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A new instrument for measuring insight: the Beck Cognitive Insight Scale

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Abstract

The clinical measurements of insight have focused primarily on patients' unawareness of their having a mental disorder and of their need for treatment ([Acta Psychiatr. Scand. 89 (1994) 62; Am. J. Psychiatry 150 (1993) 873]; etc.). A complementary approach focuses on some of the cognitive processes involved in patients' re-evaluation of their anomalous experiences and of their specific misinterpretations: distancing, objectivity, perspective, and self-correction. The Beck Cognitive Insight Scale (BCIS) was developed to evaluate patients' self-reflectiveness and their overconfidence in their interpretations of their experiences. A 15-item self-report questionnaire was subjected to a principle components analysis, yielding a 9-item self-reflectiveness subscale and a 6-item self-certainty subscale.

A composite index of the BCIS reflecting cognitive insight was calculated by subtracting the score for the self-certainty scale from that of the self-reflectiveness scale. The scale demonstrated good convergent, discriminant, and construct validity: (a) the BCIS composite index showed a significant correlation with being aware of having a mental disorder on the Scale to Assess Unawareness of Mental Disorder (SUMD; Arch. Gen. Psychiatry 51 (1994) 826) and the self-reflectiveness subscale was significantly correlated with being aware of delusions on the SUMD, (b) the composite index score of the BCIS differentiated inpatients with psychotic diagnoses from inpatients without psychotic diagnoses, and (c) in a separate study, change scores on the BCIS were significantly correlated with change scores on positive and negative symptoms. The results provided tentative support for the validity of the BCIS. Suggestions were made for further investigation of the cognitive processes involved in identifying and correcting erroneous beliefs and misinterpretations.

Keywords: Insight; Schizophrenia; Depression; Cognition

Lack of insight has been regarded as an important feature of psychosis since the time of Kraepelin (1919). More recent authors have described insight as a multidimensional construct that occurs on a continuum (Amador and David, 1998; David et al.,

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1992). The contemporary approach focuses on the patient's awareness (or, more accurately, the unawareness) of several attributes. For example, do the patients recognize (a) that they are suffering from a mental illness, (b) that their symptoms are pathological, (c) that they need treatment, and (d) that the cause or source of their symptoms is an illness?

Earlier writers, such as Jaspers (1968) and Lewis (1934) viewed insight as a unitary phenomenon: a patient either had it or did not have it. The absence of insight was regarded as the sine quo non of psychosis. This view was challenged by McEvoy et al. (1989) who described the complexity of the phenomenon and indicated that some acutely psychotic patients had intact insight. McEvoy et al. (1989) also noted that a patient's insight did not necessarily improve when the acute psychosis abated. They concluded that instead of being directly correlated, insight and psychosis could be viewed as separate phenomena with complex interactions.

It is clear, however, that impaired insight plays a role in the development of psychotic phenomena. In the formation and maintenance of delusions, for example, the aberrant beliefs are sufficiently intense to override the normal processes of reality testing which are already attenuated in psychosis. Similarly, patients' conviction that their verbal hallucinations are generated by an external agent indicates impaired recognition of the nature of the anomalous experience.

The relatively weak relationship of insight to symptoms pointed out by McEvoy et al. (1989) and summarized by Mintz et al. (in press) warrants an investigation of the patients' cognitive processing of their experiences. Focusing on the specific structure of patients' beliefs about the nature of their anomalous experiences could provide an alternative way of conceptualizing insight. For example, some patients accept the explanation that they are mentally ill and that their unusual experiences are symptoms of a mental disorder—without being convinced of this. When questioned about the cause of their symptoms, these patients typically repeat what they have been informed, namely that they have a mental illness and that their symptoms are caused by schizophrenia, or alternatively, by a chemical imbalance. Upon an in-depth clinical exploration of the content and characteristics of these experiences, however, it becomes apparent in many cases that this explanation does not reflect their strongly held beliefs. A hallucinating patient, for example, may acknowledge that the voices are caused by a mental illness. However, when questioned in greater depth, he or she may say that the voices are messages from Satan. The patient's initial explanation could be described as an expression of "intellectual insight" as opposed to "emotional insight." As used in the psychotherapy literature, emotional insight represents sufficient self-understanding to modify dysfunctional beliefs and their affective and behavioral consequences. Even though patients may honestly accept an explanation and agree that it makes sense (intellectual insight), they may not experience any appreciable change in their underlying delusional belief system (emotional insight).

The clinical concept of insight evaluated by a variety of scales (Amador et al., 1993, 1994; Birchwood et al., 1994; David, 1990; David et al., 1992; Davidhizar, 1987; Marks et al., 2000; McEvoy et al., 1989) has been valuable for determining the presence of mental illness and its prognosis, as well as prescribing appropriate treatment and management (Amador and David, 1998; Mintz et al., in press). However, the clinically oriented insight scales do not directly address the patients' limited capacity for evaluation of their anomalous experiences and their erroneous inferences. These cognitive deficiencies contribute to the impairment in clinical insight and to the development of delusional beliefs and thinking.

The crucial cognitive problem in psychotic patients resides not only in their consistent distortions of their experiences, but also in their relative inability to distance themselves from these distortions and in their relative impermeability to corrective feedback. Some nonpsychotic individuals, such as patients with depression or panic disorder, also misinterpret events: the depressed patient, for example, overinterprets interactions with others as a sign of rejection or personal inadequacy (Beck et al., 1979), whereas the panic-prone patient misinterprets physical sensations as a sign of a serious ailment (Beck et al., 1985). In both disorders, the patients retain the capacity to reflect on their experiences and to recognize that their conclusions were incorrect. In contrast, this capacity is attenuated to varying degrees in patients with psychosis. The relevant components of this refractoriness in psychosis are: (a) impairment of objectivity about the cognitive distortions, (b) loss of ability to put these into

perspective, (c) resistance to corrective information from others, and (d) overconfidence in conclusions.

The impairment in these processes of detecting and correcting misinterpretations is obviously related to the clinical phenomenon of impaired insight into the presence of symptoms and mental illness. If the patients with psychosis have impaired capacity to evaluate their aberrant interpretations as susceptible to refutation they are compelled to believe that the experiences that others call symptoms of illness are real, that their interpretations are facts, and that their thinking is rational.

The lack of awareness of a mental illness requiring treatment may be regarded as an impairment of "clinical insight." This form of insight focuses on those aspects of clinical phenomenology essential for diagnosis and treatment, whereas "cognitive insight" includes the evaluation and correction of distorted beliefs and misinterpretations. These evaluations are based on "higher level" cognitive processes (sometimes called metacognition), such as the ability to distance themselves from their misinterpretations and to reappraise them.

A first step in the understanding of these processes is to evaluate patients' reports of their objectivity regarding their current delusional thinking, their perspective about previous errors, their capacity for reattribution of erroneous explanations, and their receptiveness to corrective information from other people. The purpose of the present study is to investigate the psychometric characteristics and clinical utility of the Beck Cognitive Insight (BCIS), a self-report instrument that was developed to focus on self-reflectiveness about unusual experiences, capacity to correct erroneous judgments, and certainty about mistaken judgments.

1. Method

1.1. Sample

The sample was composed of 150 adult (18 years old and above) inpatients who were consecutively admitted to the adult psychiatric unit of a general hospital located in Cherry Hill, NJ, who were diagnosed with schizophrenia, schizoaffective disorder, major depressive disorder without psychosis, or major depression with psychotic features (who will be referred to as psychotic depressives for the remainder of this paper). All of the patients were required to have a Global Assessment of Functioning Scale (DSM-IV-TR Axis V; American Psychiatric Association, 2000) score <30 indicating severe impairment in functioning to be eligible for admission to the inpatient unit. Seventy-five inpatients were recruited to represent each of the two broad diagnostic groups (schizophrenia/schizoaffective and major depressive disorder) so that there would be a ratio of 1 BCIS item to five inpatients in case separate factor analyses had to be conducted for each group.

Seventy-five inpatients (50%) were diagnosed with schizophrenia or schizoaffective disorder: 43 schizoaffective disorder (29%), 26 paranoid schizophrenia (17%), 6 undifferentiated schizophrenia (4%). Seventy-five inpatients (50%) were diagnosed with a major depressive disorder [9 single-episode (6%), 66 recurrent-episode (44%)]. Of the 75 (50%) patients diagnosed with a major depressive disorder, 16 were psychotic depressives (21%), and 59 were diagnosed without psychotic features (79%). Sixty inpatients (40%) were diagnosed with comorbid disorders; 49 of these comorbid disorders (82%) were for alcohol, substance abuse, or both of these disorders. Only 14 inpatients (9%) were diagnosed with personality disorders.

All of the diagnoses were made according to DSM-IV-TR (American Psychiatric Association, 2000) criteria by a psychiatrist (EB) who was board certified in adult psychiatry and was actively engaged in teaching psychiatric residents and medical students how to make DSM-IV-TR diagnoses. These diagnoses were based not only on clinical interviews with the patients and their family members, when available, but also upon their previous hospital records. All of the inpatients were taking psychotropic medications at the time of testing. Of course, the types of medications prescribed for the patients corresponded to the different types of principal and comorbid disorders that they presented with. Each prescription plan was tailored to a specific patient's needs. Therefore, no attempt was made to control for individual or broad classes of medications in subsequent analyses because (a) broad class of medications, such as atypical antipsychotics, would be nested in type of diagnosis and (b) there were insufficient numbers of patients to test for the

effects of specific medications, such as risperidone versus olanzapine. A psychiatrist first determined whether a patient's present admission was caused by a failure to take a medication that the patient had successfully responded to in the past. If there was such a medication, then the psychiatrist would again start that type of medication. However, if the psychiatrists could find no history of previous medications, then he or she would start the patient on an atypical antipsychotic, such as risperidone or olanzapine. All of the patients who were diagnosed with a major depressive disorder were started on a single-serotonin-reuptake-inhibitor antidepressant, such as fluoxetine. However, if psychotic features were detected, then an antipsychotic agent, such as risperidone or olanzapine, would also be prescribed.

There were no significant differences in the demographic characteristics of the sample. The schizophrenic/schizoaffective and major depressive groups were comparable with respect to sex, and there were 38 women (51%) in the former group and 35 women (47%) in the later group. The proportions of Caucasians in both groups were also comparable; there were 43 (57%) Caucasians in the schizophrenic/schizoaffective group and 47 (63%) Caucasians in the major depressive sample. The mean ages of the inpatients with schizophrenia or schizoaffective disorders ($M = 38.92$, S.D. = 11.44) were comparable to the mean age of the inpatients with a major depressive disorder ($M = 37.89$, S.D. = 11.70). The inpatients with a major depressive disorder ($N = 39$, 52%) were more likely to be diagnosed with a comorbid disorder than were the inpatients in the schizophrenia/schizoaffective group ($p < 0.02$).

1.2. Instruments

1.2.1. BCIS

As a first step towards assessing cognitive insight in patients with psychoses, a 10-item interview schedule was developed and administered by a trained clinician. The questions were based on clinical observations of patients with and without psychoses as well as on concepts regarding self-correction derived from previous writings (e.g., Gilbert, 1991; Lazarus, 1991; Beck et al., 1979). Analyzing these responses within the framework of cognitive theory (Beck et al., 1979), the senior author (A. T. B.) constructed the Beck Cognitive Insight Scale (BCIS) by adding five more items and rewording the items for self-administration.[1] The vocabulary in the BCIS represents a third-grade reading level.

Respondents are asked to rate how much they agree with each statement by using a 4-point scale that ranges from 0 (do not agree at all) to 3 (agree completely). No time frame for the ratings is provided. This self-report instrument was constructed to contain two sets of items. The first set included items relevant to objectivity, reflectiveness, and openness to feedback. The questions were written to capture patients' recognition that they could be wrong even when they felt strongly that they were right (item #8), that other people could be more objective (#3) than they were, and that they were willing to consider other people pointing out that their beliefs were wrong (#12). An item was included to evaluate the patients' acceptance of the notion of alternative explanations (#14). There were also items about patients being receptive to feedback (items #12), being able to make more adaptive attributions (#5, #15), and being able to admit to inadequate cognitive strategies (#4). "Perspective" was based on the recognition that patients had misconstrued peoples' attitudes towards themselves (#1), that they had jumped to conclusions too fast (#4), that certain experiences that had seemed real were due to their imagination (#5), that some of the ideas he or she believed to be true were false, and that some of their unusual experiences were due to their being upset or stressed (#15).

The second set of items in the BCIS was written to address decision-making regarding mental products: jumping to conclusions, certainty about being right, and resistance to correction. These six items addressed a patient's certainty about his or her beliefs and conclusions, such as doing something if it feels right (#7), dogmatic rightness (#2, #13), and resistance to feedback from others (#9, #10, #11).

1.2.2. BDI-II

The 21-item Beck Depression Inventory-II (Beck et al., 1996) measures the severity of self-reported depression in adolescents and adults and addresses all nine of the diagnostic criteria for a major depressive

[1] A copy of the 15-item BCIS is presented in the Appendix A.

episode that are listed in the DSM-IV-TR. It is scored by summing the highest ratings for each of the 21 symptoms. Each symptom is rated on a 4-point scale ranging from 0 to 3, and total scores can range from 0 to 63. The time frame for the ratings is for the "Past Two Weeks, Including Today" [see Steer and Beck, 2001 for a review of BDI-II research].

The coefficient α of the BDI-II total scores for the 150 in patients in the present study was 0.93, and the mean BDI-II total score for the total sample was 29.18 (S.D. = 15.00) indicating that the average inpatient was describing a severe level of depression according to Beck et al.'s (1996) interpretative guidelines.

1.2.3. SUMD-A

The Scale to Assess Unawareness of Mental Disorder (SUMD-A (Amador et al., 1994) assesses (1) awareness of the mental disorder, (2) consequences of the mental disorder, (3) effects of medication, (4) hallucinatory experiences, (5) delusions, (6) thought disorder, (7) flat or blunted affect, (8) anhedonia, and (9) asociality. Each of these items is rated on a 4-point rating scale: 0 (not applicable), 1 (aware), 2 (somewhat aware/unaware), and 3 (severely unaware). The SUMD-A is not summed to calculate a total score, but each item is considered to represent a separate aspect of insight. Amador et al. (1994) reported that the interrater intraclass-correlation coefficients (ICC) for the SUMD ranged from 0.76 to 0.99 with a median of 0.89. In the present study, the psychiatrist (EB) and psychiatric resident (JB) making the SUMD-A ratings had 100% agreement (ICC = 1.00) for the Medication Effects, Hallucinations, Anhedonia, and Asociality items. The ICCs for the Mental Disorder, Consequences, Delusions, Thought Disorder, and Blunted Affect items were, respectively, 0.93, 0.89, 0.93, 0.83, and 0.75, $p < 0.001$. For analysis purposes, the mean item rating for both raters was used.

1.3. Procedure

All patients completed the BDI-II and the BCIS within 72 h of admission to the inpatient unit. The order in which the BDI-II and BCIS were administered was alternated. The second (EB) and third (JB) authors also independently rated 15 consecutively admitted patients diagnosed with schizophrenia or schizoaffective disorder with the SUMD-A. Both raters were blind to each other's SUMD-A ratings and to the patient's BDI-II and BCIS scores when they made their ratings. The present study was conducted with the approval of the medical school's Institutional Review Board.

2. Results

2.1. Factor analysis

A variety of principal factor analyses with both orthogonal (varimax) and nonorthogonal (promax) rotations were first conducted with the 15 BCIS ratings for not only the total sample of 150 inpatients together, but also separately for the 75 (50%) patients diagnosed with schizophrenia or schizoaffective disorder and the 75 (50%) patients diagnosed with an MDD. Although these analyses indicated that one or two items might shift from loading on one dimension to another, all of the factor analyses indicated that the BCIS was composed of either two or three underlying factors. However, because these factors were only minimally (< 0.30) correlated with each other, we finally decided to use a varimax-rotated principal-components analysis to identify the item domains that were represented by the 15 BCIS ratings.

The principal components analysis of the intercorrelations among the 150 inpatients' 15 BCIS ratings was performed using the SAS Factor procedure, and Cattell's (1966) scree test was employed to determine the number of components to extract based on the magnitudes of the consecutively extracted principal-component eigenvalues. The first six, consecutive eigenvalues were 2.87, 1.92, 1.48, 1.22, 0.99, and 0.92; these eigenvalues indicated that two or three components should be extracted and inspected for simple structure. The resultant components were rotated to a varimax (orthogonal) solution. The two-component solution displayed the simplest structure with all but one item, loading saliently (≥ 0.30) on one component as opposed to the other component.

Table 1 shows the varimax-rotated principal-component loadings for the 15 BCIS items. The loadings have been sorted in descending order of magnitude to facilitate interpretation. Component I had nine salient loadings (>0.30) for items #1 (have misunderstood), #3 (others more objective), #4 (jumped to conclu-

Table 1
Varimax-rotated principal components for the Beck Cognitive Insight Scale

Item	I	II	h^2
(6) Ideas were false	*0.66*	0.04	0.44
(4) Jumped to conclusions	*0.63*	0.19	0.43
(5) Due to imagination	*0.59*	0.19	0.38
(1) Have misunderstood	*0.58*	0.07	0.34
(8) Could be wrong	*0.57*	−0.24	0.39
(15) Due to stress	*0.50*	0.18	0.28
(3) Others more objective	*0.43*	0.11	0.20
(12) Willing to consider	*0.41*	−0.10	0.18
(14) Possible explanations	*0.33*	−0.19	0.15
(10) People are wrong	0.08	*0.67*	0.45
(7) Feels right is right	−0.06	*0.64*	0.42
(11) Cannot trust opinion	0.15	*0.63*	0.42
(9) Know problems	0.11	*0.61*	0.38
(2) Definitely right	0.12	*0.49*	0.26
(13) Trust own judgment	−0.12	0.25	0.08
% Total	18	14	32
% Common	60	40	100

$N = 150$ salient loadings ≥ 0.30 are in italic.

sions), #5 (due to imagination), #6 (ideas were false), #8 (could be wrong), #12 (willing to consider), #14 (possible explanations), and #15 (due to stress), whereas Component II had five salient loadings for item #2 (definitely right), #7 (feels right is right), #9 (know problems), #10 (people are wrong), and #11 (cannot trust opinion). However, item #13 (trust own judgment) has its highest loading (0.25) on this second component.

The first component was interpreted as an expression of introspection and willingness to acknowledge fallibility and was thus considered to represent *self-reflectiveness*. The five items saliently loading on the second component, along with item #13 (my judgment), were the six statements that had been written to address a patient's certainty about beliefs or judgments. This component was labeled *self-certainty.*

Based on the component loadings shown in Table 1, BCIS self-reflectiveness and self-certainty subscales were next constructed by summing the ratings for the items in Table 1 with the highest loadings, respectively, on Components I and II. We hypothesized that patients' level of certainty about their beliefs might diminish their ability or willingness to be introspective and that the reflectiveness–certainty index would reflect such a dampening of self-reflectiveness. Thus, a composite index was calculated reflecting self-reflectiveness adjusted for self-certainty (self-reflectiveness minus self-certainty). The mean BCIS self-reflectiveness and self-certainty scores for the total sample were, respectively, 14.01 (S.D. = 4.84) and 6.99 (S.D. = 3.50). The correlation between the self-reflectiveness and self-certainty scores was 0.16 and not significant. The mean composite index score was 7.02 (S.D. = 5.51).

2.1.1. Subscale internal consistencies

The coefficient αs of the self-reflectiveness and self-certainty scores for the 150 inpatients were, respectively, 0.68 and 0.60. All of the corrected item-total correlations of the BCIS items with their respective subscale total scores were significant ($p < 0.05$, one-tailed test). Given that both of these subscales are composed of < 10 items, these levels of internal consistency were considered to be acceptable for research purposes (Cortina, 1993; Holden et al., 1991), even though both coefficient αs were less than the 0.70 value recommended by Nunnally (1978). The coefficient αs for the self-reflectiveness and self-certainty scores were, respectively, 0.67 and 0.61, for the 75 (50%) inpatients with schizophrenia or schizoaffective disorder, and the coefficient αs for the self-reflectiveness and self-certainty scores were, respectively, 0.69 and 0.59, for the 75 (50%) inpatients with a major depressive disorder.

2.2. Convergent validity

To estimate the convergent validities of the BCIS self-reflectiveness and self-certainty subscales along with the composite index, these subscales and index were correlated with the nine mean SUMD-A ratings for 15 of the inpatients who were diagnosed with schizophrenia or schizoaffective disorder (2 paranoid schizophrenia, 11 schizoaffective, and 2 chronic undifferentiated schizophrenia). This subsample consisted of only these patients because the SUMD was designed for patients with psychotic disorders. A Bonferroni adjustment of 0.05/9 was employed to control for the familywise error rate. Table 2 shows that there were only two significant correlations: BCIS composite index and the SUMD-A mental disorder ($r = -0.62$, $p < 0.05$) ratings, and between self-reflectiveness and the SUMD-A delusions ($r = -0.67$, $p < 0.05$) ratings. The magnitudes of both of these correlations were large according to Cohen's (1992)

Table 2
Correlations of the Beck Cognitive Insight Scale subscales and index with the abridged scale to assess unawareness of mental disorder for inpatients with schizophrenia and schizoaffective disorder

Item	Self-reflectiveness (R)		Self-certainty (C)	Composite index
	N	*r*	*r*	*r*
Mental disorder	15	− 0.41	0.31	− 0.62*
Consequences	15	− 0.38	0.07	− 0.40
Medication effects	13	− 0.32	− 0.09	− 0.34
Hallucinations	11	− 0.45	− 0.01	− 0.57
Delusions	13	− 0.67*	− 0.14	− 0.52
Thought disorder	15	− 0.47	0.05	− 0.47
Blunt affect	10	− 0.55	0.17	− 0.50
Anhedonia	9	0.64	0.39	0.31
Asociality	8	0.37	0.32	0.17

The varying *N*s represent the number of inpatients for whom the items were appropriate. Composite index = self-reflectiveness score − self-certainty score.

* $p < 0.05$, Bonferroni adjusted.

effect size guidelines. Although there were only two significant correlations in Table 2, the magnitudes of all of the correlations of the self-reflectiveness subscale and eight of the correlations of BCIS composite index with the SUMD-A items represented moderate to large effect sizes. In addition, three of the correlations of the self-certainty subscale with the SUMD-A items reflected moderate effect sizes. The magnitudes of these correlations failed to achieve significance because a small number of inpatients were rated. Therefore, it was concluded that the BCIS subscales and index displayed sufficient convergent validity with the SUMD-A to proceed with additional analyses.

2.3. Psychosocial correlates

Before comparing the mean BCIS subscale and index scores of the inpatients by type of diagnosis, we investigated whether any of the inpatients' psychosocial characteristics might have to be controlled for in regression analyses. Table 3 lists the product moment correlations of the BCIS subscales and index scores with sex, race, age, comorbid disorder, a personality disorder, the order of administration of the BDI-II, and BDI-II suicidal ideation (#9) item by whether the inpatients had been diagnosed with schizophrenia/schizoaffective disorder or MDD. The point-biserial correlations (r_{pb}) of order of administration with the subscales were calculated because the order in which the BCIS and BDI-II had been administered had been alternated. The mean difference between the BDI-II total scores for the total sample of inpatients who had completed this instrument first 27.41 (S.D. = 14.52) and second 30.95 (S.D. = 15.35) was not significant, $t(148) = 1.45$, $d = 0.24$.

Table 3
Correlations of the Beck Cognitive Insight Scale subscales and index with selected psychosocial characteristics by diagnostic groups

Item	Self-reflectiveness (R)	Self-certainty (C)	Composite index
	r	*r*	*r*
Schizophrenias and schizoaffective disorder (N = 75)			
Sex (0 = male, 1 = female)	0.03	− 0.08	0.08
Being Caucasian (0 = no, 1 = yes)	0.09	− 0.07	0.12
Age (years)	− 0.18	− 0.02	− 0.13
Comorbid disorder (0 = no, 1 = yes)	0.08	0.16	− 0.03
Personality disorder (0 = no, 1 = yes)	− 0.02	− 0.14	0.07
Order BCIS administered (1 = first, 2 = second)	− 0.09	− 0.14	0.02
BDI-II total scores	0.17	0.01	0.14
BDI-II suicidal ideation Item	0.21	0.11	0.11
Major depressive disorder (N = 75)			
Sex (0 = male, 1 = female)	0.09	0.04	0.06
Being Caucasian (0 = no, 1 = yes)	− 0.28	− 0.21	− 0.12
Age (years)	− 0.01	0.16	− 0.11
Comorbid disorder (0 = no, 1 = yes)	− 0.13	− 0.09	− 0.06
Personality disorder (0 = no, 1 = yes)	0.04	− 0.28	− 0.15
Order BCIS administered (1 = first, 2 = second)	− 0.16	− 0.06	− 0.11
BDI-II total scores	0.33*	0.32*	0.10
BDI-II suicidal ideation Item	0.20	0.27	0.01

BDI-II = Beck Depression Inventory-II, composite index = self-reflectiveness score − self-certainty score.

* $p < 0.05$, Bonferroni adjusted.

Using a Bonferroni adjustment of 0.05/8 to control for the familywise error rate in each diagnostic group, Table 3 indicates that order of administration was not significantly correlated with the self-reflectiveness and self-certainty scores in the inpatients. However, for the inpatients diagnosed with a major depressive disorder *without* psychosis there were two significant ($p < 0.05$) correlations: self-reflectiveness and self-certainty were both moderately correlated with self-reported depression as measured by the BDI-II.

2.4. Diagnostic discrimination

Table 4 presents the means and standard deviations of the self-reflectiveness and self-certainty subscale scores along with the BCIS composite index scores for four diagnostic groups. One-way ANOVAs, followed by post-hoc Bonferroni contrasts, indicated that the mean self-reflectiveness scores, while higher in the nonpsychotics of the inpatients, did not differ significantly across the four diagnostic groups, $F(3,146) = 2.39$, $\eta^2 = 0.05$, ns. The mean self-certainty scores of these diagnostic groups differed, $F(3,146) = 3.65$, $\eta^2 = 0.07$, $p < 0.05$. The Bonferroni contrasts indicated that the mean self-certainty score of the inpatients who were diagnosed with a psychotic depression was higher than the mean self-certainty score of the inpatients who were diagnosed with a major depressive disorder without psychosis (Table 4); the mean difference of 2.53 represented a large effect size of 0.82. Importantly, the BCIS composite index significantly differentiated among the four groups, $F(3,146) = 5.33$, $\eta^2 = 0.10$, $p < 0.01$. As Table 4 indicates, the mean composite index score of the inpatients diagnosed with a major depressive disorder without psychotic features was significantly higher than the mean index scores of the patients diagnosed with schizophrenia or psychotic depression.

To ascertain whether the BCIS subscales and composite index would differentiate inpatients with psychotic diagnoses from those without psychotic diagnoses, the 75 inpatients who were diagnosed with schizophrenia or schizoaffective disorder were combined with the 16 inpatients with psychotic depression. Independent *t*-tests were then calculated to compare the mean BCIS subscale and index scores of these 91 (61%) inpatients with psychotic diagnoses to the 59 (39%) inpatients without a psychotic diagnosis. The mean self-reflectiveness score ($M = 13.19$, S.D. = 5.14) of the inpatients with psychoses was lower than the mean self-reflectiveness score ($M = 15.29$, S.D. = 4.07) of the inpatients without psychosis, $t(148) = 2.65$, $d = 0.44$, $p < 0.01$. Furthermore, the mean self-certainty score ($M = 7.45$, S.D. = 3.78) of the inpatients with psychotic diagnoses was also higher than the mean self-certainty score ($M = 6.29$, S.D. = 2.92) of the inpatients without a psychotic diagnosis, $t(148) = 2.00$, $d = 0.33$, $p < 0.05$. For the composite index, the mean score of 5.74 (S.D. = 5.74) for the inpatients with psychotic diagnoses was lower than the mean score of 9.00 (S.D. = 4.51) for the inpatients without a psychotic diagnosis, $t(148) = 3.69$, $d = 0.66$, $p < 0.001$. Fig. 1 shows the means of the BCIS subscales and index for the inpatients with and without psychotic diagnoses. The mean differences for the two BCIS subscales represent moderate effect sizes, whereas the mean difference for the composite index reflected a large effect size.

Controlling for self-reported depression with the BDI-II total scores in a regression analysis, the differentiation provided by the self-reflectiveness

Table 4
Means and standard deviations of the Beck Cognitive Insight subscales and index by diagnostic groups

Group	Self-reflectiveness (R)			Self-certainty (C)		Composite index	
	N	*M*	S.D.	*M*	S.D.	*M*	S.D.
Diagnosis							
Schizophrenia	32	12.97	5.00	7.94	3.78	5.03	5.76
Schizoaffective	43	13.26	4.70	6.53	3.45	6.63	5.78
Major depressive disorder with psychotic features	16	13.69	6.67	8.94	4.19	4.75	5.60
Major depressive disorder without psychotic features	59	15.29	4.07	6.29	2.92	9.00	4.51

$N = 150$.

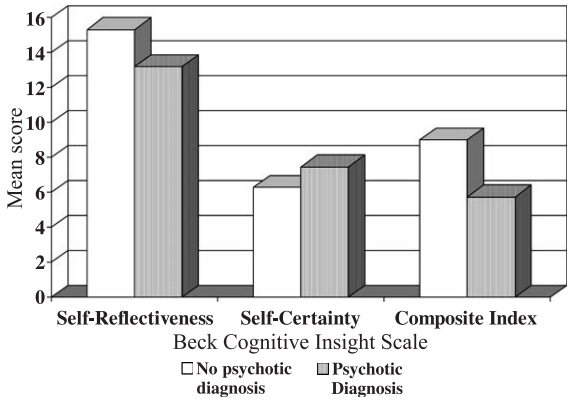

Fig. 1. Mean Beck Cognitive Insight subscale and index scores for inpatients with and without psychotic diagnoses ($t(148)=2.65$, $p<0.01$).

scores among the four diagnostic groups was not significant and comparable to that afforded by the self-reflectiveness subscale by itself, $F(3145)=2.00$, $\eta^2=0.12$, ns. The magnitude of the differentiation provided by the self-certainty subscale scores, after controlling for the BDI-II total scores, also remained comparable to that found for the self-certainty subscale by itself, $F(3,145)=3.88$, $\eta^2=0.09$, $p<0.05$.

3. Discussion

The Beck Cognitive Insight Scale (BCIS) was developed in order to increase the understanding of patients' perspectives about their anomalous experiences, their attributions, and their aberrant interpretations of specific life events. The BCIS showed adequate convergent validity and discriminant validity. The moderate correlations with the Scale to Assess Unawareness of Mental Disorder (Amador et al., 1994) suggest that the BCIS has relevance to the patients' objectivity regarding their idiosyncratic experiences. The subscales, labeled self-reflectiveness and self-certainty, appear to measure separate components of cognitive insight: (a) the patients' capacity and willingness to observe their mental productions and to consider alternative explanations and (b) their overconfidence in the validity of their beliefs.

The coefficient αs for the self-reflectiveness and self-certainty scores were, respectively, 0.68 and 0.60 for the total sample of 150 inpatients, indicating that neither subscale should be used for individual clinical assessment purposes. Although these levels of internal consistency are below 0.70 (Nunnally, 1978), these values were considered acceptable for research purposes because both of the subscales are composed of less than 10 items (Cortina, 1993; Holden et al., 1991). Perhaps, these low coefficient αs are also partially attributable to the severity of the inpatients' current mental disorders, especially for those inpatients with thought disturbances and concentration difficulties.

With respect to the convergent validity of the BCIS subscales and index, the self-reflectiveness subscale score was inversely correlated ($r=-0.67$, $p<0.05$) with the SUMD-A delusions item, and the composite index was related to the SUMD-A mental disorder item ($r=-0.62$, $p<0.05$). Although the BCIS subscales and index were only significantly related to two of the nine SUMD-A types of awareness, the magnitudes of the majority of the correlations of these subscales and composite index with the SUMD-A items represented moderate to large effect sizes. The composite index, which adjusts for a patient's level of self-reflectiveness based on his or her level of self-certainty, yielded the highest differentiation ($d=0.66$) between the inpatients with and without psychotic diagnoses. The inpatients with psychotic diagnoses were less self-reflective and more certain of their judgments than the patients without psychotic diagnoses.

The construct validity of the scale was supported by a study by Granholm et al. (2002). The authors found a significant correlation of the change scores of the positive symptoms and the negative symptoms with change scores on the BCIS in patients with schizophrenia receiving cognitive behavior therapy ($r=0.65$ and 0.58, respectively). The findings by Granholm et al. (2002) suggest that insight is a mediating variable in cognitive therapy of schizophrenia since a "standard treatment" control group did not show any correlation between improvement in their symptomatology and scores on the scale.

The BCIS thus appears to have value as a research instrument. The concept of "cognitive insight" has not been fully explored in previous research and should be a fruitful area for systematic investigations. A variety of studies of the patients' ability to evaluate their own biases and misattributions, for example, could be based on experimental paradigms utilized in studies of nonpsychotic subjects.

An example of an experiment that could tap into patients' capacity for self-reflectiveness would be the evocation of idiosyncratic interpretations of personally relevant stimuli followed by questions evaluating their objectivity toward the interpretations. The Articulated Thoughts during Simulated Situations (Davison et al., 1997) is designed to identify attributional biases and other distortions following emotional arousal. Following the administration, the patients' capacity to reflect on their cognitions and to consider alternative explanations could be evaluated. Also, their performance could be correlated with scores on the BCIS as further test of its construct validity.

The present study has several limitations. First, psychotic depression was underrepresented. Second, the majority of the present inpatients were Caucasian and were being treated in a general hospital located in suburban community. Third, the study did not employ an instrument with a structured set of interview questions to establish the inpatients' diagnoses. Fourth, because the average patient's length of stay in the present psychiatric unit was less than 1 week, it was infeasible to determine the 2-week test–retest reliability of the BCIS subscale and index scores. Future research needs to explore the psychometric properties in diverse psychiatric samples and its applicability to predicting favorable outcome with cognitive therapy as well as mediating improvement with this therapy.

Appendix A. Beck Insight Scale

Below is a list of sentences about how people think and feel. Please read each sentence in the list carefully. Indicate how much you agree with each statement by placing an X in the corresponding space in the column next to each statement.

		Do not agree at all	Agree slightly	Agree a lot	Agree completely
(1)	At times, I have misunderstood other people's attitudes towards me.				
(2)	My interpretations of my experiences are definitely right.				
(3)	Other people can understand the cause of my unusual experiences better than I can.				
(4)	I have jumped to conclusions too fast.				
(5)	Some of my experiences that have seemed very real may have been due to my imagination.				
(6)	Some of the ideas I was certain were true turned out to be false.				
(7)	If something feels right, it means that it is right.				
(8)	Even though I feel strongly that I am right, I could be wrong.				
(9)	I know better than anyone else what my problems are.				
(10)	When people disagree with me, they are generally wrong.				
(11)	I cannot trust other people's opinion about my experiences.				
(12)	If somebody points out that my beliefs are wrong, I am willing to consider it.				
(13)	I can trust my own judgment at all times.				
(14)	There is often more than one possible explanation for why people act the way they do.				
(15)	My unusual experiences may be due to my being extremely upset or stressed.				

References

Amador, X.F., David, A.S. (Eds.), 1998. Insight and Psychosis. Oxford Univ. Press, New York, NY.

Amador, X.F., Strauss, D.H., Yale, S., Gorman, J.M., Endicott, J., 1993. The assessment of insight in psychosis. Am. J. Psychiatry 150, 873–879.

Amador, X.F., Flaum, M., Andreasen, N.C., Strauss, D.H., Yale, S.A., Clark, S.C., Gorman, J.M., 1994. Awareness of illness in

schizophrenia and schizoaffective and mood disorders. Arch. Gen. Psychiatry 51, 826–836.
American Psychiatric Association, 2000. Diagnostic and Statistical Manual of Mental Disorders, 4th ed. American Psychiatric Association, Washington, DC. Text rev.
Beck, A.T., Rush, A.J., Shaw, B.F., Emery, G., 1979. Cognitive Therapy of Depression. Guildford, New York, NY.
Beck, A.T., Emery, G., Greenberg, R.L., 1985. Anxiety Disorders and Phobias. Basic Books, New York, NY.
Beck, A.T., Steer, R.A., Brown, G.K., 1996. Manual for Beck Depression Inventory-II. The Psychological Corporation, San Antonio, TX.
Birchwood, M., Smith, J., Drury, V., Healy, J., Macmillan, F., Slade, M.A., 1994. A self-report insight scale for psychosis: reliability, validity, and sensitivity to change. Acta Psychiatr. Scand. 89, 62–67.
Cattell, R.B., 1966. The scree test for the number of factors. Multivar. Behav. Res. 1, 245–276.
Cohen, J., 1992. A power primer. Psychol. Bull. 112, 155–159.
Cortina, J.M., 1993. What is coefficient alpha? An examination of theory and applications. J. Appl. Psychol. 78, 98–104.
David, A.S., 1990. Insight and psychosis. Br. J. Psychiatry 156, 798–808.
David, A., Buchanan, A., Reed, A., Almeida, O., 1992. The assessment of insight in psychosis. Br. J. Psychiatry 161, 599–602.
Davidhizar, R.E., 1987. Beliefs, feelings and insight of patients with schizophrenia about taking medication. J. Adv. Nurs. 12, 177–182.
Davison, G., Vogel, R.S., Coffman, S.G., 1997. Think aloud approaches to cognitive assessment and the articulated thoughts during simulated situations paradigm. J. Consult. Clin. Psychol. 65, 950–958.
Gilbert, D.T., 1991. How mental systems believe. Am. Psychol. 46, 107–119.
Granholm, E., McQuaid, J.R., McClure, F.S., Pedrelli, P., Beck, A.T., 2002. A randomized controlled trial of cognitive behavioral therapy for older patients with schizophrenia: improved insight is associated with symptom change. 17th Annual Society for Research in Psychopathology Convention, San Francisco, CA.
Holden, R.R., Fekken, G.C., Cotton, D.H.G., 1991. Assessing psychopathology using structured test-item response latencies. Psychol. Assess. 3, 111–118.
Jaspers, K., 1968. The phenomenological approach in psychopathology. Br. J. Psychiatry 114, 1313–1323.
Kraepelin, E., 1919. Dementia Praecox (R.M. Barclay, Trans.). Liningstone, Edinburgh.
Lazarus, R.S., 1991. Cognition and emotion. Am. Psychol. 46, 352–367.
Lewis, A., 1934. The psychopathology of insight. Br. J. Med. Psychol. 14, 332–348.
Marks, K.A., Fastenau, P.S., Lysaker, P.H., Bond, G.R., 2000. Self-Appraisal of Illness Questionnaire (SAIQ): relationship to researcher-rated insight and neuropsychological function in schizophrenia. Schizophr. Res. 45, 203–211.
McEvoy, J.P., Apperson, J., Appelbaum, P.S., Ortilip, P., Brecosky, J., Hammill, K., Geller, J.L., Roth, L., 1989. Insight in schizophrenia: its relationship to acute psychopathology. J. of Nerv. Ment. Dis. 177, 43–47.
Mintz, A.R., Dobson, K.S., Romney, D.M., in press. Insight in schizophrenia: a meta-analysis. Schizophr. Res.
Nunnally, J.C., 1978. Psychometric Theory, 2nd ed. McGraw-Hill, New York, NY.
Steer, R.A., Beck, A.T., 2001. Beck depression inventory II. In: Craighead, W.E., Nemeroff, C.B. (Eds.), The Corsini Encyclopedia of Psychology and Behavioral Science, 3rd ed. Wiley, New York, NY, pp. 178–179.