



The relationship between cognitive insight and quality of life in schizophrenia spectrum disorders: Symptom severity as potential moderator



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ABSTRACT

Cognitive insight is implicated in the formation and maintenance of hallucinations and delusions. However, it is not yet known whether cognitive insight relates to broader outcome measures like quality of life. In the current study, we investigated whether the component elements of cognitive insight—self-certainty and self-reflectiveness—were related to quality of life for 43 outpatients with schizophrenia or schizoaffective disorder. Cognitive insight was assessed using the Beck Cognitive Insight Scale (BCIS) while quality of life was assessed with Quality of Life Scale (QLS). We tested whether this relationship was moderated by clinical insight and symptom severity using the Scale to Assess Unawareness of Mental Disorder (SUMD) and the Positive and Negative Syndrome Scale (PANSS). We found that self-reflectiveness had an unmoderated positive relationship with quality of life. Self-certainty was associated with better quality of life for people with more severe symptoms. Theoretical and clinical implications of these findings are discussed and areas of future research are proposed.

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1. Introduction

Individuals with psychotic disorders tend to show a lack of insight that impacts psychosocial functioning, symptom expression, and treatment outcomes (Mohamed et al., 2009; Riggs et al., 2012; Lysaker et al., 2013). In recent years, researchers have contrasted two kinds of insight: clinical insight and cognitive insight (Donohoe et al., 2009; Lysaker et al., 2013). Clinical insight reflects an understanding or acceptance of different aspects of one's diagnosis (Beck and Warman, 2004; Lysaker et al., 2011b). Cognitive insight, on the other hand, reflects an ability to distance oneself from and evaluate one's own beliefs and interpretations. Cognitive insight is typically divided into the dimensions of self-reflectiveness or the ability to consider the possibility that one's current perceptions and beliefs could be wrong, and self-certainty or confidence in the veracity of one's current perceptions and beliefs (Beck and Warman, 2004; Beck et al., 2004). Cognitive insight is lacking when self-reflectiveness is too low or when self-certainty is too high.

Recent studies have revealed a mixed impact of clinical insight on quality of life, forcing researchers to revise earlier conceptions

of insight as being unequivocally beneficial to people with schizophrenia (Lysaker et al., 1998, 2007b; Hasson-Ohayon et al., 2006; Montemagni et al., 2014). Some preliminary evidence in a sub-clinical sample suggests the possibility that cognitive insight may have a similarly equivocal relationship with quality of life (Weintraub and Weisman de Mamani, 2015), however, the relationship between cognitive insight and quality of life for people with psychotic disorders has yet to be determined. Given that cognitive insight may be affected by psychosocial treatments, it is essential to understand how overall well-being is affected by varying levels of self-reflectiveness and self-certainty.

Some lines of evidence suggest that cognitive insight is related to positive outcomes for people with psychotic disorders. For example, greater cognitive insight is predictive of greater reductions in psychosis with cognitive behavioral therapy (Granholm et al., 2005; Perivoliotis et al., 2010; Premkumar et al., 2011), and lack of cognitive insight is consistently associated with the presence of active delusions (Bora et al., 2007; Warman et al., 2007a; Buchy et al., 2009; Engh et al., 2010). However, greater cognitive insight has also been associated with negative outcomes. Among people with psychotic disorders, cognitive insight appears to be associated with increased self-stigma (Mak and Wu, 2006) and increased anxiety (Colis et al., 2006), though Buchy et al. (2009) did not find an association with anxiety among people with first-episode psychosis. Studies have also shown that cognitive insight

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is generally related to increased depression (Granholm et al., 2005; Colis et al., 2006; Warman et al., 2007a; Uchida et al., 2009; Mass et al., 2012; Palmer et al., 2015), but some researchers measured no relationship between cognitive insight and depression (Beck et al., 2004; Pedrelli et al., 2004; Zimmermann et al., 2005; Engh et al., 2007; Tranulis et al., 2008), and one study reported that greater cognitive insight was associated with decreased depression for people with schizophrenia (Engh et al., 2011). One trial of cognitive behavioral social skills training for schizophrenia found that reductions in self-certainty were correlated with increased depression midway through treatment, but that the association disappeared by the end of treatment (Granholm et al., 2005).

One possible explanation for these equivocal findings is that the impact of cognitive insight upon quality of life depends on the presence of other variables. Two such variables are symptom severity and clinical insight. It is likely that symptom severity moderates the effect of cognitive insight on quality of life because the perspective-taking abilities associated with better cognitive insight would be expected to have very different impacts for persons experiencing different levels of symptom severity. For patients whose symptoms are severe and obvious to others, higher self-certainty may serve as a protective factor against the pervasive social stigma that can interfere with quality of life (Corrigan and Watson, 2002; Corrigan, 2004; Mak and Wu, 2006; Buck et al., 2013). It may therefore be that cognitive insight and symptom severity interact to affect quality of life.

Another potential moderator of the effect of cognitive insight on quality of life is clinical insight. Authors have suggested that clinical insight benefits patients because increased awareness of mental health allows for better adherence to medical recommendations and increased engagement in treatment (Mohamed et al., 2009). While engaged in treatment, those patients with higher cognitive insight may be better able to incorporate the feedback of mental health professionals and consider alternative ways of thinking (De Vos et al., 2015). Supporting evidence for this theory is found in trials of cognitive behavior therapy for psychosis, which consistently find that higher cognitive insight is predictive of better response to psychosocial treatments (Granholm et al., 2005; Perivoliotis et al., 2010; Premkumar et al., 2011). It is therefore possible that clinical insight moderates the effect of cognitive insight on quality of life.

To examine these issues, we gathered concurrent assessments of cognitive insight, clinical insight, symptom severity, and quality of life among patients with schizophrenia spectrum disorders. We formulated four hypotheses. We hypothesized that greater self-reflectiveness would be directly associated with better overall quality of life, while greater self-certainty would be associated with worse overall quality of life. We also hypothesized an interaction between clinical insight and cognitive insight, such that higher cognitive insight would have a positive relationship with quality of life for those patients with high clinical insight. Finally, we hypothesized that symptom severity would moderate the effect of self-certainty on quality of life such that for people with very severe symptoms, self-certainty would have a protective effect on quality of life.

2. Methods

2.1. Participants

This study was approved by the Institutional Review Boards of each of the participating institutions. Individuals with schizophrenia spectrum disorders were recruited from a VA medical hospital as part of a larger study (Warman et al., 2007a, 2007b). In order to participate in the study, participants had to be at least 18 years old and have a diagnosis of Schizophrenia or Schizoaffective Disorder as confirmed by the SCID. All participants were outpatients at the time of testing.

Table 1
Participant characteristics.

	N	%
Gender		
Male	39	90.7
Female	4	9.3
Race		
Caucasian	20	46.5
Black or African American	20	46.5
Native American	2	4.7
Hispanic or Latino	1	2.3
Diagnosis		
Schizophrenia	22	51.2
Schizoaffective	21	48.8
Age	Mean (SD)	Min–max
	48.72 (6.81)	33–62

Research assistants with extensive training in the study procedures assessed participants on the clinician-rated measures described below, and all participants were tested individually. Of the 51 patients who participated, 43 had completed quality of life evaluations allowing them to be used in the present study. Participant characteristics for the present study can be found in Table 1.

2.2. Instruments

2.2.1. The Beck Cognitive Insight Scale (BCIS; Beck et al., 2004)

The BCIS is a 15-item Likert-style self-report measure of patients' self-reflectiveness and self-certainty about their interpretations of experiences. The measure is composed of a 9-item Self-Reflectiveness subscale (BCIS-SR) and a 6-item Self-Certainty subscale (BCIS-SC), with higher scores indicating greater levels of the construct. Self-reflectiveness is operationally defined as the ability to consider the possibility that one's beliefs could be false, while self-certainty is overconfidence in the accuracy of one's current beliefs. The scale demonstrates good convergent, discriminant, and construct validity (Beck et al., 2004; Pedrelli et al., 2004; Bora et al., 2007; Perivoliotis et al., 2010), and studies have found adequate to good internal consistency and test–retest reliability (for review, see Riggs et al., 2012).

2.2.2. The Scale to Assess Unawareness of Mental Disorder (SUMD; Amador et al., 1993)

The SUMD is a clinician-rated measure of insight that uses Likert-style items with higher scores indicating lower clinical insight. The scale captures three key elements of clinical insight – Awareness of having a mental disorder, Awareness of the consequences of illness, and Awareness of the need for treatment – with the sum of the composite items creating a total score. The SUMD is widely used in studies of clinical insight and has been found to have good to excellent interrater reliability and intraclass correlations (Amador and Gorman, 1998; Lysaker et al., 2006; Yanos et al., 2008; Montemagni et al., 2014).

2.2.3. The Quality of Life Scale (QLS; Heinrichs et al., 1984)

The QLS is a 21-item clinician-rated measure of quality of life based on a semi-structured interview. Items are scored on a 7-point scale with higher scores indicating better quality of life. The QLS Total score is the sum of items composing the four subscales: (1) Intrapsychic Foundations, (2) Interpersonal Relations, (3) Instrumental Role, and (4) Common Objects and Activities (Heinrichs et al., 1984). Intrapsychic Foundations consists of items representing a sense of purpose, motivation, curiosity, and empathy. The Interpersonal Relations items capture factors such as capacity for intimacy, active versus passive participation in social activities, and withdrawal or avoidance strategies. Instrumental Role refers to the patient's ability to maintain normative roles such as student, employee, parent, etc. Finally, Common Objects and Activities refers to the patient's engagement in a range of activities and possession of common objects (going to movies, owning a watch). The QLS has been shown to have good to excellent interrater reliability (Lysaker et al., 1998). Additionally, factor analysis (Heinrichs et al., 1984) and theoretically consistent relationships with outcome measures like marital status, housing circumstances, and symptom severity (Norman et al., 2000) suggest good validity.

2.2.4. The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987)

The PANSS is a widely used clinician-rated measure of psychotic symptoms. The PANSS is composed of Likert-style items ranging from 1 to 7 representing various aspects of psychopathology commonly associated with schizophrenia spectrum disorders. The scales can be summed for a Total Psychopathology score, which has been shown to map well onto independent measures of overall illness severity as well as being sensitive to changes in illness severity over time (Leucht et al., 2005). For the purposes of this study, the PANSS-Lack of Insight item was removed from the PANSS-Total score in order to isolate the effect of cognitive insight (as measured

by the BCIS) and clinical insight (as measured by the SUMD) on quality of life, thus yielding a PANSS-Total score with a possible range of 23–203.

2.3. Analyses

Analyses were planned in three steps. First, we planned to perform preliminary tests to determine whether quality of life varied by age, gender, or diagnosis, so that these variables could be entered as covariates as needed. We also looked for zero-order correlations between the independent variables that might affect later regression analyses. In the next step, we planned to determine whether symptom severity interacted with self-certainty to affect quality of life by performing a mean-centered regression analysis using the BCIS-SC scale as the independent variable, QLS-Total Score as dependent variable, and PANSS-Total score as a moderating variable (Hayes, 2013). The Johnson-Neyman technique would then allow us to identify values of the moderator at which self-certainty had a significant effect upon overall quality of life (Fraas and Newman, 1997). To determine whether symptom severity moderated the effect of self-reflectiveness on quality of life, we planned to repeat the previous analysis using the BCIS-SR as the independent variable. In the third step, we tested for a moderating effect of clinical insight on the relationship between cognitive insight and quality of life by repeating the analyses from step two using the SUMD as a moderator in place of the PANSS-Total.

3. Results

Mean scores for the key variables are presented in Table 2. Quality of life was not significantly related to age, $r(41)=0.017$, $p=0.915$, or gender, $t(41)=-1.448$, $p=0.155$, or diagnosis $t(41)=-0.601$, $p=0.551$. Therefore, these demographic variables were not entered as covariates for later analyses. Pearson tests revealed that quality of life was significantly related to SUMD total score, $r(41)=-0.345$, $p<0.05$, and PANSS-Total score, $r(41)=-0.421$, $p=0.005$. The SUMD and PANSS-Total were also correlated with one another, $r(41)=0.551$, $p<0.001$. Additionally, there was a trend-level correlation between BCIS-SC and the PANSS-Total, $r(41)=0.284$, $p=0.065$, and between the BCIS-SC and the SUMD-Total, $r(41)=0.269$, $p=0.081$, indicating that self-certainty may be associated with more severe symptoms and lower clinical insight. *T*-tests additionally indicated that scores on the PANSS $t(41)=0.449$, $p=0.656$, the BCIS-SR, $t(41)=-0.702$, $p=0.486$, and the BCIS-SC, $t(41)=0.462$, $p=0.647$, did not significantly differ by diagnosis, but people with schizophrenia showed worse clinical insight than people with schizoaffective disorder, $t(41)=-2.732$, $p<0.01$.

To test the hypothesis that symptom severity moderates the relationship between cognitive insight and quality of life, a regression was carried out using the BCIS-SC as an independent variable, QLS-Total score as the dependent variable, and PANSS-Total score as a moderator variable. The R^2 for the overall model was 0.294 ($p<0.005$). The main effect for PANSS-Total on quality of life was significant ($B=-0.476$; $p<0.002$). The interaction term accounted for an R^2 change of 0.116, which was statistically significant ($B=0.100$, $p<0.05$). The Johnson-Neyman technique revealed that self-certainty had a significant negative effect upon quality of life for people with symptom severity scores in the bottom 4.7th percentile, and a significant positive effect on quality of life for those people with symptom severity scores that were in the top 16.3rd percentile. The regression analysis was repeated using the BCIS-SR as an independent variable. The R^2 for the overall model was 0.292 ($p<0.005$). The regression coefficients for the PANSS-Total ($B=-0.501$; $p=0.001$) and the BCIS-SR ($B=0.849$; $p<0.05$) were both statistically significant. The interaction term accounted for an R^2 change of 0.045, which was not statistically significant ($p=0.124$).

The same method was used to test the hypothesis that clinical insight moderates the relationship between cognitive insight and quality of life. First, a regression was carried out using the BCIS-SC as the independent variable, QLS-Total score as the dependent

Table 2
Descriptive statistics of study variables ($n=43$).

Measures	Mean	SD	Range
BCIS			
Self-reflectiveness	13.30	5.03	0–24
Self-certainty	8.00	3.27	0–14
SUMD Total	7.47	2.97	3–15
PANSS Total (minus insight)	68.95	13.48	43–97
QLS Total	59.79	13.16	27–109

variable, and SUMD-Total score as a moderator variable. The model for BCIS-SC yielded an R^2 of 0.217 ($p<0.05$). The regression coefficient for the SUMD-Total was statistically significant ($B=-1.729$; $p<0.05$) and the interaction term accounted for an R^2 change of 0.097 ($B=0.468$, $p<0.05$), suggesting that clinical insight did moderate the effect of self-certainty on quality of life. The Johnson-Neyman technique revealed no significance regions. The regression was subsequently repeated using the BCIS-SR, however, the fit of the overall model was not statistically significant ($p=0.092$). A visualization of the significant interaction effects for self-certainty, constructed using the fitted model's predicted quality of life given values of the independent variables at -1 standard deviation, the mean, and $+1$ standard deviation, can be found in Fig. 1.

The regression analyses for self-certainty were repeated with covariates in order to explore the possibility that the PANSS and the SUMD contributed uniquely to the significant moderation effects observed for this scale of the BCIS. The observed level of covariance between the PANSS and the SUMD does not imply that these variables would be redundant if included in the same linear regression (Friedman and Wall, 2005), however, it is important to be cautious in interpreting these regression results given the degree of multicollinearity. First, a linear regression was fit using the BCIS-SC as independent variable, the QLS-Total as dependent variable, the PANSS-Total as moderator, and the SUMD-Total as a covariate. The overall model remained significant ($R^2=0.307$, $p<0.007$). In addition to a significant main effect for the PANSS-Total score on quality of life ($B=-0.404$, $p<0.05$), the interaction effect yielded a significant R^2 change of 0.111 ($B=0.098$, $p<0.05$). The Johnson-Neyman technique revealed that increased self-certainty had a significant positive effect upon quality of life for people with symptom severity scores in the top 16th percentile. The regression was then repeated with the PANSS-Total as a covariate, the BCIS-SC as independent variable, the QLS-Total as dependent variable, and the SUMD-Total as moderator. The R^2 for the overall model was 0.270 ($p<0.05$). The interaction effect yielded an R^2 change of 0.074 with trend-level significance ($B=0.414$, $p=0.057$). No regions of significance were identified using the Johnson-Neyman technique. Visual representations of these interaction effects can be found in Fig. 2.

4. Discussion

Cognitive insight is broadly described as an important factor in schizophrenia spectrum disorders, especially given its role in the formation and maintenance of psychosis (Granholm et al., 2005; Bora et al., 2007; Warman et al., 2007a; Buchy et al., 2009; Engh et al., 2010; Perivoliotis et al., 2010). However, it is not known how cognitive insight relates to broader outcomes like quality of life. The present study suggests that, as with clinical insight (Hasson-Ohayon et al., 2006), the relationship between cognitive insight and overall quality of life is complex. We found that self-reflectiveness had an unmoderated positive relationship with quality of life. The effect of self-certainty on quality of life was moderated by

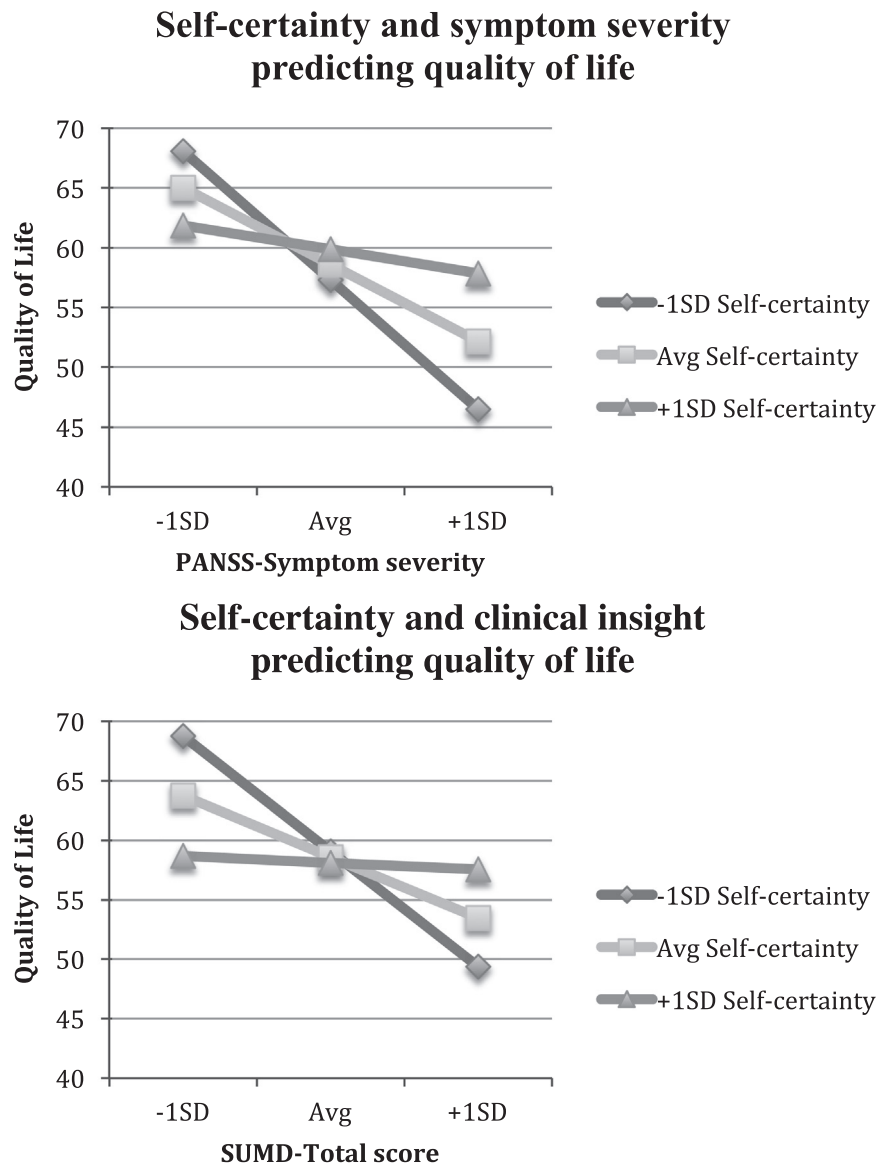


Fig. 1. The effect of BCIS self-certainty on overall quality of life at different levels of symptom severity. Graphs are created using the fitted model's predicted quality of life given values of the independent variables at -1 standard deviation, the mean, and $+1$ standard deviation. The effect of BCIS self-certainty on overall quality of life at different levels of clinical insight.

symptom severity. Greater self-certainty positively impacted quality of life when symptom severity was high, but negatively impacted quality of life when symptom severity was low. Interestingly, after controlling for clinical insight, the ameliorative effect of self-certainty on quality of life for those participants with severe symptoms remained strong, but the deleterious effect of self-certainty on quality of life for participants with less severe symptoms dropped to nonsignificance. Overall, our findings suggest that cognitive insight does relate to quality of life, but that different aspects of cognitive insight may relate to quality of life in different ways. Researchers studying clinical insight have described an “insight paradox,” in which greater levels of insight can result in lower levels of well-being when coupled with stigma (Lysaker et al., 2007b; Weintraub and Weisman de Mamani, 2015). Our findings suggest that the paradox extends to cognitive insight among people with psychotic disorders, as lower self-certainty may be associated with poorer quality of life when symptoms are more severe. Although it is not possible to determine causality, we have some interpretations for further study.

Our findings imply that self-reflectiveness may generally be

associated with better quality of life. Further research is needed to determine the nature of this relationship. It is possible that self-reflectiveness contributes toward improved relationships and functioning in social roles by allowing for more cautious responses to symptoms. A more thoughtful approach to experiences and beliefs may help patients refrain from acting on delusions or responding to hallucinations, which could make it easier to start friendships or hold a job. Self-reflectiveness may also facilitate the process of entertaining and incorporating others' points of view (De Vos et al., 2015). In some ways, self-reflectiveness, which encompasses the ability to take other viewpoints seriously (Beck and Warman, 2004), can be seen as complementary to (not synonymous with) theory of mind, which is the ability to form an accurate interpretation of what those viewpoints are (Premack and Woodruff, 1978). People who possess good theory of mind but poor self-reflectiveness may accurately assess the perspectives of other people but fail to adjust their own beliefs accordingly. On the contrary, people who possess good self-reflectiveness but very poor theory of mind may consider the feedback of others but incorrectly construe it in a way that is ultimately unhelpful. Future

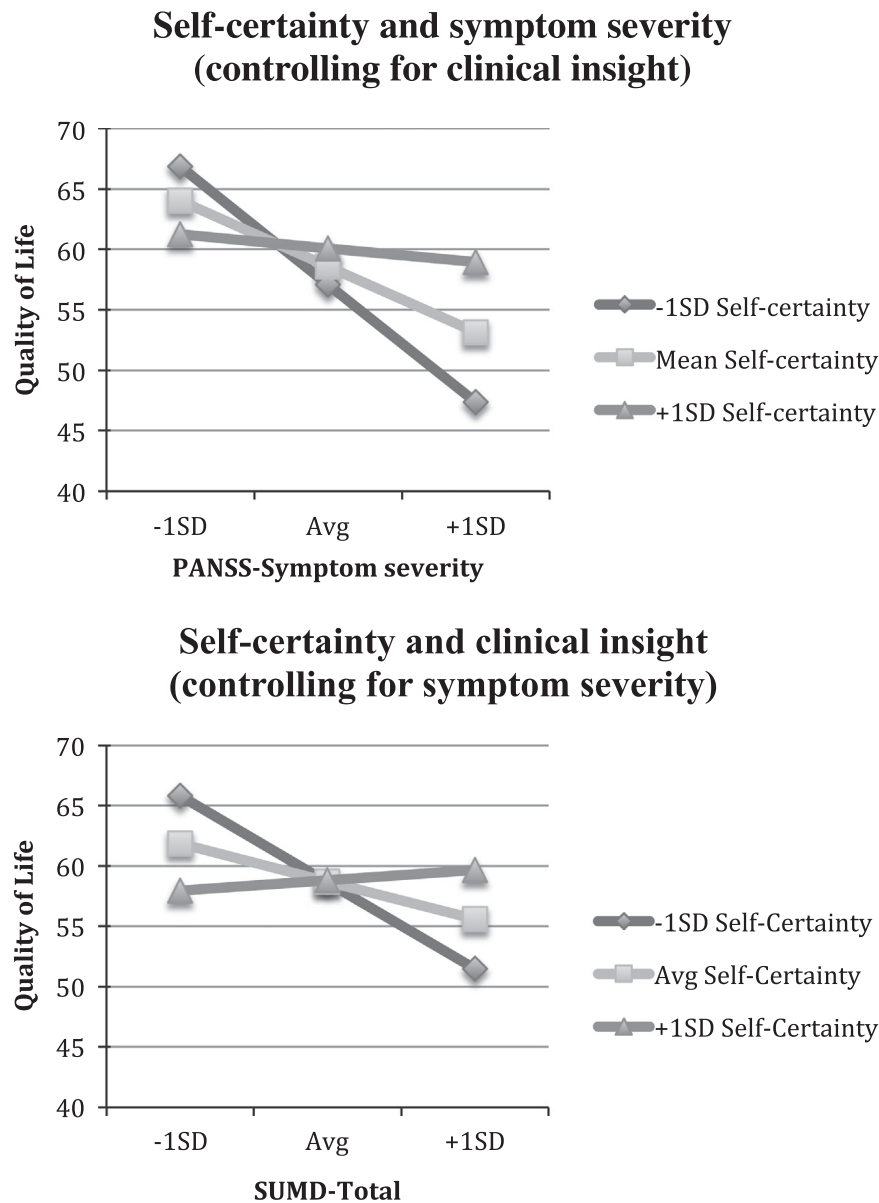


Fig. 2. The effect of BCIS self-certainty on overall quality of life at different levels of symptom severity, controlling for clinical insight scores.

research should focus on the interaction between self-reflectiveness and theory of mind and its link to social functioning.

Consistent with our hypotheses, increased self-certainty showed a positive relationship with quality of life for people with higher levels of symptom severity. Self-certainty also appeared to negatively affect quality of life for those patients whose symptoms were less severe, but this specific effect dropped to nonsignificance after controlling for clinical insight. These findings indicate that self-certainty may play a protective role for patients with more severe symptoms. We propose the possibility that self-certainty helps patients who display obvious psychotic symptoms to cope with the negative reactions they are likely to incur from other people. Psychotic disorders are among the most stigmatized of all mental health diagnoses (Jorm and Oh, 2009; Jorm et al., 2012), and psychotic behavior is itself the target of widespread negative attitudes (Phelan and Link, 2000; Lauber et al., 2004; Nordt et al., 2006) and marginalization in the community (Corrigan and Watson, 2002; Corrigan, 2004; Lawrence and Kisely, 2010). People who are the targets of such immense social ostracism are at risk for increased symptom severity (Ertugrul and Uluğ, 2004), lower self-esteem

(Lysaker et al., 2007b; Yanos et al., 2008), increased hopelessness (Lysaker et al., 2007b; Yanos et al., 2008), and impaired social functioning (Lysaker et al., 2007a). The subset of psychotic individuals who are more self-certain—more confident in the veracity of their marginalized experiences—may be better able to buffer themselves against the impact of the systematic alienation and disenfranchisement they are likely to experience.

Findings related to self-certainty and clinical insight were statistically significant before controlling for symptom severity, but not after. Visual analysis suggested that after controlling for symptom severity, quality of life was unaffected by clinical insight for patients with high self-certainty. For patients with low self-certainty, higher clinical insight may be associated with better quality of life (see Figs. 1 and 2). This effect would be consistent with our hypotheses. However, replication with a larger sample is warranted given the trend-level statistical significance of the interaction effect after controlling for symptom severity and the lack of Johnson-Neyman significance regions for either test.

A number of methodological issues in the present study limit its generalizability. First, our sample size was modest, the majority

of the sample was male, all were in treatment, and all were veterans. Results may not generalize to women, persons not in treatment, or non-veterans. While the findings of the study implicate the role of cognitive insight on quality of life, it is difficult to determine causality between these variables since the data was gathered at one time point. Longitudinal study of these variables may help to elucidate the direction of influence these variables have on each other. Future studies may also benefit from supplementing objective ratings of quality of life with subjective measures. Additionally, this study used composite measures of clinical insight, symptom severity, and quality of life, rather than examining relationships between specific subscales. Research is needed to explore whether the different components of quality of life are differentially affected by the interaction of cognitive insight and symptoms. Further work is similarly needed to examine how specific forms of psychopathology impact the relationship between cognitive insight and quality of life.

With replication, there may be clinical implications. Overall, it appeared that self-reflectiveness was positively associated with quality of life, and that self-certainty was positively associated with quality of life for people with very severe symptoms. This suggests the possibility that self-reflectiveness may be a better treatment target than self-certainty in the initial stages of treatment. Clinicians may need to exercise caution when engaging in interventions that could affect self-certainty, as self-certainty may protect patients from pain or threats to self-esteem. Clinicians may achieve better outcomes initially by helping individuals with severe psychosis to consider alternative possibilities and points of view while refraining from actively challenging current beliefs. Later in treatment, as self-reflectiveness increases and psychotic symptoms become less severe, therapists can begin to further promote cognitive insight by helping patients to lower their degree of self-certainty. One systematized example of such an approach is metacognitive therapy, which aims to help patients strengthen self-reflective abilities and build increasingly complex representations of themselves and others, allowing for eventual understanding of the fallibility of one's own thoughts and tolerance of intersubjectivity (Lysaker et al., 2011a; Barginquast and Schweitzer, 2013).

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