

LACK OF INSIGHT IN PSYCHIATRIC DISORDERS

# The Neuropsychology Of Insight: Impaired Awareness Of Deficits In a Psychiatric Context

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**T**his paper reviews the neurologic and neuropsychological literature on awareness of deficit in a psychiatric context, with a specific focus on dementia and schizophrenia. The clinical implications of this body of work will be considered, and potential directions for future research will be discussed.

Neurologic insult or disease can produce a variety of cognitive and behavioral deficits, including specific disturbances of language, memory, attention, perception, planning, and motor function. Some patients with compromised functions in these domains display impaired awareness of their deficits, yet these deficits have profound effects on patients' everyday lives. Impaired awareness of deficits has obvious clinical implications in the treatment of patients following brain injury. Patients who are unaware of their impairment are unlikely to be motivated to participate in rehabilitation or to benefit from treatment intervention. These patients also pose serious problems for caretakers because they may insist on engaging in activities that they can no longer perform safely or competently. The terms *anosognosia*, *unawareness or impaired awareness of deficits*, and *lack of insight* have been used to describe unawareness phenomena.<sup>1</sup> We will use these terms interchangeably to refer to

a neurologically based unawareness whereby patients are unable to become fully aware of their condition. Other descriptors such as *denial of illness*, *denial of deficit*, and *defensive denial* typically imply the involvement of the psychological defense mechanism of denial and have been the focus of psychodynamic interpretations of awareness disturbances.<sup>2</sup>

Striking reports of awareness disturbances in neurologic patients date back to the late nineteenth century, when Anton and Von Monakow (cited in Redlich and Dorsey)<sup>3</sup> described cortical lesion patients who were unaware of their blindness (Anton's syndrome). In 1914, Babinski<sup>4</sup> coined the term *anosognosia* to refer to unawareness of left hemiplegia after sudden brain insult. Anosognosia has since been used more generally to refer to unawareness of a variety of impairments as a consequence of brain damage, including hemianopia, memory impairment, social and behavioral changes, and aphasia. There are three critical questions that repeatedly emerge in the study of anosognosia. First, what pattern of brain damage is associated with unawareness phenomena? Second, is the awareness disturbance seen only in the context of generalized intellectual impairment or can it be observed in patients with preserved mental functions? Third, to what degree is the unawareness specific to a particular function? There are no simple answers to these questions, but some general findings from the literature can be summarized.

Different patterns of brain damage produce different types of awareness disturbances. Unawareness of hemiplegia or hemianopia have usually been associated with lesions in the right posterior region of the brain, whereas Anton's syndrome typically involves bilateral occipital or temporoparietal lesions. Patients who are unaware of their aphasic disorder have generally sustained left hemisphere brain dam-

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age. Brain damage producing frontal lobe dysfunction appears to be prevalent in cases of unawareness of a memory disorder and in patients whose personality and social behavior has changed without any self-knowledge.<sup>1</sup> Anosognosia has often been associated with intellectual impairment, disorientation, or confusion,<sup>2,3</sup> but a significant number of cases in the literature indicate that impaired awareness may occur in the context of normal sensorium and preserved intellectual capacities.<sup>4</sup> A number of investigators have noted considerable specificity in anosognosia phenomena. Patients may exhibit severe anosognosia for a particular deficit yet show preserved awareness of other equally debilitating defects.<sup>7</sup>

Although research concerned with impaired awareness has traditionally taken place in a medical setting with a focus on the neurologic sequelae of brain injury or disease, there has been a growing interest in unawareness phenomena in a psychiatric context.<sup>8</sup> Patients with cognitive impairment due to various kinds of brain dysfunction often exhibit severe psychiatric symptoms that interfere with daily functioning and require psychiatric intervention. Unfortunately, these patients frequently exhibit impaired awareness of their deficits and, consequently, may not benefit from treatment efforts. Awareness disturbances in a psychiatric context are most prominent in schizophrenic patients and elderly demented patients, although other psychiatric patient groups may also exhibit some degree of unawareness with respect to their symptoms (eg, patients with bipolar disorder).

#### IMPAIRED AWARENESS IN DEMENTIA

Patients with certain kinds of dementing illness have been described as lacking awareness or insight into their condition. Unawareness of deficits is most frequently reported as a clinical feature of "cortical" dementias such as Alzheimer's disease (AD) and Pick's disease,<sup>9,10</sup> but it has also been observed as part of the "fronto-subcortical" dementia syndrome of Huntington's disease.<sup>11</sup> In contrast, patients with the predominantly subcortical disorder of Parkinson's disease have been described as exhibiting good comprehension of their illness, even in the most advanced stages of the disease.<sup>12</sup>

Clinical descriptions of the more advanced stages of AD often include loss of insight as a major feature. Schneck and colleagues<sup>13</sup> described a pattern of decreasing insight as the severity of the disease process increased. Similarly, Reisberg and colleagues<sup>10</sup> found that as AD patients became more cognitively impaired, they rated their memory impairment as progressively less severe, whereas objective measures and spousal reports of patients' memory deficits provided evidence of progressive deterioration. Patients with moderate to severe memory impairment also tended to minimize their emotional difficulties. Despite marked

unawareness of their own deficits during the final phase, patients' ratings of their spouses' cognitive abilities closely matched their spouses' ratings of themselves. Based on the latter observation, Reisberg and colleagues concluded that AD patients were engaging in defensive denial, a mechanism that protects them against depressive symptoms.

The relation between depression and anosognosia in AD was investigated in a recent study by Migliorelli and colleagues.<sup>14</sup> These authors found that AD patients with dysthymia were significantly more aware of their cognitive deficits than were patients with either major depression or no depression. Dysthymia usually started after the onset of dementia and was significantly more prevalent in the early stages of dementia, whereas major depression often began prior to the dementia and was equally prevalent across the different stages of the illness. Importantly, there were no significant neuropsychological differences among patients with major depression, no depression, or dysthymia. The authors concluded that dysthymia in AD may represent a realistic emotional response to progressive cognitive decline, whereas major depression may be more related to biological factors. These investigators had earlier reported on a study of anosognosia and associated factors<sup>15</sup> that revealed significantly longer duration of illness, more severe cognitive impairment, more deficits in activities of daily living, and higher mania and pathologic laughing scores in AD patients with anosognosia than in AD patients without anosognosia. These findings were interpreted to suggest that anosognosia in AD may be part of a neuropsychiatric syndrome characterized by "elevated mood and disinhibition of positive emotional display." Interestingly, AD patients with anosognosia have been found to have significantly decreased regional cerebral blood flow (rCBF) in the right frontal lobe,<sup>16</sup> which may be related to the elevated mood and anosognosia observed by Migliorelli and colleagues.<sup>16</sup>

Experimental evidence of unawareness of memory dysfunction in AD patients was provided by Schacter and colleagues.<sup>17</sup> AD patients were given a categorized list and were asked to predict how many items they would be able to recall. Compared with control subjects, AD patients substantially overestimated their ability to recall items. McGlynn and Kaszniak<sup>2</sup> also used a prediction paradigm to assess awareness of deficits in AD patients and found that they overestimated their performance on a variety of verbal and visual memory tasks when compared with both their actual performance and relatives' predictions, despite generally accurate predictions of their relatives' performance on the same tasks. Results of a questionnaire measure indicated that AD patients rated their own difficulties with cognitive activities of daily life significantly lower than relatives rated patients' problems, and this discrepancy was related to the severity of patients' dementia. Based on

these findings, McGlynn and Kaszniak proposed that a breakdown in metacognitive functions occurs with progressive AD, resulting in patients' failure to update knowledge about their own cognitive performance.

There may be considerable variability in awareness among different subgroups of AD patients and between different dementia populations. Some clinical reports have emphasized an early loss of insight in contrast to unawareness during the late stage.<sup>11</sup> Gustafson and Nilsson<sup>9</sup> found that early loss of insight is a useful dimension for differentiating between AD and Pick's disease, since patients with Pick's disease appear to lose insight significantly earlier in the disease process.

Interestingly, both of these dementias are typically associated with signs of frontal lobe pathology,<sup>16</sup> but frontal degeneration is generally more severe in the early stages of Pick's disease than in AD. Danielczyk<sup>12</sup> included "insight into own illness" as a clinical parameter of a rating scale to assess mental deterioration in four groups of patients: Parkinson's disease (PD), AD, atypical Parkinson's disease (AP) with signs of vascular disease, and multi-infarct dementia (MID). Patients with PD were found to retain reasonably good insight into their illness, whereas those in the other three groups exhibited disturbed awareness of their deficits. The AD patients showed the least comprehension of their illness, followed by the AP and MID groups. It is noteworthy that the PD group showed little cognitive disturbance on a number of measures relative to the other three groups.

Lack of insight has been described as a prominent characteristic of the dementia associated with Huntington's disease (HD), a hereditary neurologic disorder affecting frontosubcortical regions of the brain.<sup>19</sup> Two prominent deficits are evident relatively early in HD: choreiform movements and a severe memory impairment. Patients with this disease also demonstrate an impairment of cortical executive functions closely resembling that observed in classic frontal lobe patients.<sup>20</sup> Caine and Shoulson<sup>21</sup> interviewed 30 HD patients to assess their insight into the process of their disease. Results suggested that 11 of the 30 patients lacked awareness of their deficits. These patients were generally ones who had been classified as moderately or severely impaired based on functional disability in everyday life. McGlynn and Kaszniak<sup>9</sup> used quantitative measures to assess the degree to which HD patients are aware of their deficits, to evaluate the relationship between cognitive impairment and development of unawareness, and to determine whether patients exhibit differential awareness of their motor disturbance and cognitive deficits. Results of a questionnaire indicated that HD patients rated their own difficulties with motor and cognitive activities of daily life significantly lower than relatives rated patients' problems, and this discrep-

ancy was related to patients' level of cognitive impairment. In contrast, patients were reasonably accurate when predicting their performance on specific motor and cognitive tasks when compared with both their actual performance and relatives' predictions.

The studies described in this section have been primarily concerned with dementia patients' awareness of their cognitive or motor deficits. In contrast, research on impaired awareness in schizophrenia has focused on awareness of psychiatric and behavioral symptoms.

#### IMPAIRED AWARENESS IN SCHIZOPHRENIA AND OTHER PSYCHOTIC DISORDERS

A number of clinical, neuropsychological, neuroradiologic, and neurophysiological investigations have provided converging evidence for significant frontal system dysfunction in schizophrenia.<sup>22,23</sup> It is not surprising, therefore, that schizophrenic patients frequently exhibit impaired awareness of their illness and its symptoms. Poor insight in schizophrenia was noted when the disorder was first named by Bleuler,<sup>24</sup> and many reports have since documented disturbed awareness as a prominent feature of the illness. Results of the World Health Organization's study of schizophrenia<sup>25</sup> revealed that 85% of subjects vehemently denied that they were emotionally ill. Lin and colleagues<sup>26</sup> reported that 69% of schizophrenic patients in their study showed no insight when asked about needing to be in a hospital or see a doctor. Van Putten and colleagues<sup>27</sup> addressed the issue of medication compliance and insight. They found that 76% of drug refusers versus 40% of drug compliers had no insight into the presence of illness.

Most studies concerned with assessing awareness of deficits in psychiatric patients have used subjective, unstandardized measures with no established reliability or validity. Furthermore, they have generally failed to assess the multidimensional nature of impaired awareness, the specificity of awareness disturbances, or the relationship between cognitive impairment and unawareness. Amador and Strauss<sup>28</sup> recognized the need for an objective, standardized, more complex measure of awareness disturbances in schizophrenia. The authors developed the Scale to Assess Unawareness of Mental Disorder (SUMD), a standardized scale on which ratings are made based on direct patient interview to assess awareness of current and past illness. The scale attempts to measure specific and global aspects of awareness and also assesses patients' attributions about the cause of signs and symptoms. In their analyses of the scale, the authors<sup>28</sup> noted that level of education was not associated with any insight score, suggesting that "educational background is not an important moderating variable in the assessment of insight." Similarly, measures of delusions did not correlate with any of the insight scores on the SUMD, ruling out the possibility that poor insight simply reflects severity of delusions.

An abbreviated version of the SUMD was recently used to investigate the multiple dimensions of insight in schizophrenic patients relative to patients with schizoaffective or mood disorders with and without psychosis.<sup>29</sup> Results revealed that a variety of self-awareness deficits were more severe and pervasive in patients with schizophrenia than in patients with schizoaffective or major depressive disorders with or without psychosis and were associated with poorer psychosocial functioning. The bipolar group of patients, however, scored as poorly as the schizophrenic group on the majority of items, with the exception of awareness of delusions. Among the schizophrenic group, 57.4% showed a moderate to severe lack of awareness of having a mental disorder, 31.5% exhibited severe unawareness of the social consequences of mental disorder, and 21.7% were rated as having severe unawareness of the efficacy of medication. The results suggested that impaired awareness in schizophrenia can be modality specific, ie, a patient can be unaware of one symptom but maintain insight into other aspects of the illness.

Michalakeas and colleagues<sup>30</sup> also assessed insight in various inpatient groups using a questionnaire measure. These authors found that unipolar depressive patients had good insight on hospital admission and did not change significantly during hospitalization, whereas acutely psychotic schizophrenic patients and acutely disturbed manic patients showed poor insight on hospital admission. Psychopathology and insight improved consistently in manic patients, but this negative correlation was not evident for the schizophrenic group despite improved insight during the course of hospitalization. These results suggested that other factors besides psychopathology in schizophrenia account for changes in insight during the course of treatment. Amador and colleagues<sup>29</sup> emphasized the importance of remediating self-awareness deficits in schizophrenia as part of a comprehensive psychoeducational program. Related to this idea, Lysaker and Bell<sup>31</sup> reported that schizophrenic patients with poor awareness and neuropsychological dysfunction of the frontal lobes showed no improvement in awareness following psychosocial treatment, whereas those with impaired awareness and intact frontal lobe functioning were able to benefit from this intervention. These findings suggest that patients with evidence of frontal lobe dysfunction may be unable to increase awareness of their condition despite rehabilitation efforts.

The relationship between impaired awareness and frontal lobe functioning was addressed in a study by Young and colleagues,<sup>32</sup> who administered the SUMD, the Wisconsin Card Sorting Test (WCST), a test of verbal fluency, and Trails subtests A and B to 31 patients with chronic schizophrenia. The percentage of perseverative responses on the WCST was the only measure that significantly correlated with the SUMD total awareness of symptoms score. A

discriminant function analysis found that a linear combination of WCST percent perseverative responses and average symptom severity correctly categorized 84% of the patients in high and low awareness groups. It is noteworthy that IQ did not significantly contribute to the discrimination of patients with high versus low awareness, suggesting that impaired awareness could not be attributed to generalized cognitive impairment. These results support the authors' hypothesis that "at least in some of its manifestations lack of awareness among chronic schizophrenics has an organic etiology probably mediated by the frontal lobes." The poor performance of schizophrenics on the WCST in this study was consistent with the literature on self-monitoring and schizophrenia. Attempts to teach the WCST to chronic schizophrenics have generally failed because patients are unable to use feedback to alter their performance.<sup>33</sup> Impaired self-monitoring characterizes a number of disturbances of self-awareness, self-consciousness, and self-control<sup>34</sup> and may be a key factor in understanding why some patients are unaware of their deficits.

There is a body of literature primarily concerned with unawareness of tardive dyskinesia (TD) in schizophrenia. This motor disturbance has generally been attributed to the effects of long-term treatment with neuroleptic drugs. Alexopoulos<sup>35</sup> found that, of 18 schizophrenic outpatients diagnosed with TD, 8 were entirely unaware of their movement disorders, and 5 of these 8 were actively delusional or hallucinating at the time of awareness assessment. Smith and colleagues<sup>36</sup> also reported on the prevalence of anosognosia in their sample of patients, indicating that only 8% possessed awareness of their motor disturbance and only 3.5% expressed some degree of distress (for similar results see Myslobodsky and colleagues<sup>37</sup>). A number of the patients were, however, able to accurately identify the symptoms of TD in others. Smith and colleagues concluded that although these patients may have been unaware of their own tongue or mouth movements, it is likely they were aware of their more obvious hand, feet, or leg movements. The self-other discrepancy observed in this study and the Reisberg and colleagues<sup>10</sup> study need not imply that patients are engaged in defensive denial. Rather, it may reflect a self-monitoring deficit that prevents patients from recognizing their own disturbed behavior while leaving intact the ability to make accurate observations and judgments about others' cognitive or motor performance.

The literature concerned with unawareness in schizophrenia does suggest that a variety of unawareness phenomena are prevalent in this population. Furthermore, the frontal lobe dysfunction associated with schizophrenia is consistent with evidence suggesting that unawareness of deficits in certain neuropsychologic syndromes depends on patterns of brain impairment involving the frontal lobes.

## IMPLICATIONS AND FUTURE DIRECTIONS

In summary, it appears that awareness disturbances are common in a psychiatric setting, particularly in patients with schizophrenia or dementia. Although limited experimental evidence is available for these patient populations, the literature suggests that compromised frontal lobe functions may play a significant role in producing impaired awareness. Models that can account for the specificity of impaired awareness and that emphasize the role of a frontally based executive system for integrating complex information about the self may be most relevant for conceptualizing anosognosia in these psychiatric groups.<sup>1</sup>

Within a clinical context, impaired awareness of deficits has a significant impact on management and treatment of patients. Elderly psychiatric patients with dementia who are unaware of their cognitive limitations may insist that they are capable of functioning independently and may attempt to engage in tasks that are unsafe given their severe cognitive impairment. In these cases, it is critical that family members be educated regarding the patient's cognitive deficits, including the awareness disturbance, so they can make appropriate adjustments in the patient's living situation. The consequences of impaired awareness in younger psychiatric patients, particularly those with schizophrenia, are also serious. Treatment compliance is a major issue with schizophrenic patients, particularly when they do not recognize their symptoms or appreciate the impact of their psychiatric illness on daily functioning. Rehabilitation potential may be severely limited by these patients' lack of awareness. Some patients may be able to benefit from awareness training, but further research is needed to address the efficacy of this strategy in various patient groups.

In terms of future directions for research on impaired awareness, it is clear that more reliable, systematic assessment tools are needed to measure the degree and quality of unawareness in different patient groups. Another important area of study concerns the neuroanatomic basis of impaired awareness. Specifically, the relationship between frontal lobe pathology, unawareness, and the role of generalized cognitive impairment in the development of awareness disturbances needs to be explored further with psychiatric populations. Given the variability observed within diagnostic categories, an effort should be made to determine which subgroups are more vulnerable to awareness disturbances. The use of brain imaging techniques, such as positron emission tomography scanning and functional magnetic resonance imaging, may be particularly helpful for investigating the neuroanatomic correlates of disturbed awareness. The possibility that patients may be able to learn (with training) to become more aware of their deficits also deserves further attention. Finally, the relationship between neurologically

based unawareness and defensive denial needs to be investigated. The notion that all deficit unawareness in patients with brain dysfunction is partly or entirely attributable to defensive denial has been rejected, but it will be essential to develop criteria to differentiate the two.<sup>1</sup>

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