Awareness of Illness in Schizophrenia

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Abstract

This article reviews the literature on "poor insight" or unawareness of illness in schizophrenia. A large body of knowledge representing several different perspectives on insight has developed. This work can be divided into three broad categories, suggesting an important role for insight in the phenomenology, pathophysiology, and treatment of schizophrenia. The argument is made here that many of the self-awareness deficits observed in schizophrenia are of diagnostic significance, are neurally based, and are indispensable in guiding treatment decisions. In addition, this article proposes guidelines for assessing unawareness of illness in schizophrenia and discusses the relevance of such deficits to the diagnosis of schizophrenia.

Individuals with schizophrenia have often been observed to ignore the deficits caused by their illness and the effect their illness has on their lives. This lack of awareness, typically described as "poor insight," is believed to contribute to noncompliance with treatment. The relationship between schizophrenia and poor insight was identified when the disorder was first named by Bleuler (Bertschinger 1916; Mayer-Gross 1920, as cited in Wciórka 1988). Although the concept of insight is widely used in psychiatry, it has acquired a variety of meanings (Greenfeld et al. 1989). In recent years, an impressive body of knowledge representing several different perspectives on insight has developed. This work can be divided into three broad categories, suggesting an important role for insight in the phenomenology, pathophysiology, and treatment of schizophrenia.

This article reviews the literature on unawareness of illness in schizophrenia. We will begin by focusing on the relevance of insight to diagnosis and classification in schizophrenia. Next, we will discuss research on unawareness of deficits; this work coming largely from the neurological literature, bears on issues of etiology and pathophysiology in schizophrenia. Finally, we will review studies that assess insight as a predictor of treatment compliance and outcome. We will argue throughout that many of the self-awareness deficits observed in schizophrenia are of diagnostic significance, are neurally based, and are indispensable in guiding treatment decisions. In addition, we will propose guidelines for ascribing unawareness of illness in schizophrenia and will make recommendations for its measurement.

Before any review of the literature, a discussion of terminology and measurement is in order.

Terminology

A variety of terms have been applied to the observed unawareness of illness in schizophrenia, including "poor insight," "sealing over," "defensive denial," "attitudes about illness," "indifference reaction," "evasion," and "external attributions" (McGlashan et al. 1975; Wciórka 1988; Greenfeld et al. 1989; David 1990). These different terms reflect important underlying conceptual differences. On one end of the spec-

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trum, poor insight is understood as a psychological defense mechanism; at the other extreme, it denotes a theoretical position implicating cognitive deficit. In between lies a quagmire of related constructs that vary with the orientations of their authors. For example, from researchers grounded in cognitive psychology have come studies examining the "external attributions about illness" of schizophrenic patients (Wciórka 1988). Psychodynamically oriented explanations of poor insight have also been given (e.g., denial as a defense mechanism) and include a subdivision of emotional versus intellectual insight (Richfield 1954). Most of these differing constructs signify a particular etiology for poor insight.

Furthermore, the poor insight described in schizophrenia is not a unitary construct. For example, Wciórka (1988) and others (Greenfeld et al. 1989; David 1990) have argued that insight comprises a variety of phenomena. It has subtypes (e.g., retrospective and current insight), and, by definition, it forces presumptions about the nature of reality (David 1990). However, whatever the nature of reality, the phenomenon of interest here is one in which an individual's perception of himself is grossly at odds with that of his community and culture. Indeed, it is at odds even with the views of similarly affected psychiatric patients (Wing et al. 1964).

At the most fundamental level, then, what has been described in schizophrenia is a seeming lack of awareness of the deficits, the consequences of the disorder, and the need for treatment. We will use the term "unawareness of illness" in this broadest sense. However, we agree with those authors who propose that insight is best conceptualized as a multidimensional construct. In keeping with this perspective, and to allow for more precise comparisons between studies, we will comment on our view of the specific phenomena comprising the dependent variables assessed.

The Measurement of Self-Awareness Deficits

The measurement of insight in schizophrenia has received little critical attention in the literature. Various methods for measuring insight have been reported. Those commonly used can be broadly divided into five categories: (1) clinical descriptions of free responses (i.e., spontaneous patient behaviors), (2) clinical descriptions of free responses to a controlled stimulus, (3) systematized scoring of free responses, (4) systematized scoring of response to a standard stimulus, and (5) multiple choice. These categories have previously been identified in a methodological critique of studies of schizophrenic language (Chapman and Chapman 1973). In this section, we will briefly review the various methods, discuss the advantages and disadvantages of each, and present recommendations for future work.

Clinical Descriptions of Free Responses. The majority of the early studies on insight in schizophrenia fall into the category of clinical descriptions of free responses. Most of these studies are based on case materials describing patients' beliefs about whether or not they are mentally ill (e.g., Bertschinger 1916; Mayer-Gross 1920; Martin 1952; Richfield 1954; Tolor and Reznikoff 1960; Sacks et al. 1974). Using this method, the investigator places no restrictions on the patients' responses, nor are restrictions necessarily placed on the investigator's own categories for describing the responses. The investigator simply notes the spontaneous behavior of schizophrenic patients, speaks with the patients, or examines their writings. The advantage to this method is that it does not restrict observations or hypothesis making, and it maximizes the chances of observing new phenomena. A conspicuous drawback to this technique is the extreme variability of the eliciting stimuli and responses, making generalizability and replication extremely difficult.

Clinical Descriptions of Free Responses to a Controlled Stimulus. One method of reducing the variability mentioned above is to control the situation that elicits the response. With the implementation of a controlled stimulus, some ambiguity can be reduced. Any structured psychiatric interview, when interpreted without standardized scoring, would also fall under this category of data collection. The most widely used clinical test of insight that falls into this category is the Mental Status Exam (MSE; Talbott et al. 1988). Insight, as generally assessed in the MSE, is considered present "if the patient realizes that he is ill and the problem is in his own mind" (MacKinnon and Yudofsky 1986, p. 76). Several studies, particularly those reliant on chart review for their dependent measures, have used the MSE to categorize patients along the insight dimension (e.g., Eskey 1958; Caracci et al. 1990). Clinical descriptions of patients' responses to semistructured interviews have also been used (e.g., McGlashan et al. 1975; Greenfeld et al. 1989).

This method is useful for lessening the ambiguity as to what elicits the

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patients' responses; moreover, it affords the possibility of direct comparison between schizophrenic patients and other groups. If two groups are given the same standardized stimuli, their responses can be compared less ambiguously than would be the case if their everyday behavior were simply observed and then compared. The disadvantage to this method is the subjectivity in the clinical observation of the patients' responses.

Systematized Scoring of Free Responses. The method of systematized scoring of free responses is similar to the first method discussed; however, the interpretation of the data is more systematic. A system is devised to categorize patients' responses, making comparisons between studies easier. Taken to its extreme, this method includes the use of continuous variables within each category. For example, Wciórka (1988) tape-recorded patients' thoughts about how they defined their illness. He subsequently rated the tapes based on six categories of attitude about illness and used a 5-point scale to quantify responses assigned to each category. Others have employed similar techniques in their measurement of insight (World Health Organization 1973; Carpenter et al. 1976; Van Putten et al. 1976; Lin et al. 1979; Rosen et al. 1982; Heinrichs et al. 1985; Wilson et al. 1986; Bartko et al. 1988).

The benefit of this method is that it allows for the quantification of the dependent measure, permitting statistical analyses. Additionally, it provides the opportunity for several experimental controls not available in the first two methods; for example, raters can be blind to experimental hypotheses, subject identity, etc. Reliability can be established between raters, and the replicability of the study is increased. The main limitation to this approach is that some responses may not fit neatly into the categories created and, consequently, information is lost.

Systematized Scoring of Response to a Standard Stimulus. Another method involves the use of a standardized stimulus to elicit responses. The subject can respond in a variety of ways; however, the response is scored in terms of predetermined categories. Several semistructured interviews and questionnaires have been reported in the literature (Thurm and Haefner 1987; Greenfeld et al. 1989; McEvoy et al. 1989*b*). We (X.F.A., D.H.S.) have developed a semistructured interview and scale to assess Unawareness of Mental Disorder (SUMD). The SUMD allows for the independent assessment of patients' current and retrospective awareness of having a mental disorder. Other dimensions assessed include patients' awareness of various signs and symptoms, of benefit from treatment, and of the psychosocial consequences of mental disorder. Attributional patterns in each of these areas are also assessed, as patients are questioned in each area, and their responses are rated on 5-point scales. We are currently conducting a reliability and construct validity study in a large sample of patients with schizophrenia and other psychotic disorders.

The value of the method discussed above is that the eliciting stimuli are consistent from subject to subject, and the criteria by which one categorizes responses can be carefully defined. The probability of replicating the procedure and results is far greater than is the case with clinical interpretation of the same data. The obvious disadvantage is that many responses cannot be scored meaningfully using scoring schemes. If all responses to a test must be forced to fit into a limited set of preconceived categories, there will undoubtedly be instances when some responses are arbitrarily placed into those categories.

Multiple Choice. In the multiple choice method, the patient is presented with a standardized stimulus and given the choice between two or more alternative responses. For example, Soskis and Bowers (1969) developed a 55-item questionnaire for patients. For each item, patients were asked to indicate whether the statement applied to them. Statements suggestive of an insight-positive attitude included "It always helps to sit down and think things through," and "When I feel strange or bad, I like to stop and try to figure out what is causing it." Insight-negative statements included "There are certain of my problems that I would rather forget about," and "When I feel strange or bad, the best thing to do is to keep busy and hope it will go away" (Soskis and Bowers 1969, p. 446). Overall insight score was tabulated by subtracting the number of negative statements endorsed from the number of positive statements endorsed. A few studies have used similar techniques (e.g., Lin et al. 1979; McGlashan and Carpenter 1981).

The use of multiple choice questionnaires provides an easy method for obtaining multiple sources of information. For example, we have developed a SUMD questionnaire for relatives to complete about their psychiatrically ill family member. The collection of confirming evidence from multiple sources is essential to

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the issue of construct validity, which will be considered below.

In summary, these five general strategies for measuring insight have relative strengths and weaknesses. In large part, the choice of any particular method over another requires an assessment of the goals of the investigation. If the aim is to perform an exploratory, hypothesis-generating study, the first two methods described above seem appropriate. If the aim is to generate replicable research, the last three methods are more appropriate. We also recommend that future work in this area focus more on the issue of construct validity. We will argue below that several studies, under the pretense of studying insight, have in fact measured multiple constructs simultaneously. To increase construct validity, future investigations in this area should seek to assess multiple independent measures of the same phenomenon.

Diagnostic Relevance

Is Poor Insight a Sign of Schizophrenia? The identification of a schizophrenia syndrome(s) based on signs and symptoms has been a complex task. In large part, this is due to the heterogeneity of the disorder and the overlap of symptoms among the traditional subtypes. In the past decade, there has been a resurgence of interest in subtyping schizophrenia (e.g., Andreasen 1982). As shall be seen, the literature on unawareness of illness in schizophrenia is relevant to the task of developing more meaningful subtypes.

In an attempt to better identify more distinct subtypes of schizophrenia, Carpenter and his associates (1976) employed cluster analytic techniques on quantified sign and symptom data. This study, based on data collected from the *International Pilot Study of Schizophrenia* (IPSS; World Health Organization 1973), provided a unique opportunity to determine whether subtype diagnoses define groups of patients similarly across cultures. From the results of this study, Carpenter et al. (1976) observed that poor insight was a prevalent feature of schizophrenia and that level of insight was an important discriminating factor in making subtype diagnoses. Of 811 subjects studied, 680 were initially assigned to one of the following six schizophrenia subtypes: simple, hebephrenic, catatonic, paranoid, acute, and schizoaffective. The scores on the 27 dimensions assessed on the Present State Examination (PSE; Wing et al. 1974) (table 1) were then submitted to a profile analysis of variance, which revealed that the subtypes were not readily distinguishable from one another. Carpenter and his associates suggest that, as generally employed, these subtypes may be of limited value. They add that their findings, if replicated, challenge the use of the traditional signs and symptoms to define these subtypes. Largely due to their unreliability, these subtypes as originally described are no longer used in current diagnostic criteria (Black et al. 1988). However, the traditional signs and symptoms continue to be used in most nosological schemes.

Having found little symptomatic discrimination between traditional subtypes, Carpenter et al. (1976) submitted data from the same 27 dimensions to a cluster analysis and identified four distinct and mathematically defined clusters (total $n = 573$). These were viewed as potentially meaningful subtypes of schizophrenia by the authors, who labeled them "typical," "flagrant," "insightful," and "hypochondriacal." As can be seen in figure 1, typical schizophrenia was characterized by poor insight, persecutory and passivity delusions, auditory hallucinations, social withdrawal, and restricted affect. The second cluster, flagrant schizophrenia, "was distinguished by aberrant, agitated, or bizarre behavior, incomprehensibility, unkempt appearance, incongruent or restricted affect, and absence of anxiety or depression" (Carpenter et al. 1976, p. 515). Insightful schizophrenia shared many of the features of typical schizophrenia, but it had good rather than poor insight. The fourth cluster, hypochondriacal schizophrenia, was characterized by intermediate insight and distinguished by increased somatic concerns and visual hallucinations. The authors raise several methodological issues having to do with their use—which was novel at the time—of cluster analytic techniques to define diagnostic groups. They caution that their results should be considered preliminary pending replication and validity studies.

In a more recent multinational study entitled Classification of Chronic Hospitalized Schizophrenics (CCHS), the 12 signs and symptoms of the Flexible System Criteria (Carpenter et al. 1973) were assessed in a sample of 768 patients (Wilson et al. 1986). The results of this study replicated the IPSS finding of high rates of poor insight in schizophrenia. Patients were included if they received a hospital diagnosis of schizophrenia by ICD-9 (World Health Organization 1978) criteria that was independently confirmed by one of the researchers. In addition, patients had to evidence at least five of the symptoms from the Flexible System Criteria. Wilson and colleagues contrasted

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Table 1. Psychopathologic dimensions[1]

Dimension	Interclass reliability	No. of PSE[2] items
1. Depression	0.92	24
2. Anxiety	0.84	4
3. Restlessness	0.74	6
4. Psychomotor retardation	0.89	9
5. Hypomania/mania	0.92	15
6. Somatic concerns	0.78	1
7. Belligerence	0.86	4
8. Obsessions	0.78	3
9. Unkempt appearance	0.59	1
10. Disorientation	0.33	1
11. Lack of insight	0.79	1
12. Depersonalization/derealization	0.86	10
13. Paranoid delusions	0.93	17
14. Grandiose delusions	0.93	5
15. Delusions of passivity	0.92	7
16. Depressive and nihilistic delusions	0.85	7
17. Other delusions	0.84	3
18. Visual hallucinations	0.82	1
19. Auditory hallucinations	0.92	3
20. Other hallucinations	0.92	5
21. Bizarre behavior	0.81	16
22. Withdrawal	0.82	6
23. Incomprehensibility	0.83	16
24. Nonsocial speech	0.76	4
25. Restricted affect	0.65	3
26. Labile affect	0.59	1
27. Incongruous affect	0.66	1

[1]Reprinted, with permission, from Carpenter et al. (1976, p. 511). Copyright © American Medical Association, 1976.
[2]Present State Examination.

the sign and symptom data from this chronic sample to the relatively more acute IPSS sample (n = 811). The data contrasted were the numbers, percents, and rank order of the 12 signs and symptoms. As can be seen in table 2, poor insight occurred more often across both samples than did any other dimension. Interestingly, when they calculated a rank order correlation coefficient to assess the relations between these two samples, they found a strong similarity in the rank order of occurrence of all 12 items (r's = +0.76). The items that differed the most between samples were incoherent speech, widespread delusions, and thoughts aloud. Next, using the same data, Wilson et al. (1986) categorized the CCHS sample by ICD-9 subtypes and compared those groups. Most of the patients were diagnosed as having hebephrenic (n = 240) or paranoid (n = 238) schizophrenia; the rest received diagnoses of simple (n = 53), catatonic (n = 46), or schizoaffective (n = 24) schizophrenia, or did not fit into any of these categories (n = 167). The authors found that widespread delusions, waking early, and depressed facies showed the greatest variability between subtypes, while poor insight, restricted affect, and nihilistic delusions showed the least. They conclude that these comparisons suggest a shift in chronic schizophrenia toward more negative features. What is particularly noteworthy for this discussion is the authors' independent replication, in a second large multinational sample, of the finding of both the prevalence of poor insight (as defined in the IPSS) and its order of occurrence relative to other signs and symptoms.

In both studies reviewed (Carpenter et al. 1976; Wilson et al. 1986), insight was defined as present "if there was some awareness of emotional illness" and absent if the patient "vigorously denied he was disturbed" (World Health Organization 1973). Such a definition of insight is conservative: it requires only that the patient evidence some awareness of emotional illness. In the IPSS, awareness need not be accompanied by correct attribution for specific signs and symptoms (i.e., awareness of specific symptoms and accurate identification of these as a consequence of mental illness) to be called insight. Similarly, the IPSS general definition of insight does not require that the patient express recognition of the need for treatment. This definition of insight approximates that used by most clinicians in their implementation of the MSE. On the other hand, the IPSS definition of absence of insight is narrow and may identify something other than a lack of awareness. For example, the argument can be made that patients who "vigorously" deny the existence of a mental illness may be responding defensively to a recognition of the very deficits they are disavowing

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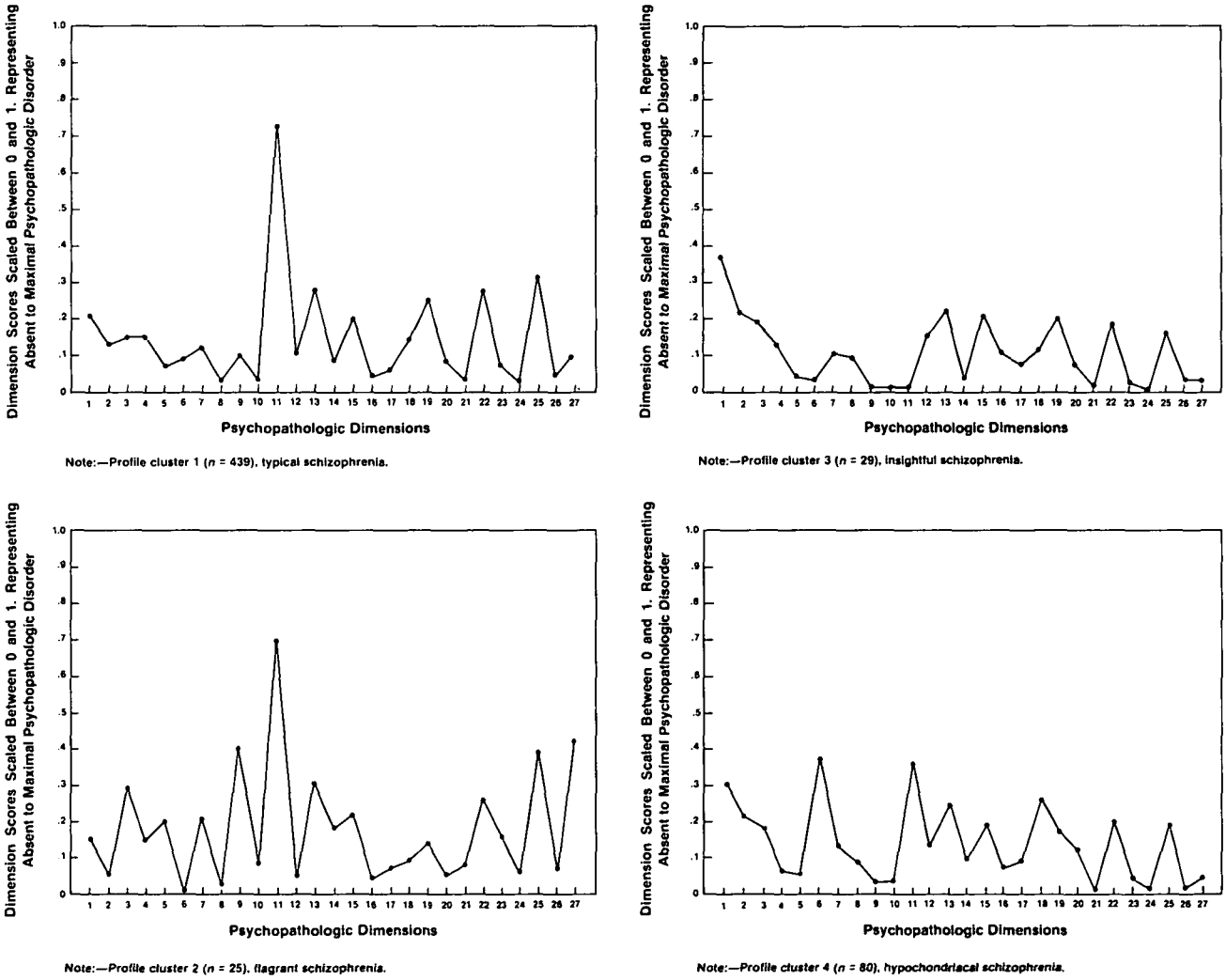
Figure 1. *Dimension scores on the 27 items of the Present State Examination (PSE) for four clusters: Typical, flagrant, insightful, and hypochondriacal schizophrenia*[1]



Note.—See table 1 for the 27 PSE dimensions.

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Table 2. Number, percentage, and rank order of occurrence of the flexible system criteria in the CCHS and IPSS populations[1]

	CCHS			IPSS		
Criteria	***n***	**%**	**Rank**	***n***	**%**	**Rank**
Restricted affect	584	76.0	2	488	60.2	3
Poor insight	686	89.3	1	657	81.0	1
Thoughts aloud	154	20.1	10	259	31.9	7
Waking early	258	33.6	7	219	27.0	8
Poor rapport	537	69.9	3	384	47.3	4
Depressed facies	229	29.8	9	164	20.2	9
Elation	99	12.9	11	70	8.6	11
Widespread delusions	342	44.5	6	489	60.3	2
Incoherent speech	354	46.1	4	80	9.9	10
Unreliable information	255	33.2	8	260	32.1	6
Bizarre delusions	352	45.8	5	307	37.9	5
Nihilistic delusions	36	4.7	12	64	7.9	12
Total *n*	768			811		

Note.—CCHS = Classification of Chronic Hospitalized Schizophrenics; IPSS = International Pilot Study on Schizophrenia.

[1]Reprinted, with permission, from Wilson et al. 1986, p. 260.

in order to escape the depressing reality of their situation (Van Putten et al. 1976).

Since it appears that poor insight, at least as defined in the IPSS, is clearly prevalent in schizophrenia, the question of its specificity to the disorder is raised. To our knowledge, there have been no direct comparisons of schizophrenic patients to other psychiatric groups on this particular dimension. However, evidence exists to suggest that "depressed" college students and psychiatric outpatients may be more accurate than normals in some aspects of self-evaluation, such as judging social competency and evaluating contingencies between their own behaviors and certain outcomes, regardless of the hedonic value of the outcomes (Alloy and Abramson 1979; Lewinsohn et al. 1980). Similarly, in a study contrasting depressed with nondepressed college students (i.e., mean Beck Depression Inventory Scores [Beck 1967] for depressed = 16.12 and for nondepressed = 1.19), Sackeim and Wegner (1986) found that depressed subjects were more accurate in their self-evaluations (i.e., they did not use the same self-serving biases) than were nondepressed subjects. In a second study, Sackeim and Wegner contrasted depressed inpatients and outpatients with schizophrenic inpatients and normal controls, and they found that the latter two groups used "self-serving biases" in their appraisals of their behaviors and their outcomes while the depressed patients did not. The self-serving biases were characterized as follows: "If an outcome is positive, I controlled it, I should be praised, and the outcome was very good. If an outcome is negative, I did not control it (as much), I should not be blamed, and it was not so bad anyway" (Sackeim and Wegner 1986, p. 559). The authors go on to say that the cognitive distortions evident in the schizophrenic and normal groups represent a "normal" pattern of functioning. In fact, an abundance of work with nonpsychiatric samples supports this position (see Taylor and Brown 1988 for a review).

Interpreting the meaning of these studies in the context of the present discussion is difficult because of the incompatibility of methods and limitations on the generalizability of the results. Sackeim and Wegner (1986) assessed subjects' attributions for hypothetical situations and found no differences between normals and schizophrenic patients. These findings are intriguing on many levels. They suggest that, in at least some areas of self-appraisal, schizophrenic patients (or a subgroup of these patients) function normally. That is, like most people, they use a self-serving bias in evaluating their behaviors and their outcomes.

Taken a step further, these findings also have implications for theories about the etiology of unawareness of illness in schizophrenia. In

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anticipation of our discussion of the neuropsychology of unawareness deficits, it is important to make a distinction that is made in neurology between dysfunctions that result in system breakdown and those that release a system so that its manifestations stand in greater relief. In this context, the gross unawareness of illness observed in schizophrenia could be explained as a result of the disinhibition of normally adaptive cognitive biases rather than as a deficit state per se. Meanwhile, the more accurate self-appraisals identified in depressives can be understood as a failure of these cognitive biases to affect their normal inhibitory effect on dysphoric mood. In other words, the self-awareness deficits evident in schizophrenia may result from overuse of normally adaptive cognitive biases whereas depressives fail to make use of such protective mechanisms. Indeed, Sackeim (1983) has proposed that self-deception (or denial) is adaptive and essential to the regulation of euthymic mood states. Interestingly, a report on insight and medication compliance from Van Putten et al. (1976) seems to support this view: they found a significant inverse relation between grandiosity and insight, leading them to hypothesize that drug refusers may prefer a grandiose psychotic state (i.e., an extreme, self-serving cognitive bias) to the more normal state induced by psychotropic medicine.

From the literature reviewed thus far, it remains unclear if unawareness of illness is specific to schizophrenia among psychiatric disorders or if self-awareness deficits observed in other disorders is of a different type. This uncertainty is due to the lack of comparability between methods and the dearth of work on unawareness of illness as such in psychiatric disorders other than schizophrenia. Future work could address these issues by using a standardized assessment of unawareness in large samples of psychiatric patients across diagnostic groups. We are currently pursuing such a study.

The studies of poor insight reviewed above bear on the persistent problem of the validity of the diagnosis of schizophrenia. Some researchers have argued that signs and symptoms may not be the best differentiating criteria for distinguishing schizophrenia from other disorders (Carpenter et al. 1976; Carpenter and Kirkpatrick 1988; Meehl 1989). Given the burgeoning literature on putative genetic and the diagnostic markers such as smooth pursuit eye-tracking dysfunction, and given indications that some of these markers may have value as risk indicators, this strategy may indeed be useful. Unawareness of illness in schizophrenia may also prove valuable in such an approach as an alternative sign. The data from studies reviewed in this section are consistent with a conceptualization of unawareness of illness in schizophrenia as an expression of the disorder, much as are hallucinations or delusions. Indeed, as shall be discussed in the section on etiology, some evidence exists that can be interpreted as supporting the idea that at least some forms of unawareness of illness in schizophrenia may stem from the subtle neurological deficits associated with the disorder.

Relation to Severity of Illness. The relationship between unawareness of illness and severity of psychopathology in schizophrenia remains unclear. Some early studies examining this relationship have found these dimensions to be both inversely correlated (Small et al. 1965) and positively correlated (Whitman and Duffey 1961). More recent reports indicate that they are independent of each other (Bartkó et al. 1988; McEvoy et al. 1989*c*).

The finding by Small and colleagues that insight improves with clinical status is based on a study of 154 psychiatric patients from different diagnostic groups, including schizophrenia (Small et al. 1965). Since the authors do not report insight scores by diagnosis, it is unclear if insight improved as symptoms remitted in the schizophrenic patients studied.

Bartko et al. (1988) studied 58 schizophrenic patients diagnosed according to Research Diagnostic Criteria (RDC; Spitzer et al. 1978), and rated them using the Brief Psychiatric Rating Scale (BPRS; Overall and Gorham 1962) and the Global Assessment Scale (GAS; Endicott et al. 1976). Patients were divided into two groups: medication compliant (n = 26) and noncompliant (n = 32). The noncompliant group evidenced significantly more "lack of insight into illness" ($p < 0.05$) and "lack of feeling of illness" ($p < 0.01$), as measured by Zerssen's Clinical Self-Rating Scale (Zerssen and Koeller 1976, as cited by Bartko et al. 1988), and was more grandiose ($p < 0.05$). However, these two groups did not differ on the GAS or on any BPRS items other than grandiosity.

McEvoy and associates (1989*b*) assessed the relations between insight and psychopathology in 52 acutely psychotic schizophrenic patients diagnosed according to *DSM-III* (American Psychiatric Association 1980) criteria. Patients were assessed with the BPRS and the Insight and Treatment Attitudes Questionnaire (ITAQ) developed by McEvoy et al. (1989*b*). While patients displayed significant

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improvement in symptomatology during the hospitalization (mean initial BPRS score, 42.9 ± 8.1; last BPRS score, 33.3 ± 9.6), the level of insight remained stable, leading the authors to conclude that the mechanisms responsible for insight and positive symptoms of schizophrenia are independent.

In a subsequent article, McEvoy et al. (1989*a*) found that while degree of psychopathology diminished during hospitalization for both voluntary and involuntary patients, only the voluntary patients' insight ratings improved over the course of hospitalization. This finding is of particular importance to the distinction between poor insight and delusional beliefs. Increased insight into the falseness of delusional beliefs is an indicator of improvement in the severity of delusions. The dissociation between insight and improvement in symptoms of psychosis overall in McEvoy et al.'s data suggests that improvement in insight cannot be explained by treatment of delusions alone.

In summary, the lack of comparability between studies in their definitions and methods of measuring insight and psychopathology probably accounts for conflicting results in the literature. The methodologically more sophisticated studies reviewed indicate that insight and severity of symptoms of psychosis are independent. Further standardization of measures of insight, psychopathology, and patient samples will determine the generalizability of these results.

Relations to Outcome and Compliance. One would expect that patients with schizophrenia who believe they are ill and can benefit from treatment would likely be more compliant with treatment and have better outcome. Although some studies have failed to find any relationship between insight and outcome (Eskey 1958; Wing et al. 1964; Van Putten et al. 1976), the majority of studies indicate that higher levels of awareness of having an illness and of benefiting from treatment augur well for positive clinical outcome and compliance with treatment (Lin et al. 1979; McGlashan and Carpenter 1981; Heinrichs et al. 1985; Bartko et al. 1988; McEvoy et al. 1989*b*). Lin and colleagues (1979) examined 100 readmitted patients meeting 5 of Carpenter and colleagues' (1974) 12 differential symptoms of schizophrenia. Insight was judged to be present if patients responded positively to any one of the following three questions: "Do you think you need to be in the hospital?" "Do you think you had to see a psychiatrist?" "Do you think you had to see a doctor?" Perceived benefit of medication was judged to be present if patients stated that the medication had some positive effect. Lin et al. (1979) found that those patients who had insight, those who perceived benefits from medication, and, most important, those who perceived a relation between the two were more likely to comply with medication, as determined by self-report and corroboration by the outpatient therapist. Of the 69 patients without insight, only 12 adhered to their regimen, whereas 14 of 31 (45%) insightful patients adhered to theirs. Compliance was best for those patients who understood that medication was treating a mental illness.

Bartko et al. (1988) contrasted a group of 32 RDC-diagnosed schizophrenic patients who were medication noncompliant to a compliant group ($n = 26$) and found that noncompliant patients had significantly poorer insight (for two measures of insight, both p's < 0.05).

McEvoy and colleagues (1989*b*) examined the longitudinal relationship between insight as measured by the ITAQ and medication compliance in a group of 52 hospitalized *DSM-III*-diagnosed schizophrenic patients. These patients were admitted during acute exacerbations related to medication noncompliance. Compliance was assessed on admission to the study, at day 14, and at discharge from the hospital. Ratings were made on a 4-point scale, with active compliance (1) at one end and overt refusal (4) at the other. The authors found a moderate inverse correlation between insight and compliance with medication regimen at initial assessment ($r = -0.35$, $p = 0.006$) and at day 14 ($r = -0.36$, $p = 0.005$). That is, patients with higher insight ratings were more compliant than those with lower insight ratings. Although this relation did not hold up at the final assessment ($r = 0.16$, $p = 0.12$), the authors suggest that this was probably due to the reduced range of scores produced by the high rate of compliance evident in the sample at discharge. They conclude that, overall, insight predicted better compliance in their sample. However, having observed good compliance in some patients who did not believe they were ill or needed medication, the authors suggest that socialization of patients to expected behaviors may also account for cooperation with medication regimens. They add that compliance itself is not a good measure of insight, particularly for hospitalized patients.

Some investigators have examined the relations between poor insight and various measures of outcome and psychosocial functioning. For example, Heinrichs et al. (1985)

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found that relapse rates were significantly higher in noninsightful patients. Subjects were 39 outpatients, of whom 33 were diagnosed as schizophrenic and 6 as schizoaffective by RDC. The treating clinician's progress note on the day the clinician judged that a relapse had begun was extracted, and a judgment was made as to whether the patient displayed insight. Of the 24 patients judged to have had "early" insight, only 2 required rehospitalization after discharge, in contrast to 7 of the 14 patients without insight ($p = 0.006$, Fischer's exact t test). The authors do not indicate at what point in time relapse was assessed, so we cannot tell from their results if more patients from the insightful groups would have required hospitalization later on. Heinrichs et al. conclude, however, that early insight is an important patient attribute predictive of course.

McGlashan and Carpenter (1981) found that insight correlated positively with frequency of social contacts and that poor insight correlated negatively with quality of useful work. Similarly, in a longitudinal study of 32 schizophrenic patients, Soskis and Bowers (1969) found that from 3 to 7 years after the index episode, patients who ignored or denied illness evidenced poorer psychosocial functioning (e.g., less employment, poorer socialization, greater number of hospitalizations) than patients who had insight.

Some studies have not found insight to be related to length of hospitalization, compliance, and posthospitalization functioning. Eskey (1958) reviewed the MSEs of 300 psychotic patients and classified each patient into one of three groups: those with marked insight, those with partial insight, and those with no insight. The three groups did not differ in length of hospitalization. Van Putten et al. (1976) found that insight, as defined in the IPSS, was not significantly related to medication compliance. Wing et al. (1964) followed a sample of 128 male schizophrenic patients (by hospital diagnosis) for 1 year after discharge from the hospital and assessed attitudes about illness before hospital discharge. Specifically, they asked patients if they thought they were ill, whether the delusions and hallucinations they had were a sign of illness, and whether the patients viewed other similarly affected individuals as ill. None of these attitudes was found to be related to several measures of posthospital psychosocial functioning.

To summarize, the investigations reviewed used widely differing measures of insight, compliance, and outcome, which makes comparisons between studies difficult. Nonetheless, the bulk of the evidence reviewed supports the general notion that displaying an awareness of illness in schizophrenia is associated with better medication compliance and clinical outcome. Of the studies finding no such relations, several methodological flaws in diagnostic and assessment procedures may account for the nonsignificant results. For example, these studies did not use well-specified patient groups (e.g., "hospital diagnosis of schizophrenia," "psychotic patients"), which suggests that other nonschizophrenic patients may have been included in the samples. If the self-awareness deficits described are schizophrenia-specific, the inclusion of other diagnoses will mask the relations to variables such as outcome. Future work in this area is needed to determine if particular dimensions of insight are related to measures of outcome and compliance.

Etiology

Neuropsychology of Unawareness of Illness. Unawareness of illness in neurological disorders (i.e., anosognosia), first described by Babinski (1914), bears a striking resemblance to poor insight in schizophrenia. Babinski described the anosognostic patient as displaying a lack of knowledge, awareness, or recognition of disease. This has most frequently been observed in patients suffering from hemiplegia and hemianopia following stroke. Gerstmann offers the following description:

> The hemiplegia is usually on the left side of the body. The patient behaves as though he knew nothing about his hemiplegia, as though it had not existed, as though his paralysed limbs were normal, and insists that he can move them and walk as well as he did before. [Gerstmann 1942, pp. 891-892]

As in schizophrenia, unawareness of illness in neurological disorders is largely intractable to direct confrontation. For example, when such a patient is shown the affected limb, he or she will be indifferent to it (Gerstmann 1942). In other instances, the patient will reveal delusional ideas (insisting, e.g., that the limb is someone else's), presumably to explain the dissociation between his or her experience of self and his or her perceptions. To our knowledge, there have been no studies of the neurological substrates of unawareness of illness in schizophrenia, although there has been a plethora of such work in neurological disorders. This work will be discussed briefly below, as we believe it provides a useful model for schizophrenia.

As with unawareness of illness in schizophrenia, anosognosia has been understood in various ways. It is

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most often distinguished from motivated denial (psychological defense) in that anosognosia is thought to stem from a neuropsychological deficit that leaves a patient unable to become aware of the signs of their illness (McGlynn and Schacter 1989). Various terms have been used besides anosognosia, including "lack of insight," "imperception of disease," "denial of illness," and "organic repression." McGlynn and Schacter (1989) provide an extensive review of this literature and discuss the theoretical implications of the various terms. Regardless of the etiology, one thing is certain: anosognosia in neurological disorders arises directly following injury to the brain. On the other hand, denial of illness has been observed in physical disorders such as cardiac disease and cancer, but with widely varying reports of its frequency (Strauss et al. 1990).

In neurological disorders, neuroanatomically based theories of anosognosia can be broadly divided into those that attribute this deficit to focal brain lesions and those that attribute it to diffuse brain damage (McGlynn and Schacter 1989). Researchers subscribing to the focal lesion viewpoint generally attribute anosognosia to right hemisphere lesions of the parietal area and its connections (Von Hagen and Ives 1939; Gerstmann 1942; Critchley 1953; Warrington 1962; Geschwind 1965; Stuss and Benson 1986). Although there are some reports of anosognosia following left hemisphere insult, these are less convincing due to methodological problems (e.g., hemispheric dominance was not ascertained), and the bulk of evidence is from right hemisphere lesions (Stuss and Benson 1986; McGlynn and Schacter 1989). The findings implicating right hemisphere involvement in self-awareness deficits have led to several theories suggesting that anosognosia may stem from the isolation of cortical speech areas (Geschwind 1965), a disconnection from awareness of body scheme or image representation (Schilder 1935; Gerstmann 1942), or a neurologically based affective disturbance (Bear 1982).

The frontal lobes have also been implicated in anosognosia. Stuss and Benson (1986) review a wide range of unawareness deficits, and they suggest that these deficits have in common an inability to be self-monitoring or to self-correct and that self-awareness demands intact prefrontal function. They note the similarities between different forms of anosognosia—Capgras syndrome, reduplicative paramnesia, and confabulations frequently seen in Korsakoff syndrome. Specifically, Stuss and Benson suggest that these deficits involve a disorder of self-awareness and the ability to be self-corrective, resulting in a general deficiency in reality testing. They suggest that although frontal structural damage has not been demonstrated in most reported disorders of awareness, an argument can be made that a functional disturbance exists. They cite a large body of literature implicating prefrontal function as necessary for the capacity of self-awareness.

Stuss and Benson offer a general model for the neurological underpinnings of the wide range of self-awareness disorders they review:

> Inattention (most often unilateral) apparently occurs with pathology involving a number of anatomical sites, one being the frontal eye field area. If there is a neural circuit underlying attention as suggested, the frontal cortex . . . appears to be important. Greater degrees of unawareness, such as unconcern, anosognosia, reduplication, confabulation, etc., probably demand simultaneous malfunction of several cerebral areas with different degrees and combinations producing different syndromes. The specific behavioral abnormality . . . may be dependent on a specific combination of brain abnormalities. [Stuss and Benson 1986, p. 120]

As shall be discussed shortly, this view has important implications for the self-awareness deficits observed in schizophrenia.

Anosognosia has also been observed in patients who have had diffuse brain damage, usually following a stroke (Sandifer 1946; Ullman 1962; Cole et al. 1968). In these patients, self-awareness deficits are most often understood as stemming from an overall decline in cognitive function. This seems unlikely, however, since anosognosia has been observed in patients without general intellectual impairment (Babinski 1914; Gerstmann 1942; Cutting 1978) and in patients with unawareness of specific dysfunctions coinciding with intact awareness of other decifits (Von Hagen and Ives 1939). If anosognosia stemmed from general intellectual impairments, we would expect awareness deficits for multiple rather than for specific defects.

Of interest is the finding of domain specificity for anosognosia (e.g., Von Hagen and Ives 1939; Bisiach et al. 1986). For example, a case described by Von Hagen and Ives (1939) involved a 76-year-old patient who denied paralysis of the left leg and yet was aware of the paralysis of the left upper limb and of severe memory impairment. Such observations have led some investigators to postulate that these deficits involve "modality-specific disorders of thought" that arise from a dysfunction of a modular central processing system rather than of a single higher

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order system responsible for self-awareness. Schacter (in press) disagrees with this view and offers a descriptive model for unawareness phenomena referred to as dissociable interactions and conscious experience (DICE). This model involves a centralized conscious awareness system (CAS), which interacts with modular systems concerned with language, memory, perception, etc. In order for unawareness to occur in a particular domain, the input to the CAS from the relevant module would need to drop to a sufficiently low level of activation that it becomes functionally disconnected from awareness.

The literature on unawareness of tardive dyskinesia in schizophrenia suggests that self-awareness deficits in schizophrenia may also be domain specific. Rosen and his associates (1982) found that of 70 schizophrenic patients with tardive dyskinesia, 47 (67%) were unaware of the deficits produced by the movement disorder. Similarly, Caracci et al. (1990) found that 15 of 20 (75%) schizophrenic patients with tardive dyskinesia were unaware of their movement disorder. Interestingly, verbal and visual feedback resulted in a short-term increase in awareness; however, this was not sustained for longer than 2 weeks. Moreover, when the relation between awareness of tardive dyskinesia and "awareness of psychiatric disorder" was examined, Caracci et al. observed that 13 patients were unaware of psychiatric disorder, indicating that although the two measures strongly correlated, there was not complete overlap.

If the self-awareness deficits observed in schizophrenia are neuropsychologically based and can vary for different signs and symptoms (e.g., hallucinations, tardive dyskinesia, flat affect, etc.) and for other consequences of the disorder, the models proposed by Stuss and Benson (1986) and McGlynn and Schacter (1989) may have relevance to schizophrenia.

From the literature reviewed, certain parallels between unawareness phenomena described in neurological disorders and schizophrenia can be drawn. Phenomenologically, self-awareness deficits in their extreme, as described in these two literatures, share common features that distinguish both from the less severe disturbances that result from psychological defense mechanisms. Theoretically, neuroanatomically based models have been outlined in anosognosia, which may have relevance to schizophrenia. For example, there are numerous reports of the presence of neurological soft signs and neuropsychological deficits in schizophrenic patients (e.g., Kolakowska et al. 1985; Heinrichs and Buchanan 1988). A model developed to explain the familial data on schizophrenia and eye-tracking dysfunction is directly applicable to these findings. Matthysse et al. (1986) propose that schizophrenia and eye-tracking dysfunction are independent expressions of an underlying "latent" trait, some nervous system disease process that affects different regions and systems of the brain independently. This model is consistent with the explanations for anosognosia offered by Stuss and Benson (1986) and McGlynn and Schacter (1989). That is, schizophrenia in all its varied forms may result from deficits in multiple brain regions leading to disorders of thought, perception, attention, affect, eye movement, and/or self-awareness.

The etiology of unawareness phenomena in schizophrenia is poorly understood. An argument has been made that at least some forms of self-awareness deficits may stem from neuropsychological dysfunction. Future work in this area could address this issue more directly by assessing the relations between self-awareness deficits in schizophrenia and measures of abnormal brain structure (e.g., magnetic resonance imaging) and function.

Denial of Illness: Psychological Coping Mechanism or Defense. Historically, self-awareness deficits in schizophrenia have most often been understood as stemming from psychological defenses or adaptive coping strategies (Mayer-Gross 1920; Searles 1965; Semrad 1966; Levy et al. 1975; McGlashan and Carpenter 1976; Van Putten et al. 1976; Lally 1989). Several investigators have suggested that schizophrenic patients have distinct recovery styles following psychotic episodes (Sacks et al. 1974; McGlashan et al. 1975; McGlashan and Carpenter 1981; Strauss et al. 1987; Thurm and Haefner 1987; Greenfeld et al. 1989). We will review literature representative of this view below.

Based on case history material, Mayer-Gross (1920) classified the defensive strategies of schizophrenic patients into four categories: denial of the future, creation of a new life after the illness, denial of the psychotic experience, and melting of the psychotic experience into a new set of life experiences. These four categories were thought to compose a continuum of defenses that serve to help the patients adapt to their abnormal experiences. In two of these steps, different types of self-awareness deficits were observed. In the "denial of the future" category, patients were observed to deny the possibility of positive future events

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(i.e., they displayed "despair") even when such events were of high likelihood. Meanwhile, in the "denial of the psychotic experience" category, patients were typically unaware of the signs and symptoms of the illness. This latter stage is of direct relevance to the present discussion, whereas the former combines unawareness phenomena (e.g., denial of relevant data for making predictions about the future) with attributional processes. Essentially, Mayer-Gross identified various domains for which schizophrenic patients displayed awareness deficits and interpreted this finding as evidence for distinct categories of psychological defense. In addition, he proposed that the degree of denial (i.e., defense) changes over the course of recovery. This view has its origins in psychoanalytic theory. As shall be seen, the results of several other studies have been interpreted similarly.

In their review of the literature on postpsychotic depression (PPD), McGlashan and Carpenter (1976) identify its relation to denial in schizophrenia. They cite several authors who have identified PPD as marking a stage of recovery from psychosis that either follows a more "primitive" defensive state characterized by denial (Semrad 1966; Kayton 1973, as cited in McGlashan and Carpenter 1976) or precedes the reinstatement of psychotic denial (Donlon and Blacker 1973). Despite their differences, the authors who McGlashan and Carpenter review all share the view that PPD arises from a lessening of defensive denial, which results in the patients becoming aware of the tragic circumstances of their illness. McGlashan and Carpenter report that the results of numerous studies (mostly case histories) have been interpreted by most authors as supporting the psychoanalytic conception of PPD in schizophrenia. In short, this view can be described as follows: "Patients who try to integrate information from their psychosis (*rather than use extensive denial*) may be more prone to react depressively to new insight" (McGlashan and Carpenter 1976, p. 235 [emphasis added]). Implicit in this view of PPD is the concept that denial in schizophrenia serves a defensive function.

In other work, McGlashan and his associates (1975) have suggested that there exists a continuum of recovery styles: on one end lies "integration," and on the other, "sealing over." Fourteen neuroleptic-withdrawn, "generally nonpsychotic" schizophrenic patients diagnosed according to *DSM-II* (American Psychiatric Association 1968) criteria were interviewed 12 months following an acute psychotic episode. Patient responses during a taped, structured interview were reliably categorized (kappa = 0.46, $z = 4.3$, $p < 0.001$) into either the integration or sealing-over categories. The raters used the following criteria for making this distinction:

> (1) Some patients prefer not to think about their psychotic experience during recovery and adopt an attitude of "the less said the better." They would be referred to as sealing over patients. (2) Some patients manifest an interest in their psychotic experiences during recovery and are willing to discuss their experiences in an effort to learn more about themselves. These patients would be considered integrators. [McGlashan et al. 1975, p. 1270].

Responses from each group were evaluated and led the authors to conclude that integrators displayed an awareness of the continuity of their personality before, during, and after their psychotic episode. They "took responsibility" for their psychotic symptoms and were flexible in their thoughts about them. Meanwhile, patients who sealed over tended to isolate their psychotic experience. That is, they resisted thinking about the experience and, when confronted with it by others, were unaware of (or "encapsulated") aspects of it. In addition, they viewed the psychosis as alien, caused by some force outside themselves.

In the study just reviewed, McGlashan et al. (1975) describe varying patterns of retrospective awareness, flexibility of beliefs, and attributional style, and interpret these as representing distinct styles of recovery from psychosis. They suggest that, at one end of a continuum, patients cope with schizophrenia by actively keeping from awareness facts about their illness, while at the other extreme, patients are aware of these facts and are active in expanding this knowledge. The differences in awareness they describe are for past events (i.e., retrospective awareness) and are interpreted as reflecting coping strategies applicable to other stressful life events besides having schizophrenia.

The results from several other studies of patients' attitudes about their illness (Eskey 1958; Soskis and Bowers 1969; Levy et al. 1975; Cohen and Berk 1985; Wciórka 1988; Greenfeld et al. 1989) have been interpreted similarly—that is, that varying levels of insight stem from either psychological defense mechanisms per se or from coping strategies. The frequent finding that poor insight is positively correlated with elated mood and grandiosity (Van Putten et al. 1976; Roback and Abramowitz 1979; Heinrichs et al. 1985; Bartko et al. 1988) has also been interpreted as evidence that

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poor insight serves a defensive function.

To say whether unawareness of illness in schizophrenia reflects a psychological defense mechanism, one must test the question directly. Of relevance to this issue is the work by Gur and Sackeim (1979) on self-deception. Hilgard (1949) claimed that all defense mechanisms share the mechanism of self-deception. Gur and Sackeim offer operationalized criteria for ascribing self-deception: "(1) The individual holds two contradictory beliefs. (2) These two contradictory beliefs are held simultaneously. (3) The individual is not aware of holding one of the beliefs. (4) The act that determines which belief is and which belief is not subject to awareness is a motivated act" (p. 149). Citing an extensive literature indicating that people with negative attitudes about themselves find self-confrontation aversive, Gur and Sackeim identified a group of such individuals using personality questionnaires, and they presented these subjects with their own taped voice (self-confrontation) and the voices of others. Subjects were asked to decide whether the voice they were presented with was their own or someone else's. Gur and Sackeim were interested in answering the question of whether avoidance of self-confrontation (i.e., misidentifying the self as others, a false negative) and unmindful self-confrontation (i.e., misidentifying others as self, a false positive) were instances of self-deception as defined by their criteria. To demonstrate that subjects held two contradictory beliefs simultaneously (criterion 2), they needed to employ other indices of knowledge besides the subjects' response to the question. To accomplish this, they measured electrodermal responses (EDRs) to the presentations and reaction times (RTs) for the voice identifications. Interestingly, they found that both EDR reactivity and RT latency were significantly higher when subjects were presented with their own voice than when subjects were presented with the voices of others. The authors interpreted this pattern of results in subjects who made errors (i.e., false negatives and false positives) as an indication that these subjects had knowledge as to the true source of the voices but were apparently unaware of this, as indicated by their choices (criterion 3). Moreover, these errors were believed to be motivated. To address the issue of motivation (criterion 4), Gur and Sackeim performed a second experiment wherein they introduced two pretest manipulations designed either to increase or to lower self-esteem. As they expected, subjects who underwent the pretreatment to lower self-esteem made more errors in identifying their own voice (i.e., they avoided self-confrontation), while those in the condition designed to increase self-esteem made many more true and false-positive responses (i.e., they sought out self-confrontation). The authors suggest that since such errors should normally occur by chance, the pattern of results indicates that motivational factors influenced self-deception.

The studies discussed earlier in this section all share the presumption that poor insight (or unawareness of illness) in schizophrenia is an important psychological coping or defense mechanism. However, these studies did not directly test the question of whether poor insight is a defensive strategy. Instead, they describe unawareness of current psychosis, retrospective unawareness for past episodes, rigidly held beliefs about lack of illness, and external attributions for events associated with schizophrenia, and they interpret these as stemming from psychological defense or coping strategies. Up to this time, experimental paradigms such as that reported by Gur and Sackeim (1979) have not been used in the study of unawareness of illness in schizophrenia. The use of such procedures could shed light on the question of whether such phenomena are instances of self-deception for the purposes of psychological defense.

Insight Is a Multidimensional Construct. From the literature reviewed thus far, certain distinctions can be made regarding the different components of insight in schizophrenia. In our view, the concept of insight into illness appears to consist of at least four distinct dimensions: (1) awareness of the signs, symptoms, and consequences of illness; (2) general attributions about illness and specific attributions about symptoms and their consequences; (3) self-concept formation; and (4) psychological defensiveness. We believe that these four dimensions are identifiable in most published investigations of insight.

Other distinctions have been made that may be more accurately reclassified by our scheme. Based on a study involving 21 psychotic patients, Greenfeld et al. (1989) define five components of insight in psychotic disorders. They label these components "symptomatology," "existence of illness," "etiology," "vulnerability to relapse," and "the value of treatment." Citing patient responses, the authors suggest that insight is a multidimensional construct with independent components. That is, patients appear to have different levels of insight into distinctly different and largely independent areas related to their illness.

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Wciórka (1988) proposes a typology of "attitudes" schizophrenic patients have about their illness. He suggests that insight may have several dimensions and features by which several different subtypes of patients can be classified. A sample of 100 ICD-9-diagnosed schizophrenic patients in relative symptom remission underwent an extensive clinical interview. Patients were encouraged to talk about their subjective definitions of their illness, and their responses were taped. Based on these tapes and on suggestions from the literature, Wciórka identified six "features of attitudes toward illness." For each, Wciórka created a 5-point rating scale (from total nonendorsement of the idea [1] to full endorsement [5]). The six features rated were patients' (1) sense of their illness belonging to them, (2) sense of influence over their illness, (3) sense of the location of cause of their illness, (4) evaluation of their illness, (5) readiness to discuss the facts of their illness, and (6) effort to develop a concept of their illness. These features were then aggregated into three dimension scales based on positive correlations between items: (1) identification of the illness with themselves, (2) evaluation of their illness, and (3) willingness to be reflective about their illness. The dimensions were interpreted as reflecting cognitive, evaluative, and reactive components of attitude toward illness.

In our terms, we would describe these same dimensions as reflecting (1) general attributions about illness and self-concepts, (2) specific attributions regarding symptoms, and (3) defensiveness. The value of using the classifications we have proposed is that the categories reflect more distinct processes that have been studied extensively in different contexts. For example, the literature contains reports of many investigations of attributional styles in psychiatric patients that are not directly aimed at the issue of insight in schizophrenia and yet are relevant. Empirical studies of self-concept and the related personality construct of self-esteem abound (Winters and Neale 1985; Link 1987), as do investigations of psychological defense mechanisms. Finally, the cognitive psychology literature on specific self-awareness deficits is broad, spanning many disorders and patient groups. Using the categories we have proposed will make comparisons between studies easier and will make it possible to specify the unique contribution each of these processes makes to what is commonly labeled "poor insight" in schizophrenia.

Attempts at Improving Poor Insight

The psychiatric literature largely fails to examine directly the relationship between specific interventions and changes in insight. The question of whether poor insight can be improved remains unresolved. Below, we will briefly review studies in which improvement in insight, broadly defined, is examined in relation to efforts to improve compliance and outcome. Since, to our knowledge, very little work has been reported on this issue in schizophrenia, we will begin by briefly discussing attempts to treat problems of self-awareness reported in the neurological literature, as we believe this serves as a useful model.

McGlynn and Schacter (1989), in a comprehensive review of unawareness of neuropsychological symptoms, note that there is a virtual absence of literature on "awareness training" in neurological disorders in which anosognosia is a prominent feature. They state that in severe forms of anosognosia, even repeated attempts to demonstrate deficits to the patient are ineffective, and that other currently employed training attempts may be inadequate. Citing Glisky and Schacter's (1987) work training brain-damaged patients with memory impairments, they suggest that extremes of repetition are necessary. Importantly, they note that all too often, psychogenic and neurogenic contributions to poor awareness are not distinguished, and that these require different therapies. Along with making distinctions between different types of unawareness, distinguishing between anosognosia secondary to different kinds of brain damage is also important in planning interventions. Prigatano and Fordyce (1986), in a large-scale rehabilitation program in which cognitive retraining is used to address awareness deficits, found that "self-appraisal" is often compromised after head trauma, but when the basis is frontal lobe disfunction (with resultant inattentiveness, concrete thinking, and misinterpretation of higher levels of information), patients can be significantly helped to improve self-perception. In contrast, in patients who present with temporal lobe and deep-brain structural abnormalities, such therapies are ineffective. The implications of such work for schizophrenia, in which both frontal and temporal lobe lesions are postulated, may be valuable in guiding classification according to level of insight and in studying interventions across patient groups.

The research on attempts to ameliorate awareness deficits in schizophrenia is less direct than the reports just discussed. Partially successful attempts to modify delusional beliefs (Watts et al. 1973; Milton et al. 1978) and at patient education (Lin

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et al. 1979; Brown et al. 1987) offer indirect evidence that some forms of knowledge about their illness can be modified in patients with schizophrenia. For example, Seltzer and colleagues (1980), in a study with significant shortcomings (50% patient dropout rate and mixed diagnostic samplings), lectured 67 inpatients about the "nature of their disorder" and its pharmacological management. These patients and a group of matched controls were tested on a 14-point scale to assess medication knowledge. Medication compliance in-hospital and at 5-month outpatient followup was assessed by urine levels and pill count. An outpatient noncompliance rate of 9 percent (2 of 23) in the "educated" sample was significantly different from the 67 percent (6 of 9) of those in the control group. Because pretreatment level of knowledge (or awareness) was not assessed and several patient groups were included in the sample, it is not possible from the data presented to draw conclusions about the impact of education on unawareness of illness in schizophrenia.

From a psychoanalytic perspective, some researchers (e.g., Searles 1965) have suggested that unawareness of illness (i.e., psychotic denial) can be modified through psychotherapy. However, to our knowledge, empirical studies of this position in schizophrenia do not exist.

From the studies discussed above, it is evident that an important lacuna exists in the empirical literature regarding interventions with awareness deficits in schizophrenia. Here again, the neuropsychological literature on improving awareness of deficits in patients with anosognosia serves as a useful model for psychiatric research in schizophrenia. Since it appears that schizophrenic patients with poor insight do more poorly on several measures of outcome and compliance than do those patients with good insight, improving awareness of illness in this disorder should be among the primary goals of any good clinical strategy.

Summary

From the literature reviewed, we have suggested that at least some forms of unawareness of illness in schizophrenia may stem directly from the pathophysiology of the disorder. Given this, the study of these phenomena offers important opportunities for improving the meaningfulness of diagnoses, understanding the neuropsychology, and enhancing the treatment of schizophrenia. Nonetheless, a comprehensive examination of the meaning, treatment, etiology, and pathophysiology of unawareness of illness in schizophrenia has been difficult due to conceptual ambiguities. For this reason, we propose the following terminology and guidelines in the interest of increasing comparability between studies: (1) for "unawareness of deficit," patients should communicate a lack of knowledge about a specific deficit when confronted with it by the examiner; and (2) for "incorrect attributions about illness," patients should communicate the belief that either specific deficits or consequences of illness are unrelated to having a mental disorder. Both criteria are necessary for ascribing "unawareness of illness." In other words, to display unawareness of illness, patients should communicate both unawareness of deficits and incorrect attributions simultaneously. For symptoms that are generally assessed on the basis of subjective report (e.g., hallucinations), the concept of unawareness of deficit cannot easily apply. In these instances, unawareness of illness relates only to attributional deficits.

The question of the etiology of unawareness of illness remains unanswered although much indirect evidence is available. Unawareness of illness appears stable over time in some samples of patients and is not just associated with acute exacerbations of psychosis. Given the observations of poor insight in studies before the advent of neuroleptics, in first-break schizophrenic patients, and in patients who have been neuroleptic withdrawn, it is unlikely that poor insight is due to treatment with neuroleptics. Also, from the studies reviewed we can say that unawareness of illness in schizophrenia occurs independent of specific cultural effects or gender differences.

Future studies could directly answer the question of whether unawareness of illness in schizophrenia is trait related by examining a sample of patients longitudinally, both on and off neuroleptics. The specificity to schizophrenia could also be determined by direct comparisons with other psychiatric disorders and psychotic controls. To test the hypothesis that some forms of unawareness are neurologically based, future investigations could contrast patients with and without awareness of illness on measures of brain function and structure. Alternatively, instances of unawareness of illness stemming from psychological defense mechanisms could be more convincingly identified by employing the criteria for self-deception and associated experimental paradigms proposed by Gur and Sackeim (1979). In conclusion, future work on unawareness of illness in schizophrenia will need to address its multidimensional

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nature and use more reliable and valid measures to better answer the questions raised in this review.

The reappraisal of unawareness of illnesss may be particularly important to current efforts to expand and redefine the diagnosis of schizophrenia. Relative to *DSM-III* and *DSM-III-R* (American Psychiatric Association 1987), broader definitions of schizophrenia have been proposed for *DSM-IV*, for example, briefer duration criteria and more emphasis on negative symptoms (Andreasen 1990). Unawareness of illness appears to be as prevalent in schizophrenia as are many of the *DSM-III-R* and proposed *DSM-IV* criterion symptoms. In conjunction with the *DSM-IV* field trial, unawareness of illness will be assessed in a large geographically diverse sample of patients with psychotic and negative symptoms. This study will shed light on the relation of awareness deficits to other symptoms, subtypes, and course variables. With other data emerging as to the specificity, trait stability, and neurobiological basis of unawareness of illness, perhaps there will be further support for the suggestion that unawareness of illness is an important core symptom of the syndrome and an indispensable means of subtyping patients with schizophrenia.

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