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Co-occurring Deficits in Clinical and Cognitive Insight in Prolonged Schizophrenia-Spectrum Disorders: Relationship to Metacognitive Deficits

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People diagnosed with schizophrenia have been broadly observed to experience deficits in clinical and cognitive insight; however, less is understood about how these deficits are related. One possibility is that these deficits co-occur among people when other deficits in cognition are present, such as in executive function, social cognition, and metacognition, which may either promote the development of both forms of poor insight or allow one to negatively influence the other. To explore this possibility, we conducted a cluster analysis using assessments of clinical and cognitive insight among 95 adults with a schizophrenia spectrum disorder. As predicted, this analysis yielded a group with concurrently poor clinical and cognitive insight (*n* = 36). Additional groups were found with concurrently good clinical and cognitive insight (*n* = 28) and poor clinical insight and good cognitive insight (*n* = 31). Groups were then compared on assessments of executive function, social cognition, and metacognition. The group with concurrently lower levels of cognitive and clinical insight had significantly poorer metacognition relative to the other groups. In particular, they tended to form more fragmented and less integrated ideas about themselves and others. No differences were found for executive function or social cognition. The result may suggest that while clinical and cognitive insight is partially orthogonal phenomena, relatively lower levels of metacognition, or difficulties forming integrated ideas about oneself and others, maybe a condition leading to the confluence of lower clinical and cognitive insight. Interventions targeting metacognition may be of particular use for this group.

Key words: psychosis/psychotic disorders/self-reflection/self-reflectivity/self-certainty/metacognition/schizophrenia/insight/social cognition/executive function

Introduction

Clinical insight in psychiatric conditions has traditionally referred to the recognition of morbid changes in a person's life, including the development of psychopathology, loss of function, and/or impairments in mental processes.[1] It has been operationalized across a broad literature as involving awareness of the presence and effects of mental illness as well as the need for treatment. Recent meta-analyses have shown that poor clinical insight is common in schizophrenia spectrum disorders[2] and is associated with more severe levels of symptoms and impairments in neurocognition and social cognition.[3] Individual studies found poor insight is associated with less engagement with treatment.[4,5] Paradoxically, when clinical insight is good, depression and demoralization can occur, particularly during episodes that result in stigma or social disadvantage.[6–9] Further, a recent meta-analysis found that increased clinical insight can lead to reduced quality of life in people diagnosed with schizophrenia.[10]

The study of insight in schizophrenia spectrum disorders has expanded in recent years based on findings that such people often struggle to understand and make sense of their life outside of a psychiatric context.[10] One such area includes awareness of one's cognition, referred to as cognitive insight.[11] Cognitive insight is distinct from clinical insight in that it is not concerned with the awareness of a mental illness but instead with attention to and awareness of one's thoughts and thought processes. For example, a person with good cognitive insight would be expected to attend to their thinking while being aware of its fallibility. However, like clinical insight, cognitive insight is associated with several aspects of psychosocial function and is present early in the illness course.[12] Lower cognitive insight has been found to be associated with the

presence of delusions in people with schizophrenia and in at-risk groups,[13,14] poor neurocognitive functioning,[15–17] more severe symptoms during first episodes of psychosis[18] and beyond,[16,19,20] poor quality of life,[21,22] as well as poor community functioning.[16,23] In contrast, higher levels of cognitive insight have been associated with recent suicide attempts or active ideation,[24,25] stigma,[26] depression,[27,28] a lower sense of personal recovery,[29] and reduced quality of life.[30]

Although the study of different forms of insight has been growing rapidly, it remains unsettled as to if and how cognitive insight and clinical insight are related to one another in schizophrenia spectrum disorders.[31] There are at least two possibilities that have been discussed to date. First, as some studies have suggested, they may be unrelated.[26,32–34] Consistent with this, it has been reported that each may be linked to different underlying disturbances in basic brain processes.[35] A recent meta-analysis of insight in people with psychosis, for instance, found that clinical insight is not related to a specific brain area, but rather with diffuse regions, whereas cognitive insight is associated with specific areas related to executive function and memory.[36] The authors suggested that cognitive insight could involve the integration of information related to the self and one's subjective experiences, whereas clinical insight might not involve such specific processes. However, a second possibility is that they may be related and overlap substantially with one another. Supporting this, one meta-analysis found a small association between elements of cognitive insight and clinical insight.[35] Additionally, a recently proposed conceptual framework suggested that greater understanding of one's subjective experience of illness supports understanding others' perceptions of one's illness, which in turn supports growth in insight.[37] This might explain the relatively similar associations between good clinical and cognitive insight and a variety of desirable and undesirable outcomes, such as the associations between lower insight and more severe symptoms, as well as lower treatment adherence. With good insight, common associations are presented with regard to stigma and depression. Ultimately, understanding how cognitive and clinical insight is related to one another is important because mixtures of higher and lower cognitive and clinical insight might require different treatment strategies or the development of different interventions.

A third possibility that has been relatively less explored is that cognitive and clinical insight reflects genuinely unique processes which may commonly, though not necessarily, co-occur.[38] In particular, it is possible that under certain circumstances or in the presence of other impairments, deficits in both forms of insight may develop. One such set of variables that may lead to the co-occurrence of lower clinical and cognitive insight are impairments in various kinds of cognition. For example, it is possible that significant disturbances in other forms of cognition might directly contribute to the development of both forms of poor insight or potentially allow the mutual influence of one form of poor insight upon another.

To date, there are at least three different forms of impaired cognition common in schizophrenia that have been related to poor clinical and cognitive insight separately and which might be related to their confluence. The first of these, executive function, refers to the neurocognitive abilities which allow people to form certain ideas, inhibit others, and shift set as needed.[39] We reasoned that deficits in executive functioning might promote both forms of poor insight or heighten their influence upon another because of the interference of these deficits in the ability to effectively sort and manage information. Social cognition refers to people's abilities to form accurate appraisals of the thoughts, feelings, and intentions of others.[40] Here we reasoned that social cognitive deficits would limit an accurate sense of the thoughts and perceptions of others. This in turn would limit the kinds of input from others that might challenge poor insight or heightened the mutual influence of relative deficits in clinical and cognitive insight upon one another. Finally, metacognition refers to the processes which enable people to notice and integrate information in an ongoing sense of self, others, and one's place in the community.[41] Here we reasoned that having a generally more fragmented and less coherent sense of self could not only foster both forms of limited insight but also enable a lack of awareness in one form of insight which could weaken the other form of insight.

To investigate this possibility, we performed a cluster analysis on validated measures of clinical and cognitive insight to determine if we could identify groups of people with schizophrenia spectrum disorders who have higher, lower, and mixed levels of insight. Planned tests included determining whether any resulting groups differed on measures of three forms of cognition linked to insight in schizophrenia spectrum disorders: executive function, social cognition, and metacognition.[3,15,16,42–46] Notably, we used multiple social cognition measures because it is a multidimensional construct.[47,48] We reasoned that relatively poor executive functioning might result in the co-occurrence of poor clinical and cognitive insight as it might limit the ability to focus attention and interpret specific experiences related to declining mental health and cognitive processes. We believed that relatively poorer social cognition might similarly lead to co-occurring deficits in clinical and cognitive insight as it may limit the ability to recognize and make use of others' perceptions of one's declining mental health and cognitive processes. Finally, it is possible that with poorer metacognition, deficits in both cognitive and clinical insight might emerge as people struggle to form complex representations of themselves and others. To rule out the possibility that any group differences were a function of

the global severity of psychopathology, we also explored global symptom severity measures.

We hypothesized that there would be more than two groups that reflected higher and lower insight, with additional groups reflecting mixtures of higher and lower insight in terms of clinical and cognitive insight. Additionally, we predicted that a group with significantly lower levels of both clinical and cognitive insight would have the lowest levels of executive functions, social cognition, and metacognition.

Method

Participants

Participants were 82 adult men and 13 adult women with diagnoses of schizophrenia (n = 57) or schizoaffective disorder (n = 38) confirmed by the Structured Clinical Interview for DSM-IV.[49] Participants were engaged in outpatient treatment at a VA Medical Center (n = 78) or Community Mental Health Center (n = 17). All participants were in a non-acute phase of illness, as defined by no hospitalizations or medication changes in the prior month, but were not in remission, per se. Exclusion criteria were intellectual disability or active substance dependence of any form as defined by DSM-IV.

Assessments

Insight. The Beck Cognitive Insight Scale (BCIS)[11] is a 15-item continuous self-report questionnaire that assesses cognitive insight. It is comprised of a self-reflectivity subscale and a self-certainty subscale. Scores are summed for subscale totals. A total score can be obtained by subtracting the self-certainty scale score from the self-reflectivity scale score. The BCIS has been widely used in psychosis research.[50,51]

The Positive and Negative Syndrome Scale (PANSS)[52] is a 30-item dimensional assessment of the symptoms of schizophrenia scored by a trained rater. Scores range from 1–7 and a clinical cut point identifies moderate to severe symptoms at above 4, with anything below that indicating no to mild impairment. For this study, we utilized the Lack of Insight item as an index of clinical insight and the PANSS total score as an overall psychopathology index.

From a measurement perspective, it is important to note that a 15-item self-report measure of cognitive insight and a 1-item interviewer-rated measure of clinical insight could impart implications for method variance. However, this approach is common practice in the literature[26] and there are no known published psychometric studies suggesting loss of information or introduction of measurement error in relation to it.

Executive Function. The Wisconsin Card Sorting Test (WCST)[53] measures executive functioning in terms of the flexibility of abstract thinking needed to match test stimuli to one of four key categories based on an unnamed matching principle. For this study, we focused on the raw Number of Categories Correct and Percentile for Perseverative Errors as general executive functioning measures, in line with other research on insight.[15–17]

Social Cognition. The Bell–Lysaker Emotional Recognition Task (BLERT)[54,55] assesses a person's identification of affective cues in standardized video segments. Scores range from 0 to 18 and index the number of correct identifications. This measure was developed in part for use with people with schizophrenia. This test has good test–retest validity and internal consistency in people with schizophrenia.[56]

The Reading the Mind in the Eyes Test[57] uses 36 photographs of someone's eyes. Participants are asked to identify which of four emotion or thought words best describe that expressed by the eyes in a given photograph. Participants may be awarded one point per photograph. This measure is used regularly with people with schizophrenia[58,59] and has good test–retest validity and internal consistency in this population.[56]

Metacognition. The Indiana Psychiatric Illness Interview (IPII)[60] is a semi-structured interview that extracts samples of a person's thinking about the challenges of their life, focusing on those related to mental illness and psychopathology. The IPII's goal is to gather a detailed and well-rounded narrative of psychiatric challenges within the context of a person's life.

The Metacognition Assessment Scale – Abbreviated (MAS-A)[61,62] is a multidimensional scale of metacognitive capacity. It produces a total score and four subscale scores: Self-reflection, or an individual's capacity to recognize that they have autonomous thoughts and subsequently synthesize detailed and nuanced personal narratives of their thoughts and emotions; Awareness of the Other's Mind, or the capacity to integrate the thoughts and emotions that other people in their life experience; Decentration, or the capacity to know that others have perspectives and motivations which are independent of the participant; and Mastery, or the capacity to use metacognitive knowledge of one's strengths and limitations to effectively cope with psychological challenges. The MAS-A is rated based on narrative transcripts, in this case, provided by the IPII, by trained raters. Prior research indicates good-to-excellent interrater reliability.[63] This scale has been used predominantly with people with schizophrenia.

Procedure

Institutional review boards at each recruitment site approved the study protocol. Participants were recruited from clinics at each site and constitute convenience samples. Participants provided informed consent, were

administered the SCID-IV, and then completed the full battery of assessments.

Analyses

Data analysis was conducted in the R environment using R Studio.[64] We used the k-medians clustering algorithm to identify homogenous groups in the sample using the cluster library.[65] In k-medians clustering, k clusters are first defined by identifying a median-based medoid, and then the data are partitioned into distinct clusters until within-cluster variance is minimized relative to between-cluster variance, thus resulting in maximally discrepant groupings.[66] Clusters derived using this method are robust to outliers, as medians are less influenced by extreme values than means. K-medians clustering is appropriate when a priori hypotheses exist regarding the number of clusters in a sample and is more suitable for smaller sample sizes than the alternative, model-based techniques (e.g., latent class analysis).[67] Additionally, using this procedure instead of theory-defined groups allows exploratory and empirical detection of participants who demonstrated hypothesized patterns of scores on insight indicators.

Because cluster analysis methods like k-medians assume that a two-cluster solution is viable, we calculated the Caliński-Harabasz index (CH index)[68] for model comparison. The CH index range is unbound, with higher values indicating the most appropriate number of clusters for the data, and is a measure of relative rather than absolute fit. It is worth noting that because k-medians assume at least two clusters, the assumed two-cluster model is always the most statistically parsimonious.

We submitted the BCIS composite score and the PANSS lack of insight item to cluster analysis for three and four-cluster solutions and then compared the CH index for both solutions. Both insight variables were converted to Z-scores before analysis, with no missing data on the cluster indicators. Because we were interested in nuanced cluster patterns beyond a higher/lower dichotomy, our starting point for cluster analysis was the three- and four-cluster models and we empirically determined the optimal fitting *k* value for our data between these two.

Following the identification of the final cluster solution, we conducted Kruskal-Wallis tests on the insight variables with the identified clusters as the group variable to confirm the clusters' conceptual relevance.[69] Kruskal-Wallis tests are one-way comparisons of distribution location differences, more similar to medians than means, and are thus appropriate for our k-medians derived clusters. Another strength of these tests is that they do not hold the assumptions needed for typical analysis of variance, though a weakness is they can be less sensitive at smaller sample sizes. While some analyses in psychopathology research use covariates, there is an assumption that the covariate and independent variables in such analyses are uncorrelated. While not reported here, both the data in the present study and recent meta-analyses[3] show that psychotic symptoms, neurocognition, and social cognition are associated with clinical insight, making them unsuitable as covariates.

As such, we conducted Kruskal-Wallis tests to test cluster differences in psychosis symptoms, executive function, metacognition, and social cognition. We followed up all significant main effects with posthoc Dunn tests[70] to examine pair-wise group differences on a given variable. All main effects and posthoc test *P*-values were adjusted using Benjamini and Hochberg's false discovery rate correction for multiple comparisons.[71]

Results

Participants

The mean age and education for the sample were 49.36 (SD = 8.70) and 12.72 (SD = 1.79), respectively. The median number of psychiatric hospitalizations was six. Fifty-one participants identified as Black (54%), forty-three identified as White (45%), and one participant identified as Latinx (1%).

Cluster Analysis

The Caliński-Harabasz statistic of 76.48 for three clusters and 54.87 for four clusters indicated that the three-cluster solution was a more parsimonious fit for the data, and was carried forward as our final clustering solution. The three-cluster solution identified groups that we determined to be characterized relative to each other by lower cognitive and clinical insight (labeled L hereafter; $n = 36$), higher cognitive and clinical insight (H; $n = 25$), or mixed with lower cognitive and higher clinical insight (M; $n = 34$).

Group Comparisons

As shown in table 1, groups significantly differed on all insight scales, which further confirmed that clustering had the expected outcome of maximally discriminating groups based on their insight characteristics. There were large main effects for the BCIS composite score that reflects cognitive insight ($H[2] = 61.57$, $P.\ fdr < .001$), self-reflectivity ($H[2] = 30.79$, $P.\ fdr < .001$) and self-certainty ($H[2] = 20.46$, $P.\ fdr < .001$). L had the lowest cognitive insight and self-reflectivity. H had the lowest self-certainty. There was also a large main effect for the PANSS Lack of Insight item ($H[2] = 64.42$, $P.\ fdr < .001$) with L showing the poorest scores, but not for the PANSS total score ($H[2] = 2.13$, $P.\ fdr = .421$). Figure 1 shows clusters with regard to PANSS Lack of Insight and BCIS composite score.

As can be seen in table 2, groups did not differ on executive or social cognitive domains. In terms of

Table 1. Background Characteristics, Insight, and Overall Symptoms of Groups Varying on Clinical and Cognitive Insight (n = 95)

	L	M	H	H Statistic	*P*	*P* Adj.	Eta Sq	Size	Post hoc group comparisons
	Clinical - Cognitive -	Clinical + Cognitive -	Clinical + Cognitive +						Dunn Test (*P* Adj. < .05)
Rank (Insight)	3	2	1						
Total *N*	36	31	28						
Age	50.5 (8.90)	52 (5.93)	50 (5.93)	1.47	.48	.536	0		
Education	12 (1.48)	12 (0)	12 (1.48)	1.34	.511	.536	0		
Diagnosis* (N/% Schizophrenia)	24 (66.7)	16 (51.6)	17 (60.7)	1.58	.454	.454	0		
Insight and Psychopathology									
BCIS Composite Index	6 (2.97)	7 (2.22)	14 (2.97)	61.57	<.001	<.001	0.647	Large	3 > 2, 1
BCIS Self-Reflectivity	21 (3.71)	22 (4.45)	26 (2.97)	30.79	<.001	<.001	0.312	Large	3 > 2, 1
BCIS Self-Certainty	15 (4.45)	15 (2.97)	11 (2.97)	20.46	<.001	<.001	0.201	Large	3 < 2, 1
PANSS Lack of Insight	4 (4.33)	3 (2.79)	3 (2.88)	64.42	<.001	<.001	0.678	Large	1 > 2, 3
PANSS Total Score	81 (14.08)	78 (19.27)	75 (14.82)	2.13	0.345	0.421			

Note: Median (median absolute deviation) depicted. False discovery rate correction applied to all *P*-values for main effects and post hoc comparisons. *Chi-square test.

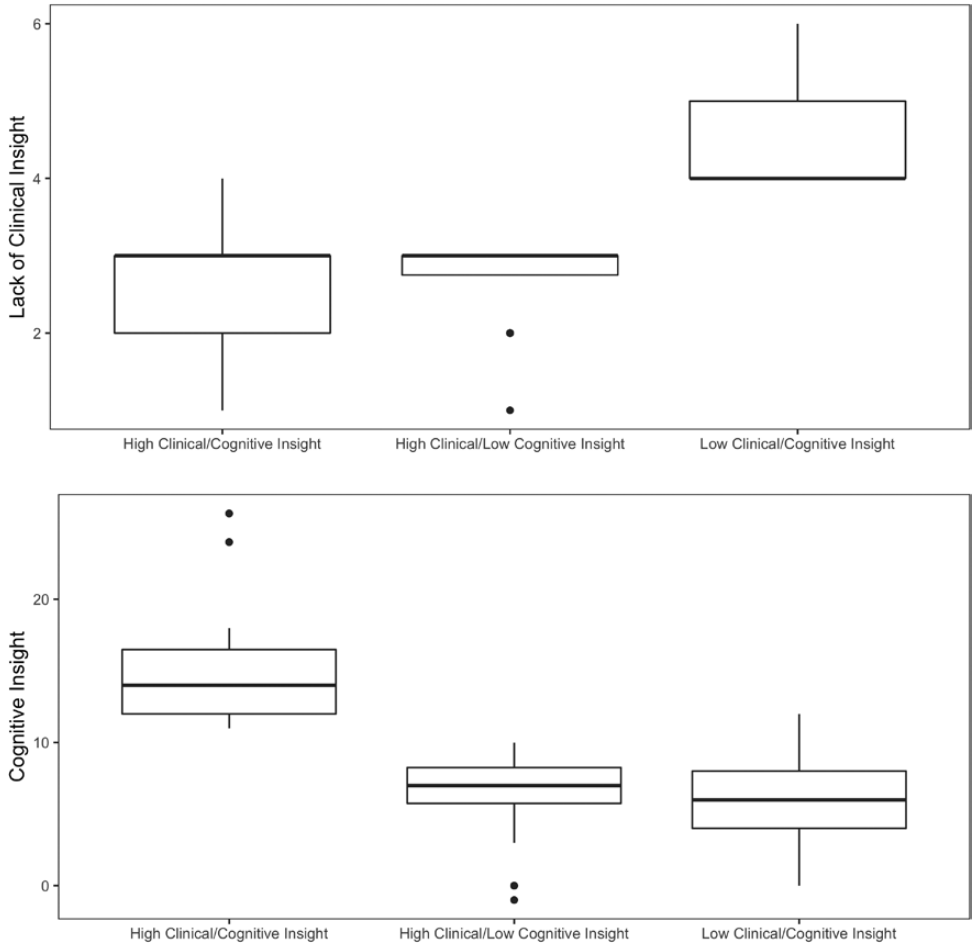

Fig. 1. Insight domains by cluster (raw scores).

Table 2. Metacognition, Social Cognition, and Executive Function (n = 95)

	L	M	H	H Statistic	*P*	*P* Adj.	Eta Sq	Size	Post hoc group comparisons
	Clinical - Cognitive -	Clinical + Cognitive -	Clinical + Cognitive +						Dunn Test (*P* Adj. <.05)
Rank (Insight)	3	2	1						
Total *N*	36	31	28						
Metacognition									
MAS-A Self-Reflection	3.5 (.74)	4.5 (1.48)	4.5 (1.48)	11.46	.003	.007	0.102	Moderate	3, 2 > 1
MAS-A Other's Mind	2.5 (.74)	3.5 (.74)	3 (.74)	17.36	<.001	<.001	0.167	Large	1 < 2 (3, 2 > 1 before adj)
MAS-A Decentration	0.5 (.74)	1 (.74)	1 (1.48)	8.57	.014	.029	0.071	Moderate	1 < 2
MAS-A Mastery	3 (1.85)	4 (1.48)	4 (1.48)	3.69	.158	.268			
MAS-A Total	10 (3.35)	12 (4.08)	13 (4.45)	13.22	<.001	.004	0.122	Moderate	3, 2 > 1
Social Cognition									
BLERT Total	12 (2.97)	12 (2.97)	14 (2.97)	6.38	.041	.078			
Eyes Test	21.5 (5.93)	20.5 (5.19)	23 (4.45)	3.09	.213	.329			
Executive Function									
WCST Categories Correct	2.5 (2.22)	3 (2.97)	4 (2.97)	2.11	.348	.455			
WCST Percent Perseverative Errors	22.5 (17.04)	21 (8.89)	18 (11.86)	1.31	.519	.519			

Note: Median (Median absolute deviation) depicted. False discovery rate correction applied to all *P*-values for main effects and post hoc comparisons.

metacognition, there was a moderate main effect for MAS-A Self-Reflection (H[2] = 11.46, *P*. fdr = .007), with M and H showing the highest scores. A large main effect for Awareness of the Other's Mind (H[2] = 17.36, *P*. fdr < .001), as well as moderate main effects for Decentration (H[2] = 8.57, *P*. fdr = .029) and MAS-A total (H[2] d = 13.22, *P*. fdr = .004) were found. In both cases, L showed consistently lower scores. There was no main effect for Mastery (H[2] = 3.69, *P*. fdr = .268). Figure 2 shows clusters with regard to MAS-A scores.

Discussion

To better understand the relationship between clinical and cognitive insight in schizophrenia spectrum disorders, this study used cluster analytic methods to determine if we could find dissociable groups with co-occurring deficits in both forms of insight, the absence of either deficit or a mixture of one but not the other deficit. Analyses found a three-cluster solution was the most quantitatively parsimonious, with two-thirds of the sample fitting into "both higher" or "both lower" insight clusters, and one-third fitting into a "mixed" cluster. Concerning the clinical qualitative meaning of the scores, using tertile reference ranges for cognitive insight and related labeling convention,[72] L and M had more "moderate" cognitive insight, and H had "high" cognitive insight, meaning that they were in a different category with the most intact insight. In terms of clinical insight, L performed as expected and had a more significant lack of awareness of their mental illness. Using the original clinical cutoff values for clinical insight and related labeling convention,[52] L and M had more "moderate" impaired clinical insight, and H had more mildly impaired clinical insight, again falling in a different category. It is likely that the lack of severe impairments in clinical insight reflects the outpatient nature of the sample. We then examined whether groups differed on three forms of cognition that might potentially influence the co-occurrence of both deficits: executive function, social cognition, and metacognition. As anticipated, we found the group with co-occurring deficits in clinical and cognitive insight had the poorest level of metacognition, specifically in the areas of self-reflection, awareness of others' minds, and decentration. Of note, these findings were present in the absence of group differences in overall psychopathology. No differences were found for social cognition or executive function.

While the study's cross-sectional nature prevents us from concluding causality, these results bring up several considerations to be tested in future research. One interpretation is that exceptionally lower metacognition is a pathway to a profile in which there is both lower clinical insight and lower cognitive insight. With lower metacognition, people might be unable to integrate information into a holistic experience of the self and so be less able to perceive changes that might occur in self-experience. This fragmentation of self-experience may lead to a decreased ability to recognize changes in their lives, notice a loss

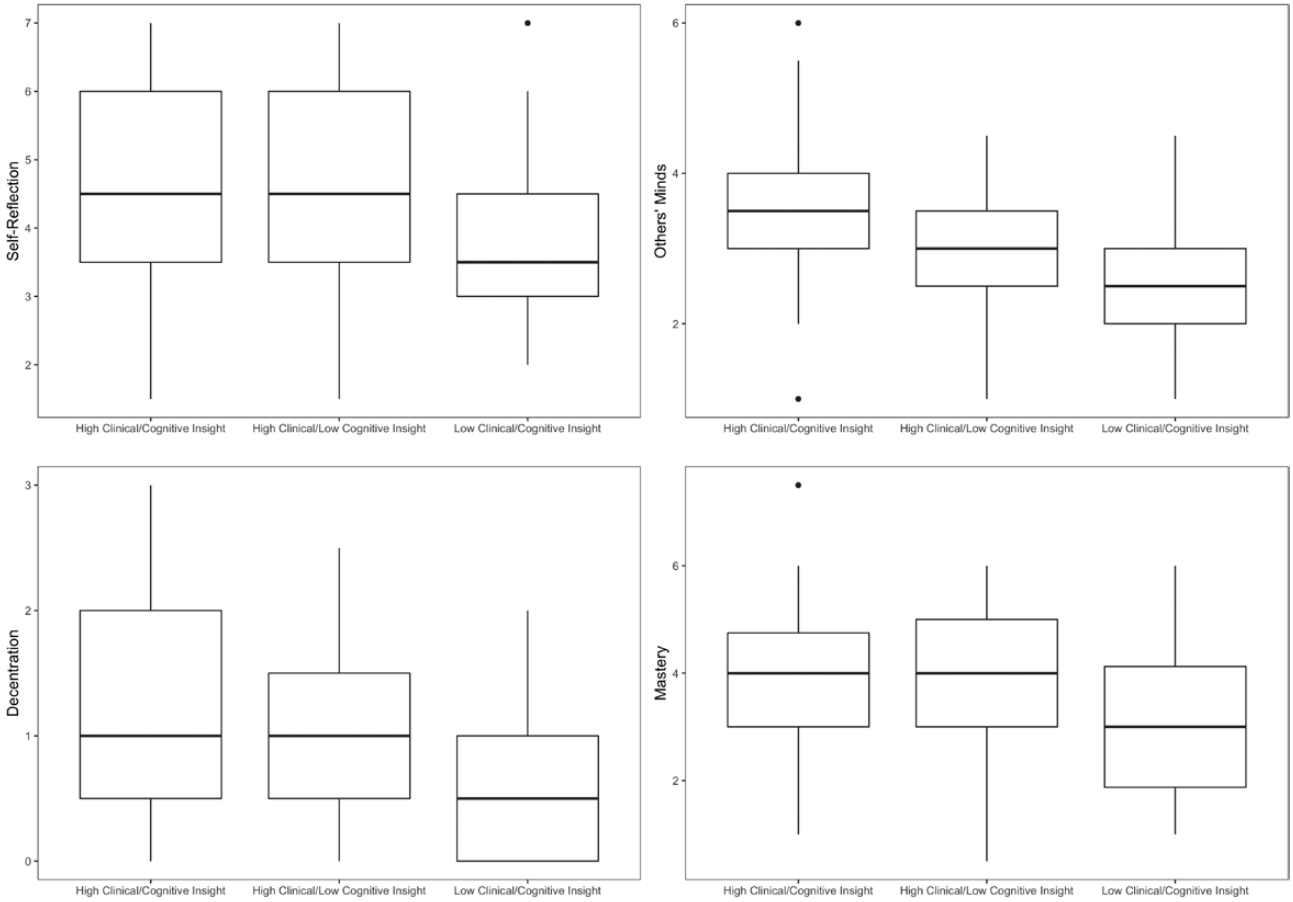

Fig. 2. Metacognition subdomains by cluster (raw scores).

of meaning or functioning, and integrate this information, thus driving lower clinical and cognitive insight or enabling one to negatively influence the other.[73] This is consistent with recent findings that metacognition may operate as a unique hub connecting multiple facets of cognition and psychopathology in schizophrenia.[41,74] Of note, there are alternative interpretations. It is possible that with poor clinical and cognitive insight, metacognition is negatively affected. It is also possible that the observed relationship between variables is the result of other variables that were not measured here. These could include, for example, trauma, stigma, or attachment history. It is also possible that the coupling of both forms of lower insight leads to impaired metacognitive capacity and not the other way around.

There were unexpected findings. Groups did not differ on social cognition or executive function. This may suggest these variables, while potentially related to one or the other form of insight, do not affect whether they co-occur. There were also no group differences in metacognitive Mastery, which is the ability to conceptualize a psychological problem (e.g., loneliness) and cope with it using self-knowledge. This may suggest that the factors which affect the co-occurrence of lower cognitive and clinical insight have more to do with making sense of one's internal states than the ability to respond to distress. Lastly, while we found a group with mixed lower clinical insight and higher cognitive insight, we did not find the reverse or a group with higher clinical insight and lower cognitive insight. This may suggest that lower cognitive insight is a barrier to higher clinical insight. It is possible that these unexpected findings might be in part due to no group having truly poor cognitive insight with reference to published norms.[72] However, those reference ranges were formed using tertiles in their sample and are only guides. As with all unexpected findings, replication is needed and results should be taken as fodder for future research.

There are limitations to this work. The cross-sectional nature of this study precludes concluding the stability of these clusters over time and the stability of relationships to variables between clusters. A future longitudinal study is needed to more carefully explore these relationships. The sample size was relatively modest and a larger sample would allow a more robust characterization of groups through cluster analyses or latent-profile approaches. Limited instruments were used and there are other clinical insight measures that are also conceptually relevant for clustering.[75] While the sample included individuals

with schizoaffective disorder, there were no specific measures of depressive or manic symptoms, although stability requirements make the latter unlikely. There were also no comprehensive neurocognitive batteries employed here that were normed for severe mental illness such as the MATRICS Consensus Cognitive Battery,[76–78] which includes domains like verbal memory and sustained attention that is not included in the present study. In addition, there are other domains of social cognition not studied here, such as attribution.[56] We also utilized one assessment of metacognition using a method that examines the integrative function of metacognitive processes. More research is therefore needed with broader instrumentation. Participants were mostly male, likely had longer durations of illness by virtue of age, and all were receiving treatment. Replication is needed in more diverse samples including one with people who refuse treatment.

With replication, results may have clinical implications. If metacognitive capacity affects the confluence of these forms of insight, it may be that treatments that target metacognition in schizophrenia spectrum disorders will have positive effects on insight. To date, one approach, Metacognitive Insight and Reflection Therapy (MERIT),[79] has been found to be acceptable to people with lower insight and linked with meaningful improvements in insight in one randomized controlled trial and multiple case studies.[80,81] By targeting the level at which people are struggling to integrate information, MERIT aims to increase the integration of self-experience, leading to a more coherent sense of self and the struggles one faces. Other metacognitive approaches include metacognitive training (MCT), which aims to address stigma, self-worth, and depression.[82] These interventions have been found to be acceptable by patients with schizophrenia spectrum disorders, with MERIT and MCT linked to significant improvements in clinical and cognitive insight.[83,84]

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