Cognitive Insight, Clinical Insight, and Reasoning in Schizophrenia: A Pilot Study in a Forensic Setting

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INSIGHT AND REASONING IN A FORENSIC SETTING

Abstract

This pilot study of 20 chronically ill male in-patients with schizophrenia and a history of violence investigates the relationships between cognitive insight, clinical insight, reasoning, and symptoms in a forensic setting. The majority (75%) of the patients with schizophrenia made hasty decisions based on a small amount of information (the jumping-to-conclusion bias, JTC). In addition, the data suggested that the more information patients gather, the more clinical insight they have and the less distressed they are by their symptoms. However, neither cognitive nor clinical insight was found to be statistically significantly associated with symptoms. The Beck Cognitive Insight Scale (BCIS) showed low and non-significant correlations with JTC bias as well as with symptoms. We discuss the potential significance of JTC bias, and clinical and cognitive insight in treatment of forensic schizophrenia patients with a history of violence.

keywords: schizophrenia, cognitive insight, clinical insight, jumping to conclusions, forensic, treatment, psychosis

Cognitive Insight, Clinical Insight, and Reasoning in Schizophrenia: A Pilot Study in a Forensic Setting

Poor insight into one's own illness is a predominant feature of schizophrenia (Amador et al., 1994). The concept of insight can be broken down into multidimensional clinical insight and the more recent construct of cognitive insight (Beck, Baruch, Balter, Steer, & Warman, 2004). Clinical insight consists of awareness of having an illness, its consequences, the need for treatment, and the recognition of symptoms attributable to the illness (Mintz, Dobson, & Romney, 2003). These dimensions are incorporated into various clinical scales, but they do not directly assess the capacity for evaluating unusual experiences and incorrect conclusions. The concept of cognitive insight, on the other hand, focuses on the metacognitive processes of evaluating and correcting beliefs, thereby providing an alternative way of conceptualizing insight (Beck et al., 2004). To assess cognitive insight, Beck et al. (2004) developed the Beck Cognitive Insight Scale (BCIS), which is comprised of two factors: self-reflectiveness and self-certainty. Self-reflectiveness indicates patients' willingness to acknowledge fallibility and their openness to feedback. Self-certainty reflects overconfidence in beliefs. The scale's composite index score reflects cognitive insight and flexibility.

Previous research has yielded contradictory findings concerning the relationship between clinical and cognitive insight. Some studies have found no association between the two types of insight (Greenberger & Serper, 2010; Tastet, Verdoux, Bergua, Destaillats, & Prouteau, 2012). Other studies, however, have found an association between these two constructs (for a review, see Riggs, Grant, Perivoliotis, & Beck, 2012). Riggs et al. (2012) state that, despite their correlation, these two constructs are complementary rather than

overlapping.

Contradictory results have also been reported regarding the relationship between clinical insight and symptomatology. However, in their meta-analysis, Mintz et al. (2003) summarize the results of 40 studies (N = 2,838) and conclude that a modest negative association exists between overall clinical insight and positive symptoms—the more positive symptoms there were, the less insight there was. In addition, they found that this relationship was stronger during a period of acute psychosis than it was during a period of remission.

The theoretical model behind the BCIS presumes a relationship between delusions and low self-reflectiveness accompanied by high overconfidence (Beck et al., 2004). Previous studies have shown the relationship between self-reflectiveness and delusions to be inconsistent (Buchy, Malla, Joober, & Lepage, 2009; Engh et al., 2010; Warman, Lysaker, & Martin, 2007). Self-certainty, on the other hand, has been consistently shown to be associated with positive symptoms, especially delusions (Bora, Erkan, Kayahan, & Veznedaroglu, 2007; Bruno, Sachs, Demily, Franck, & Pacherie, 2012; Engh et al., 2010; Pedrelli et al., 2004; Warman, Lysaker, & Martin, 2007). Contrasting observations, however, have also been reported (cf. Favrod, Zimmermann, Raffard, Pomini, & Khazaal, 2008; Granholm, Auslander, Gottlieb, McQuaid, & McClure, 2006). There is evidence that higher cognitive insight at baseline seems to predict reduction of delusions at the end of therapy (Perivoliotis et al., 2010). Furthermore, cognitive insight, especially self-reflectiveness, can be improved by psychosocial treatment, and this improvement is associated with a reduction in positive symptoms at the end of therapy in patients with psychosis and chronic schizophrenia (Granholm et al., 2005; Perivoliotis et al., 2010). According to Lysaker et al. (2013), cognitive insight represents one component of the broader concept of metacognitive awareness which describes the ability to form complex images of others and of one's self, a

process linked to disorganization symptoms, social function, and flexibility in abstract thought. This ability is not, however, linked to positive symptoms (Lysaker et al., 2013). Most of the previous studies looking at cognitive insight, positive symptoms, and psychosis have included only outpatients. Ekinci and Ekinci (2013) compared clinical insight, cognitive insight, and positive symptoms in violent and non-violent schizophrenia outpatients. They found that violent patients had, along with lower self-reflectiveness and cognitive insight, higher scores on positive symptoms than the non-violent patients did. As far as we know, no previous studies have been published on cognitive insight measured by BCIS among an in-patient population in a forensic setting.

Another concept that is relevant when trying to understand self-reflectiveness and insight in schizophrenia is bias related to drawing conclusions. Moritz and Woodward (2005) demonstrated that patients with schizophrenia base their decisions on less information than other psychiatric patients and healthy controls do, and the response pattern is most prominent in acute delusions. When a decision is made after requesting only one or two pieces of evidence, the phenomenon is referred to as the jumping-to-conclusions (JTC) bias (see e.g. Fine, Gardner, Craigie, & Gold, 2007; Garety & Freeman, 1999). The literature shows that between approximately 50% and 60% of schizophrenia patients exhibit this response pattern, whereas closer to approximately 20% or 30% of healthy controls jump to conclusions (see, e.g., Dudley, Taylor, Wickham, & Hutton, 2015; Garety & Freeman, 2013; Freeman, Pugh, & Garety, 2008; Warman, Lysaker, Martin, Davis, & Haudenschield, 2007). Freeman et al. (2008) found that JTC was associated with conviction in paranoid thoughts and distress caused by paranoid ideation. Garety et al. (2005) demonstrated that the bias was associated with belief inflexibility, delusions, and higher delusion conviction.

In the present descriptive pilot study, we investigated the possible characteristics of

these patients in terms of cognitive insight and the possible relationships between cognitive insight, clinical insight, reasoning, and symptoms. More precisely, we were interested in testing the JTC bias among forensic schizophrenia patients. That is, we examined the amount of information gathered (draws-to-decision, DTD) before making a decision and its relationship with cognitive and clinical insight as well as with psychological distress or symptoms. We expected, on the basis of earlier studies, an association between DTD and insight as well as between DTD and psychological symptoms among schizophrenia patients in a high-security forensic setting. In addition, we tested the feasibility of the BCIS scale for these patients, and whether BCIS is associated with DTD and psychological distress.

Method

The study and the procedure were approved by the Kuopio University Hospital Committee on Research Ethics. The participants gave their written informed consent.

Design

This cross-sectional descriptive pilot study was conducted in a high-security hospital setting as a part of a wider and longer RCT intervention study, which is described in an article by Kuokkanen, Lappalainen, Repo-Tiihonen, and Tiihonen (2014). All participants underwent the same assessments during a single research appointment in November 2011.

Service setting and participants

Niuvanniemi Hospital is a state mental hospital treating patients with numerous previous hospitalizations and who have been committed to involuntary treatment. There are patients from two service types: forensic patients whose sentences have been waived due to their insanity, and non-forensic, difficult-to-treat patients. Most often the forensic patients in the hospital have committed violent crimes, such as homicides, attempted homicides or assaults. At the time of the study, 97% of the difficult-to-treat male patients had a history of violent

behavior and, thus, criminal activity (see Table 1). Therefore, it was presumed that forensic and non-forensic patients do not differ from each other significantly and all of the patients were dealt with as one group.

[Table 1 near here]

Figure 1 shows the participant flow. Adult male patients were recruited by a member of the research team (R.K.) in September 2011 using the hospital's patient registry (N = 290). The registry was screened according to the inclusion criteria: schizophrenia diagnosed prior to the study by the treating psychiatrist using the ICD-10 criteria (World Health Organization, 1992), Finnish as a native language, and completion of a psychoeducation group. The latter criterion was due to the RCT intervention study described elsewhere (Kuokkanen et al., 2014). The exclusion criteria were moderate to severe intellectual disability, dementia, gross neurological disorder, or an inability to consent assessed by the treating psychiatrist. Out of 91 eligible patients, 33 were randomly selected. Twelve of them declined to participate and one was excluded due to inability to consent. Twenty patients consented to participate.

[Figure 1 near here]

Measures

In addition to other demographic data, information about the following issues was collected after completion of the study: education, criminal history, Global Assessment of Functioning (GAF; *Diagnostic and Statistical Manual of Mental Disorders,* 4th ed. Text Revision*,* American Psychiatric Association, 2000, determined by a trained nurse as a part of routine periodical assessment), number of prior hospitalizations and the duration of current admission. Two forensic patients refused to share this information (see Table 1).

Symptom measures and clinical insight. Delusions, suspiciousness, and a lack of

clinical insight were determined using the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987), specifically the items P1 delusions, P6 suspiciousness and G12 lack of judgment and insight (clinical insight). The selection of the positive symptom P1 and P6 items, reflecting paranoid and other delusions, was based on the theoretical model of BCIS (see Beck et al., 2004). The rest of the PANSS items were excluded in order to avoid making the assessments too exhausting for the patients. In addition, different dimensions of delusions and suspiciousness were assessed on the delusions scale of the Psychotic Symptoms Rating Scales (PSYRATS; Haddock, McCarron, Tarrier, & Faragher, 1999). The researcher (R.K.) was trained by a senior expert clinician (E.R.-T.) in using these measures. Inter-rater agreement (kappa) was over .70 for all measures at the item level. The PSYRATS items conviction, amount of distress, intensity of distress, and total score were selected for comparisons based on the theoretical background (see Freeman et al., 2008) and because PANSS items do not differentiate these dimensions of symptoms.

Reasoning ability. Reasoning ability in terms of data gathering was determined by a computerized version of a reasoning task adapted from Moritz et al. (2010). In this reasoning task, a fisherman chooses one lake from two possible lakes and fishes from that lake only. The lakes have fish of two different colors in opposing ratios of 20:80. In the task used, participants had to decide how much information (i.e., how many fish) they would need to gather before they could make a decision regarding from which of the two lakes the fish were caught. The draws-to-decision (DTD) variant of the JTC paradigm was used as an outcome variable (see Fine, Gardner, Craigie, & Gold, 2007; Garety & Freeman, 1999).

Cognitive insight. Cognitive insight was measured using the authorized Finnish version of the Beck Cognitive Insight Scale (BCIS; Beck et al., 2004). The instrument is a 15-item self-assessment questionnaire and it is comprised of two subscales: self-

reflectiveness (SR) and self-certainty (SC). Each item is assessed on a 4-point scale ranging from 0 (do not agree) to 3 (agree completely). The self-reflectiveness subscale is a sum of nine items, with the possible range being 0–27. The self-certainty subscale is a sum of six items and the possible range is 0–18. The BCIS composite index (CI) is calculated as self-reflectiveness minus self-certainty (CI = SR - SC). Poorer cognitive insight is indexed by lower scores on the self-reflectiveness subscale (e.g., BCIS/SR = 10 out of 27), higher self-certainty scores (e.g., BCIS/SC = 15 out of 18), and lower BCIS composite index scores (e.g., BCIS/CI = 10 – 15 = -5). The original validation study by Beck et al. (2004) reported a coefficient α for the self-reflectiveness of 0.68 and for the self-certainty of 0.60. The mean scores for schizophrenia patients in their study were 12.97 for self-reflectiveness (*SD* = 5.00), and 7.94 for self-certainty (*SD* = 3.78). Several studies concerning psychotic patients have reached similar mean scores as Beck et al. (2004) found (see, e.g., Martin, Warman, & Lysaker, 2010; Pedrelli et al., 2004; Warman, Lysaker, & Martin, 2007), even though there has been some variation (cf. Greenberger & Serper, 2010; Guerrero & Lysaker, 2013; Tastet et al., 2012). Ekinci and Ekinci (2013) reported a mean score of 9.3 (*SD* = 3.9) for self-reflectiveness and of 9.5 (*SD* = 3.5) for self-certainty among violent schizophrenia outpatients. The BCIS has been shown to be able to distinguish psychotic patients from healthy controls (Martin et al., 2010; Riggs et al., 2012), but no clear cut-off score can be set for predicting patient status (Martin et al., 2010).

Analyses

The non-parametric tests were used due to the non-normally distributed variables and the small sample size. The Mann–Whitney *U*-test and the chi-square test were used to compare the differences between the forensic and non-forensic patients. To examine the rank correlations, Kendall's tau-c (τc) was used because the variables were characterized by non-

normality and many tied ranks, and because the data did not produce square contingency tables but large rectangular tables. In addition, by using rank correlation it was also possible to reduce potential distortions produced by outliers, unequal variances and nonlinearity. The Monte Carlo method was used to test statistical significance. The internal consistency of the BCIS scales was investigated by calculating Cronbach's alpha for both subscales.

Results

None of the differences in the demographic variables or in the selected measures between the forensic and non-forensic groups were statistically significant. The demographic information is shown in Table 1. The results indicate that the sample was heterogenic and chronically ill. There was only one statistically significant correlation between demographic variables and selected measures: between duration of current admission and PSYRATS intensity of distress caused by symptoms ($\tau c = .36$, $p < 0.05$). Table 2 shows the mean values, standard deviations, ranges, and confidence intervals for means for all of the measures. To note, the mean score of PANSS G12 represented a moderate to moderately severe disruption in clinical insight.

Jumping-to-conclusions bias. The amount of information gathered (DTD) before making a decision was low ($M = 2.15$, $SD = 1.76$). In fact, 55% ($n = 11$) of the participants made a decision after only one piece of information (i.e., after the first fish) exhibiting an extreme JTC bias. An additional 20% ($n = 4$) of the patients made a decision after the second piece of information (i.e., after the second fish) and thus jumped to conclusions as well.

[Table 2 near here]

Table 3 shows the correlations between the measures. A statistically significant negative correlation between data gathering (DTD) and PANSS G12 lack of judgment (clinical insight) was found ($\tau c = -.34$, $p < .05$). Thus, the more information the patient

gathers, the more clinical insight he has. In addition, we found a significant negative correlation between DTD and PSYRATS amount (τc = -.28, p < .05) and intensity of distress (τc = -.30, p < .05) caused by symptoms. This suggested that the more information patients gather, the less distressed they are by their symptoms. DTD did not show any notable correlation with PSYRATS delusional conviction. On the other hand, PSYRATS delusional conviction correlated significantly with both P1 delusions (τc = .60, p < .001) and P6 suspiciousness (τc = .50, p < .01). This finding suggested that the more delusional or suspicious patients are, the more convinced they are of their ideation. Further, PANSS P1 delusions correlated significantly with PSYRATS intensity of distress caused by symptoms (τc = .33, p < .05). In other words, the more delusional patients are, the more distress they experience. On the other hand, the correlations between P6 suspiciousness and amount of distress and intensity of distress were non-significant and low.

[Table 3 near here]

Cognitive insight. We found the BCIS to be internally consistent. The Cronbach's alpha for BCIS self-reflectiveness was 0.82, and for self-certainty 0.80. These results are in line with the internal consistency found in the original study by Beck et al. (2004). The mean BCIS self-reflectiveness (CR) score was 15.30 (SD = 5.98), the mean self-certainty (SC) score was 9.15 (SD = 4.17), and the mean composite index (CI) score was 6.15 (SD = 7.14). The BCIS subscales CR and SC did not correlate with each other (τc = .06, see Table 3).

There were low and non-significant correlations between BCIS subscales (self-reflectiveness and self certainly) and DTD (τc = -.12 - -.23, Table 3). In addition, very low correlation was observed between Composite Index (CI) and DTD. Furthermore, we found no statistically significant correlations between the BCIS subscales and symptom measures. There was a moderate (τc = .32), though non-significant, positive correlation between BCIS

self-certainty (SC) and PANSS G12 lack of judgment. The correlation between self-reflectiveness (SR) and lack of clinical insight (G12) was inverse, modest (τc = -.23, Table 3), and non-significant.

The BCIS composite index (CI), on the other hand, showed a non-significant, though moderate, negative correlation (τc = -.36) with PANSS G 12 lack of judgment and insight (reflecting clinical insight). Additionally, PANSS G 12 (lack of judgment & insight) showed a moderate but non-significant correlation (τc = .31) with suspiciousness (P6).

Discussion

Our results revealed that the majority of the schizophrenia patients in a high-security forensic setting made hasty decisions based on a small amount of information reflecting the jumping-to-conclusion (JTC) bias. The prevalence of this bias was at least at the same level as in previous studies, if not even slightly higher (see e.g., Dudley, Taylor, Wickham, & Hutton, 2015; Garety & Freeman, 2013). We also observed a significant association between data gathering (DTD) and clinical insight. The results thus suggested that the more information patients consider in making decisions, the better view of their condition they are able to achieve (clinical insight) – or vice versa. Our data also indicated that when patients gather more information, the less distressed they are about their symptoms. Of course, this effect could also be the other way round. Thus, less distressed patients may be able to gather more information. This observed link between data gathering and the distress dimension of delusions was in accordance with the prior observation made by Freeman, Pugh, and Garety (2008). Overall, our findings of the significance of JTC bias among schizophrenia patients in a forensic setting are in accordance with the observations made among other psychotic patients (see, e.g., Dudley et al., 2015; Garety & Freeman, 2013; Garety et al., 2005; Moritz & Woodward, 2005).

The possible deficit in the connection between JTC bias and clinical insight often creates many challenges during treatment, and leads us to a situation where a patient may have poor insight into his condition, make hasty and possibly faulty decisions, and be distressed due to his symptoms. Moreover, we observed that the more delusional or suspicious patients are, the more convinced they are of their ideations. This may, for example, lead to ill-advised actions. It could be hypothesized that if reasoning or data gathering ability could be rehabilitated and improved, it might create favorable effects for clinical insight as well as for symptom-induced distress, even though we cannot infer the direction of the impact from this data. A trend for short-term improvement in JTC bias has been observed following an eight-session, group-administered metacognitive training program in a forensic setting (Kuokkanen, Lappalainen, Repo-Tiihonen, & Tiihonen, 2014). However, it was hypothesized that to achieve more lasting results, the period of training should be longer (Kuokkanen et al., 2014).

We observed that, in addition to making hasty decisions, the patients' clinical insight was quite poor, regardless of symptom severity. It could be assumed that both patients' JTC bias and insight regarding their symptoms need to be modified before violent patients can be released from a forensic hospital even if positive symptoms were in a state of remission. After all, poor insight is considered to be a risk factor for violence among forensic patients (Alia-Klein, O'Rourke, Goldstein, & Malaspina, 2007). On the basis of our results, it seems that treating symptoms is not enough and there is a need for complementary rehabilitation methods in improving both data gathering skills and insight. Group-administered psychoeducation has shown improvements for clinical insight in offender patients with schizophrenia in a forensic setting (Aho-Mustonen et al., 2011). Because the patients in our study had already gone through group-administered psychoeducation prior to the study, it

implies that the majority of the patients most likely need repeated and long-term rehabilitation in terms of psychoeducation and other methods at different stages of rehabilitation, such as specific training in data gathering skills.

To our knowledge, this was the first study to examine cognitive insight measured by the Beck Cognitive Insight Scale (BCIS) in a forensic setting, and its relationship to in-patients with chronic schizophrenia. In our study, the BCIS was found, in accordance with previous studies, to be internally consistent. Contrary to the theoretical model formulated by Beck et al. (2004), we found no association between cognitive insight and symptoms. Further, we found no significant association between cognitive insight and clinical insight.

This result seems to be in line with the statement by Riggs et al. (2012) that clinical insight and cognitive insight are two different constructs that complement each other. We observed that in a forensic setting, chronic schizophrenia patients scored slightly higher on self-reflectiveness as well as on self-certainty when these scores were compared to those in the original study by Beck et al. (2004). Additionally, the difference regarding self-reflectiveness was even greater in favor of forensic in-patients in our study when compared to the mean self-reflectiveness score of violent schizophrenia outpatients (Ekinci & Ekinci, 2013), which is an interesting finding. Although more research is needed to confirm the benefits of BCIS among different populations, the evaluation of cognitive insight and flexibility using the BCIS might be advantageous in this population and service setting.

There are several limitations to this study. The cross-sectional design does not provide information on insight and its relation to symptoms over time. The sample was heterogenic, consisting of chronically ill patients with comorbid disorders. The sample size was also small, which has a number of consequences: The results may not be generalizable to the whole population of patients chronically ill with schizophrenia and possessing difficult

symptomatology, and we did not control for the demographic variables, because small cell frequencies in partial correlation would not give reliable results. Data gathering was determined by a computerized task, and this may not adequately reflect JTC bias in other environments. In addition, because there is no normative data for the BCIS, we were not able to make formal comparisons. The results should be considered to be preliminary and this area needs more research before any strong conclusions can be reached.

This exploratory pilot study suggests an important link that needs to be studied more closely between JTC reasoning bias and clinical insight, and between JTC reasoning bias and symptom-induced distress. Our study suggests that it is worthwhile to focus on these issues and that a larger, more conclusive study is needed. In the future, it would be of importance to conduct a full prognostic and mediation analysis to investigate these connections and characteristics of chronically ill patients with schizophrenia in a forensic setting. Our results imply that it could be advisable to assess a patient's ability to gather sufficient information for making decisions, as well as the patient's clinical insight and cognitive insight to attain a wider, more diverse picture of the patient's current situation and to offer specific training accordingly. This training could include more frequent use of psychoeducation to increase clinical insight and long-term metacognitive training that could possibly improve data gathering skills and decision-making ability. A more precise analysis of the above mentioned skills could help construct more individually designed treatment plans and, for instance, evaluate patients' suitability for psychotherapeutic treatment.

Funding

This work was funded by the Finnish Ministry of Social Affairs and Health through the developmental fund for Niuvanniemi Hospital.

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TABLE 1 Demographic Information for Study Participants

Characteristic	Mean (*SD*)	Range	(%)
Age (years)	43.55 (12.24)	19-67	
GAF*	17.39 (5.56)	10-31	
Duration of illness (years)	16.45 (9.48)	3-37	
Number of hospitalizations*	13.06 (10.75)	1-37	
Duration of current admission (years)*	8.03 (6.52)	0.92-21.58	
Education, highest completed, *n**			
No formal education	1		(5%)
Elementary school	10		(50%)
Secondary education	7		(35%)
Diagnosis, *n*			
Paranoid schizophrenia	15		(75%)
Hebephrenic schizophrenia	1		(5%)
Undifferentiated schizophrenia	4		(20%)
Number of patients with			
comorbid substance abuse	11		(55%)
comorbid personality disorder	6		(30%)
History of violence*	18		(90%)

Note. *SD* = standard deviation; GAF = Global Assessment of Functioning

* Values missing from two forensic patients (n=18)

TABLE 2 Mean Values, Standard Deviations, Ranges, and Confidence Intervals for Means

Characteristic	Mean (*SD*)	Range	95% CI
PANSS P1 Delusions	2.20 (1.44)	1-5	1.53; 2.87
PANSS P6 Suspiciousness	3.00 (1.30)	1-5	2.39; 3.61
PANSS G12 Lack of judgment & insight	4.50 (1.15)	2-6	3.96; 5.04
PSYRATS Total	7.45 (5.51)	3-21	4.87; 10.03
PSYRATS Conviction	2.00 (1.75)	0-4	1.18; 2.82
PSYRATS Amount of distress	0.65 (1.27)	0-4	0.06; 1.24
PSYRATS Intensity of distress	0.50 (1.10)	0-4	–0.01; 1.01
BCIS Composite Index	6.15 (7.14)	–5-17	2.81; 9.49
BCIS Self-reflectiveness	15.30 (5.98)	6-27	12.50; 18.10
BCIS Self-certainty	9.15 (4.17)	0-16	7.20; 11.10
DTD	2.15 (1.76)	1-7	1.33; 2.97

Note. *SD* = standard deviation; CI = confidence interval; PANSS = Positive and Negative Syndrome Scale; PSYRATS = Psychotic Symptoms Rating Scales; BCIS = Beck Cognitive Insight Scale; DTD = draws-to-decision

TABLE 3

	DTD	BCIS SR	SC	CI	PANSS P1	P6	G12	PSYRATS Total	Amount of distress	Intensity of distress	Conviction
DTD		–.120	–.234	.054	–.293	–.113	**–.344***	–.246	**–.281***	**–.300***	–.173
BCIS SR			–.055	**.645*****	.167	.144	–.231	.117	.050	.087	–.013
BCIS SC				**–.445****	–.207	–.125	.319	–.117	–.044	–.060	–.113
BCIS CI					.187	.156	–.363	.094	.069	.100	–.020
PANSS P1						**.373***	.213	**.620*****	.287	**.327***	**.600*****
PANSS P6							.313	**.400***	.188	.220	**.500****
PANSS G12								.163	.013	.007	.233
PSYRATS Total									**.475*****	**.533*****	**.673*****
Amount of distress										**.513*****	.240
Intensity of distress											.253
Conviction											

Note. Significant values are shown in bold. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (2-sided). DTD = draws-to-decision; BCIS = Beck Cognitive Insight Scale; SR = self-reflectiveness; SC = self-certainty; CI = composite index; PANSS = Positive and Negative Syndrome Scale; P1 = delusions item; P6 = suspiciousness item; G12 = lack of judgment & insight item; PSYRATS = Psychotic Symptoms Rating Scales

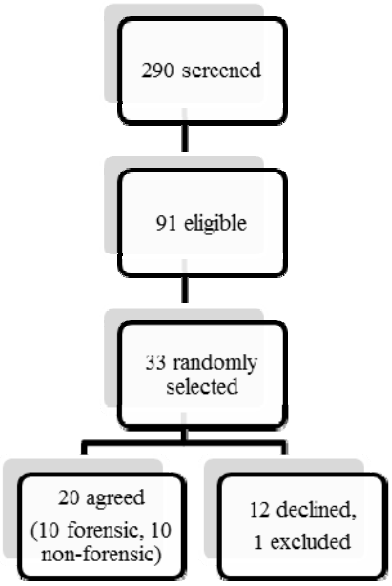

FIGURE 1 Participant flowchart.