a significant predictor of negative self-compassion, with females scoring significantly higher on that factor. This finding is consistent with a meta-analysis that females score lower than males on self-compassion using all six subscales of the SCS (Yarnell et al., 2015). Women seem to engage in more frequent rumination and self-criticism than males (Neff, 2011), and the significant difference between men and women found in the SCS-neg but not in the SCS-pos suggests that the positively and negatively worded items are not measuring the same construct.

Results may also shed light on the construct of self-compassion itself. The observed links between metacognition and positive aspects of self-compassion are consistent with work that theorizes that reflectivity may be a necessary component for some persons to form an image of themselves as worthy of compassion (Gilbert, 2014). Results also strengthen the argument that the positively and negatively worded items of the SCS should be considered separately (Pfattheicher et al., 2017), particularly in clinical populations (Muris et al., 2018). In addition, there may be method effects from using positively and negatively worded items (Suárez-Álvarez et al., 2018) that are exacerbated when used with individuals with severe psychopathology.

The present study has limitations. The majority of individuals in the sample were male, had met criteria for a schizophrenia-spectrum diagnosis for many years, and were currently enrolled in treatment. It is possible that these relationships might differ in predominantly female samples, first-episode psychosis samples, or among persons not engaged in treatment or who reject treatment. We also only included participants with schizophrenia-spectrum disorders. It is unknown whether relationships in our sample inform processes involved in other populations for whom metacognitive deficits and persecutory ideation are both common, including bipolar disorder (Tas et al., 2014), personality disorders (Carcione et al., 2011; Dimaggio and Lysaker, 2014), posttraumatic stress disorder (Davis et al., 2016; Lysaker et al., 2015), and major depression (Ladegaard et al., 2015). Lastly, we obtained only single measures from participants and used only one measure of each construct. Future work that uses multiple measures is needed in a longitudinal design to understand how these relationships between self-compassion, metacognition, cognitive insight, and mindfulness change over time and impact recovery.

With replications, these findings may have clinical implications. A range of treatments has emerged with a focus on promoting self-compassion in schizophrenia (Martins et al., 2018) and other types of psychopathology (Kirby et al., 2017). Treatments may have greater efficacy if they could address factors such as metacognition and mindfulness, which may

engender positive self-compassion. Existing psychotherapies for individuals with schizophrenia such as Metacognitive Reflection and Insight Therapy (Lysaker and Klion, 2017; Vohs et al., 2018), which enhance metacognition, may also have a positive effect on self-compassion. Future research is needed to determine the nature of the relationship between metacognition and self-compassion in schizophrenia.

CONCLUSIONS

Findings in this study suggest that greater self-compassion is associated with higher metacognition and dispositional mindfulness. Future research and treatment on the cultivation of self-compassion among individuals with schizophrenia may benefit from clarifying the effect of strengthening metacognition and mindfulness.

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TABLE 1.

Zero-Order Correlations and Descriptive Statistics

Variable	SCS-Pos	SCS-Neg	MAS-A SR	MAS-A O	MAS-A M	FFMQ Total	PANSS Total	BCIS-sr	MCSD
SCS-Pos									
SCS-Neg	−0.04								
MAS-A SR	0.12†	0.14†							
MAS-A O	0.26**†	0.08†	0.67***†						
MAS-A M	0.25**†	0.04†	0.65***†	0.53***†					
FFMQ total	0.43**	−0.37**	0.08†	0.04†	0.1†				
PANSS total	−0.23*	0.24*	−0.43***†	−0.38***†	−0.48***†	−0.33**			
BCIS-sr	0.05	0.45**	0.22*†	0.25*†	0.1†	−0.08	0.14		
MCSD	0.38**	−0.47**	−0.17†	−0.15†	−0.07†	0.4**	−0.11	−0.41**	
Descriptive statistics M (SD)	4.2 (1.35)	3.0 (0.92)	3.6 (1.61)	42.0 (10.38)	41.0 (11.26)	122.3 (18.4)	74.5 (13.51)	23.0 (4.0)	18.9 (6.3)

*
$p < 0.05$;

**
$p < 0.005$.

†Indicates a Spearman's rho correlation.

MAS-A SR indicates the Metacognition Assessment Scale–Abbreviated Self-Reflectivity subscale; MAS-AO, Awareness of the Other subscale; MAS-A M, Mastery subscale.

TABLE 2.

Step-Wise Multiple Regressions Predicting SCS-Pos and SCS-Neg

	Variable	B	β	sr^2	R^2
Prediction of SCS-Pos					
Step 1					
	Age	0.14	0.11	0.16	0.16
	Sex	0.97	0.03		
	MCSD	0.46*	0.28		
Step 2					
	FFMQ total	0.19*	0.34	0.11	0.27
Step 3					
	MAS-A O	2.89*	0.26	0.06	0.33
Prediction of SCS-Neg					
Step 1					
	Age	0.19	0.14	0.32	0.32
	Sex	9.76*	0.3		
	MCSD	−0.77*	−0.43		
Step 2					
	BCIS-sr	0.71*	0.25	0.06	0.38

*$p < 0.01$.

MAS-A SR indicates The Metacognition Assessment Scale–Abbreviated Awareness of the Other subscale.