Predictors of Functional Outcome Among Adolescents and Young Adults With Psychotic Disorders

Alexis D. Henry, Wendy J. Coster

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Adolescents and young adults who experience the onset of a psychotic disorder often demonstrate major disruptions in occupational and social functioning. Yet, certain persons appear to be at a greater risk for impaired functioning after an episode of psychosis than others. This review of the psychiatric research literature on outcomes in psychotic disorders identifies several variables predictive of occupational and social functioning among young persons with both affective and nonaffective psychoses. Variables predictive of functional outcomes include diagnosis, symptom severity, duration of onset of symptoms, age of onset of symptoms, gender, stressful life events, premorbid functioning, and social supports. A model for conceptualizing the relationships of these variables to functioning is presented, and the implications for occupational therapy practice and research are discussed.

Alexis D. Henry, S.D., OTR/L, is Research Assistant Professor, Department of Psychiatry, Center for Psychosocial and Forensic Services Research, University of Massachusetts Medical Center, 55 Lake Avenue North, Worcester, Massachusetts 06155.

Wendy J. Coster, Ph.D., OTR/L, FAOTA, is Associate Professor, Department of Occupational Therapy, Sargent College of Allied Health Professions, Boston University, Boston, Massachusetts.

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Both affective and nonaffective psychotic disorders often have their onset during adolescence or young adulthood (DeLisi, 1992; Kaplan, Sadock, & Grebb, 1994; McGlashan, 1988). It is during adolescence and young adulthood that expectations for independence and self-sufficiency in occupational and social role performance increase. The onset of a psychotic disorder often disrupts a person's ability to perform competently in occupational and social roles, thus adolescents with psychotic disorders are appropriate candidates for occupational therapy intervention. Given that psychotic disorders sometimes have a chronic course and that the accompanying functional disruptions can be longstanding, it would be particularly meaningful for occupational therapists to be able to identify who, at onset, is at greatest risk for occupational and social role dysfunction in both the short and long term. However, little attention has been paid to questions such as this within the occupational therapy literature.

This article presents a review of psychiatric research literature concerned with outcomes in psychotic disorders. The review discusses morbid and premorbid predictors of social and occupational functioning among adolescents and young adults with psychotic disorders, particularly those with a first episode of psychosis. Additionally, this article presents a model explaining the nature of the relationship of these predictor variables to social and occupational dysfunction. Implications of the model for occupational therapy practice and research with this vulnerable population are discussed.

Psychosis and Psychotic Disorders

Psychosis, which can be manifested as a disturbance of thought organization, thought content, perception, reality testing, judgment, or any combination of these, is characteristic of several different psychiatric disorders (Kaplan et al., 1994). The most common major mental disorders that can present with psychotic symptoms are affective disorders (also called mood disorders), such as bipolar disorder and unipolar psychotic depression; nonaffective disorders, such as schizophrenia; and schizoaffective disorder in which persons display symptoms of both schizophrenia and an affective disorder (Kaplan et al., 1994).

The presence of at least one episode of mania is the factor that distinguishes bipolar disorder from unipolar psychotic depression. Persons with mania commonly present with euphoric mood and grandiose delusions, whereas persons with unipolar psychotic depression present with depressed mood and, generally, mood-congruent delusions such as somatic delusions or delusions of...
Persons with schizophrenia most commonly present with bizarre delusions or hallucinations or both and often evidence a formal thought disorder, with loose associations, tangentiality, or neologisms. These florid symptoms of schizophrenia are often referred to as positive symptoms (Andreasen & Olsen, 1982). Negative symptoms of schizophrenia are those that reflect a deficit state, including flat or blunted affect, poverty of speech, lack of motivation, anhedonia, poor grooming, social withdrawal, and cognitive deficits (Andreasen & Olsen, 1982).

Although there has been controversy about whether schizoaffective disorder is an atypical schizophrenia or an atypical affective disorder, it is considered a unique diagnostic entity (American Psychiatric Association [APA], 1994; Harrow & Grossman, 1984; Williams & McGlashan, 1987). Persons who meet DSM-IV criteria (APA, 1994) for schizoaffective disorder must experience both an episode during which they evidence some symptoms of schizophrenia concurrently with either mania or major depression and an episode during which they evidence symptoms of psychosis without any prominent mood symptoms.

Method and Measurement in Outcome Studies
Since Kraepelin (1921) first divided psychosis into dementia praecox (schizophrenia) and manic-depression, many studies have addressed the prediction of outcome in psychotic disorders. Predictive studies are longitudinal in design, with subjects either retrospectively or prospectively compared against themselves. Retrospective outcome studies rely heavily on clinical records or on subjects' or family members' recollections as sources of baseline data regarding the premorbid or morbid phases of the disorder because subjects are usually identified after they have left the clinical setting. Both of these sources can be problematic in terms of completeness, accuracy, and reliability. It is generally agreed that prospective studies are methodologically superior because subjects are identified at a point, usually during hospitalization, when baseline data can be collected systematically. Subjects are then followed for later outcome evaluation (Harrow & Grossman, 1984).

The most common method used to collect both baseline and follow-up data is subject (or family member) interview. Trained interviewers generally summarize interview data with the use of numeric rating scales. For example, an interviewer who questions a subject regarding work functioning in the past year might rate the subject on a scale of 0 (no useful work) to 4 (employed continuously). In addition to interviews, paper-and-pencil self-report measures are sometimes used. Most studies report acceptable interrater or test-retest reliability or both of baseline and outcome measures.

Outcome in outcome research in psychiatry has, at times, been operationalized with the use of a global, overall rating of the subject's functioning. Global measures of outcome, such as the Global Assessment of Functioning Scale (APA, 1994), consider both the subject's functioning in a variety of occupational domains and the severity of any psychiatric symptoms that may be present. However, most researchers in psychiatric disorders agree that a global approach to measuring outcome is limited in that it masks the subject's strengths or weaknesses relative to different areas. For example, although work or social functioning have some degree of relatedness to psychiatric symptomatology, they are not perfectly correlated with it. In general, a multidimensional approach to follow-up data collection is most appropriate.

Most studies of psychotic disorders take a multidimensional approach and separate outcome into distinct variables. These variables have included overall duration of rehospitalization during the follow-up period, symptom severity for specified periods, quality and quantity of social relationships, quality and quantity of occupational functioning, quality of self-care or the ability to meet needs, and life satisfaction (Carpenter, Bartko, Strauss, & Hawk, 1978; Gossett, Barnhart, Lewis, & Phillips, 1977; Harrow, Goldberg, Grossman, & Meltzer, 1990; Keller et al., 1987; Rosen, Rosenthal, Dunner, & Fieve, 1983; Strauss & Carpenter, 1972; Tohen, Waternaux, & Tsuang, 1990). It seems obvious that multidimensional baseline data also should be collected in outcome studies because variables like past employment or social relationships tend to be the best predictors of their respective outcomes (Strauss & Carpenter, 1974). However, surprisingly, baseline data regarding social and occupational functioning are sometimes missing in studies where the purpose is to describe the outcome of specific psychotic disorders.

Outcome studies vary in terms of the length of the follow-up period, ranging from very short term (6 months) to very long term (30 years to 40 years). Consideration should be given to the length of the follow-up period when evaluating the findings of outcome studies because functional status can either improve or deteriorate over time, depending on diagnosis and other variables.

Interpretation of outcome studies in psychotic disorders conducted before the 1980s is hampered by two major limitations. First, before the 1980s, most of the comprehensive outcome studies of persons with psychotic conditions have been conducted with patients with schiz-
ophrenia. Since then, however, changes in diagnostic practices suggest that these cohorts probably included subjects who would not be diagnosed with schizophrenia with current criteria but rather with some other psychotic disorder such as bipolar disorder or unipolar psychotic depression (APA, 1994). Thus, the relevance of the results of early outcome studies for specific groups of patients is unclear given the uncertain validity of diagnosis. Not surprisingly, these early studies found specific schizophrenic symptoms and diagnosis to be relatively poor predictors of outcomes such as occupational and social functioning, quality of life, and current symptomatology (Carpenter et al., 1978; Hawk, Carpenter, & Strauss, 1975; Strauss & Carpenter, 1972, 1974).

A second limitation of early outcome studies of psychosis is that, generally, they involved cohorts of subjects who had both a first episode and multiple episodes. Until recently, relatively little research has focused exclusively on following subjects experiencing a first episode of psychosis. Affective and nonaffective psychotic disorders can have a chronic course in many persons, and it generally agreed that the impact of chronicity on social and occupational functioning is substantial (Keller, Lavori, Lewis, & Klerman, 1983; Strauss & Carpenter, 1974). Studies that follow subjects with first-episode psychosis are best able to control for the impact of chronicity in identifying factors predictive of good versus poor functioning on outcome (Tohen, Waternaux, Tsuang, & Hunt, 1990).

Despite the limitations of these early studies, some of their findings continue to hold up among more recent studies. In particular, more recent studies continue to point to the considerably poorer outcome among persons with nonaffective psychoses compared with persons with affective psychoses and to the importance of premorbid functioning in predicting functioning on outcome (e.g., Beiser et al., 1994; Tsuang & Coryell, 1993).

Predictors of Outcome in Psychotic Disorders
Symptom Severity, Diagnosis, and Duration of Onset

In studies of adolescents and young adults hospitalized for psychiatric disorders, severity of symptomatology at the index hospitalization (i.e., the point of entry into the study) has been shown to correlate with social and occupational functioning at follow-up. Persons with psychosis are generally considered to have a more severe degree of psychiatric symptomatology than those without psychosis (Kaplan et al., 1994). In general, studies of adolescents and young adults suggest that persons who present with psychosis (either affective or nonaffective) during the index hospitalization tend to function more poorly at both short-term and long-term follow-up than persons without psychosis (e.g., Gossett et al., 1977; Rosen et al., 1983; Strober, Lampert, Schmidt, & Morrell, 1993; Werner, Welch, & Fishman, 1979). Persons with nonaffective psychoses such as schizophrenia consistently have been found to have poorer outcomes (e.g., poorer social and occupational functioning or greater symptom severity) than those with affective psychoses (e.g., Cawthon, James, Dell, & Seagroatt, 1994; Kettering, Harrow, Grossman, & Meltzer, 1987; McClellan, Werry, & Ham, 1993; Moliner et al., 1988; Tsuang & Coryell, 1993). Recent studies of persons who have had a first episode of schizophrenia suggest that outcome is poor, even among the subjects with first-episode psychosis (e.g., Erickson, Beiser, Iacono, Fleming, & Lin, 1989; Shatse et al., 1992). However, some studies have reported that there may be a subgroup of persons with first-episode schizophrenia who demonstrate fewer negative symptoms and who have comparatively good functional outcome (Ganguli & Brar, 1992; Shatse et al., 1992). It has been suggested that negative symptoms (e.g., flat affect, social withdrawal) may be more strongly related to social and occupational functioning than positive symptoms such as hallucinations and delusions (Andreasen & Olsen, 1982; Fenton & McGlashan, 1994; Shatse et al., 1992).

Not all persons with affective disorders present with psychosis; however, persons with bipolar disorder are much more likely to present with psychosis than those with depression. Psychosis has been reported in approximately 70% to 75% of persons with bipolar disorder (Harrow et al., 1990; Tohen, Waternaux, & Tsuang, 1990), whereas it is estimated that only 25% of persons with major depression have psychosis (Coryell, Pohl, & Zimmerman, 1984). Of note, follow-up studies of adolescents and young adults with major depression and without a history of mania have found that a significant number of the subjects with psychosis later developed bipolar disorder. An initial presentation of psychotic depression during adolescence or young adulthood may, for some persons, be the first episode of a bipolar disorder (Strober & Carlson, 1982; Strober et al., 1993).

Among both persons with bipolar disorder and persons with depression, the presence of psychosis has been reported to be associated with poorer functional outcome (Coryell, Endicott, & Keller, 1990; Harrow et al., 1990; Henry, 1989; Rosen et al., 1983; Tohen, Waternaux, & Tsuang, 1990). Even when symptoms have remitted, persons with psychotic affective disorders continue to demonstrate functional deficits, especially in short-term follow-up studies (Dion, Tohen, Anthony, & Waternaux, 1988; Henry, 1989). However, some data suggest that
differences in functional outcome between persons with psychotic versus nonpsychotic affective disorders may diminish over time, with functioning among persons with psychotic affective disorders improving over the long term (e.g., Coryell, Lavori, Endicott, Keller, & Van-Eerdewegh, 1984; Coryell & Tsuang, 1982; Strober et al., 1993; Tohen, Waternaux, & Tsuang, 1990).

Studies of functional outcome among persons with schizoaffective disorder report mixed results. Some studies have suggested that persons with schizoaffective disorder tend to have outcomes more similar to schizophrenia than to affective disorders (Coryell et al., 1984; Williams & McGlashan, 1987). However, in a review of outcome studies of this disorder, Harrow and Grossman (1984) suggested that although outcome of schizoaffective disorder is generally poorer than that of affective disorder, it is generally better than outcome of schizophrenia. These somewhat contradictory findings may be attributable to the length of the follow-up period. There is some suggestion that functional outcomes for persons with schizoaffective disorders parallel those of affective disorders in the short term but begin to more closely resemble schizophrenia in the long term (Tsuang & Coryell, 1993; Williams & McGlashan, 1987).

In addition to the diagnosis and the severity of the symptoms associated with the diagnosis, the duration of the onset of the symptoms has been found to be predictive of functional outcome. Onset is generally defined as the length of time between first evidence of psychiatric symptoms, usually psychotic symptoms, and first hospitalization or treatment (Flaum, Andreasen, & Arndt, 1992; Haas &weeney, 1992). Several studies of adolescent and young adult subjects experiencing both first and multiple episodes of psychosis suggest that duration of onset of psychiatric symptoms predicts both short-term and long-term outcome. Persons with a rapid, more acute onset of symptoms tend to function better at outcome (and have a reduced risk for relapse) than those with a more gradual, insidious onset (e.g., Flaum et al., 1992; Johnstone, MacMillan, Frith, Benn, & Crow, 1990; Rabiner, Wegner, & Kane, 1986; Shtasel et al., 1992, Tohen et al., 1992). In essence, chronicity predicts chronicity. Patients who have been chronically ill are likely to have continued difficulty functioning and to have poorer functional outcomes than patients who have been ill for only a short period. It may be that psychosis has a deteriorating effect on functioning, so persons who have been symptomatic for longer periods have greater difficulty overcoming the effects of psychosis.

**Age of Onset**

Most studies of schizophrenia suggest that an early age of onset is a predictor of poor outcome. Studies of persons with a first episode of schizophrenia point to the beginning of a decline in functioning during adolescence and young adulthood and an earlier age of onset as a predictor of rehospitalization, chronicity, and poorer social and occupational functioning at follow-up (e.g., Eaton et al., 1992; Moller, von Zerssen, Werner-Eilert, & Wuschner-Stockheim, 1982; Shtasel et al., 1992). Among persons with first-episode schizophrenia, an earlier age of onset has been associated with poor or an insidious decline in premorbid functioning, whereas a later age of onset has been associated with good premorbid functioning (Haas &weeney, 1992).

Among affective psychoses, findings regarding the relationship between age of onset and functioning at follow-up are equivocal. A prospective 18-month follow-up of persons with first-episode affective psychosis found that younger subjects functioned more poorly at outcome than the older persons (Erickson et al., 1989). Similarly, Rosen and colleagues (1983) conducted a retrospective 5-year follow-up of subjects with bipolar disorder with and without psychosis and found that the subjects with psychosis were considerably younger at first treatment and that a younger age at first treatment was related to poorer global functioning at follow-up. However, McGlashan (1988) conducted a long-term (15-year) follow-up study comparing adolescent-onset with adult-onset mania and found that although the adolescent subjects presented with more psychotic symptoms and greater chronicity at baseline, at follow-up, they were functioning as well or better than the subjects with adult-onset mania. Tohen and colleagues’ recent studies with varying follow-up periods (6 months and 4 years) did not find any relationship between age of onset and functioning at follow-up among persons with bipolar disorder (Tohen, Waternaux, & Tsuang, 1990; Tohen, Waternaux, Tsuang, & Hunt, 1990; Tohen et al., 1992).

Few studies have examined the relationship between age of onset and functional outcomes among persons with psychotic depression (A. J. Rothschild, personal communication, 1994). In their 6-month follow-up of subjects with first-episode psychosis, Tohen and colleagues (1992) found that the subjects with psychotic depression under the age of 40 were at a significantly greater risk for not recovering functionally at 6 months than the subjects over the age of 40, although the sample was very small (n = 15). As previously described, some studies suggest that persons who present with psychotic depression during adolescence or young adulthood have an increased likelihood of later developing bipolar disorder (Strober & Carlson, 1982; Strober et al., 1993).
Gender

Studies of schizophrenia consistently include more male than female subjects. Although some have questioned whether this trend reflects a methodological bias among researchers (Wahl & Hunter, 1992), recent studies of first-episode schizophrenia suggest that the disorder may be both less severe and less common in women, particularly among young women (Iacono & Beiser, 1992). Men with schizophrenia tend to have an earlier age of onset, demonstrate more negative symptoms, show greater intellectual deterioration, and have poorer premorbid functioning than women (Beiser et al., 1994; Bilder et al., 1992; Childers & Harding, 1990; Farone, Chen, Goldstein, & Tsuang, 1994; Haas & Sweeney, 1992; Salokangas & Stengard, 1990). In addition, men generally demonstrate poorer functioning on outcome and are more likely to be chronically ill (Beiser et al., 1994; Kaasrup, 1987; Klinge, Pigott, Knitter, & O’Donnell, 1986; McGlashan & Bardenstein, 1990). Although not all studies of outcome in schizophrenia have found a gender effect, rarely have men been shown to have a more favorable outcome than women (Angermeyer, Kuhn, & Goldstein, 1990). Some researchers, however, have found that the gender effect diminishes over a very long-term follow-up period (Childers & Harding, 1990). Similar findings of poorer functional outcome among men have been reported in persons with bipolar disorder (Erickson et al., 1989; Harrow et al., 1990; Tohen et al., 1992; Tohen, Waternaux, Tsuang, & Hunt, 1990). Although both nonpsychotic and psychotic depression are more common in women, reports of gender differences in functional outcome are not found (A. J. Rothschild, personal communication, 1994; Coryell, Keller, Lavori, & Endicott, 1990).

Stressful Life Events

Several authors have suggested that stressful, independent life events (those that are not a result of symptomatology or personal behavior) may have a role as triggers for both the onset and the relapse of schizophrenic, bipolar, or depressive episodes, particularly when the event(s) occurs within 3 weeks to 4 weeks of onset or relapse (Ellicott, Hammern, Gitlin, Brown, & Jamison, 1990; Nuechterlein et al., 1992). However, the relationship of precipitating stressful life events (those that occur before the onset of a first episode of psychosis) to social and occupational functioning after the first episode has not been well researched. Some authors have suggested that clearly identifiable precipitants to a psychotic episode predict a more positive functional outcome (Moller et al., 1982; Opjordsmoen, 1991), whereas others did not find such a relationship (Strauss & Carpenter, 1974).

It seems paradoxical that stressors trigger the onset of either an initial or a relapse episode and yet predict a better outcome from that episode. However, there is some evidence that stressful life events are associated with an acute as opposed to a more insidious onset of symptoms (Billings & Moos, 1984). The previously healthy person who appears to become acutely symptomatic in response to a major stressor generally has a history of better premorbid functioning (also a predictor of better outcome) than the person who has had a slower, insidious onset of symptoms that is often accompanied by a deterioration in functioning over time. A person experiencing a relapse of symptoms is likely to experience some impairment in functioning, although a brief symptomatic relapse secondary to a life stressor may have only limited functional consequences. However, repeated psychotic relapses, triggered by repeated stressors, can result in substantial, relatively longstanding impairments in occupational and social functioning. Thus, stressful life events may predict poor outcome in persons with chronic illness. A critical factor in the relationship between life events and symptomatic relapse and functioning may be the person’s capacity to cope with stress, which is addressed in the next section.

Premorbid Functioning and Social Supports

When the data are collected, premorbid occupational and social functioning are among the best predictors of occupational and social functioning on outcome. Studies of both affective and nonaffective psychoses point to a history of good premorbid functioning as being one of the most consistent predictors of good functioning in both short-term and long-term follow-up. Premorbid functioning predicts functioning on outcome for both persons who are acutely ill and persons who are chronically ill (Beiser et al., 1994; McGlashan, 1986; Williams & McGlashan, 1987). However, good premorbid functioning, particularly among persons with chronic schizophrenia, seems to lose its protective effect against later deterioration over the very long term as institutionalization, personality deterioration, and long-term medication use take their toll (McGlashan, 1986). Good premorbid functioning is generally associated with a more acute and a later age of onset of first psychosis (Haas & Sweeney, 1992). In addition, good premorbid functioning has been found to be associated with an absence of negative symptoms (Andreasen & Olsen, 1982). Among persons with psychotic disorders, aspects of premorbid functioning that have been shown to predict functional outcomes include duration of work history, quality of work performance, and occupational level;
scholastic achievement and educational level; social adjustment, social skills, and social relationships, including marital status and heterosexual relationships; number of friends and involvement with friends; and range of interests and activity involvement (e.g., Beiser et al., 1994; Dejong, Giel, Slooff, & Wiersma, 1985; Erickson et al., 1989; Harrow, Westermeyer, Silverstein, Strauss, & Cohler, 1986; Johnstone et al., 1990; McGlashan, 1986; Moller et al., 1988; Rabiner et al., 1986).

In general, premorbid measures of functioning are the best predictors of their respective outcome measures; that is, premorbid occupational (work) functioning best predicts occupational functioning on outcome, and premorbid social functioning best predicts social functioning on outcome. However, there is evidence that social functioning predicts not just its corresponding outcome, but other outcome variables as well. Having friends, the capacity for involvement with friends, and the capacity to recruit these social supports when under stress are particularly relevant. The recruitment of social supports is one coping skill that may moderate the negative effects of stressful life events for persons with psychotic disorders (Lukoff, Snyder, Ventura, & Nuechterlein, 1984). The composition and quality of the relationships in the social support network are important factors in the prediction of outcome. Several studies have reported that persons whose social networks were composed primarily of friends, neighbors, and others who are not kin tended to demonstrate better occupational functioning and to experience better symptomatic recovery and lower relapse rates than those whose social networks were composed primarily of relatives (Erickson et al., 1989; Garrison, 1978; Lukoff et al., 1984; Randolph & Escobar’s study [as cited in Lukoff et al., 1984]).

Most of the research examining family member involvement in the course of psychotic disorders has focused on persons with schizophrenia and the construct of expressed emotion. Expressed emotion refers, in part, to the level of criticism, emotional overinvolvement, and hostility directed toward patients by the family members, typically spouses and parents (Vaughn & Leff, 1976). Research data have indicated that persons whose families are high in expressed emotion are at greater risk for relapse than persons whose families are low in expressed emotion (Lukoff et al., 1984). So a social network composed primarily of relatives might be more toxic if the family is high in expressed emotion, and such a family would be considered to be a source of stress rather than of support.

Discussion

Occupational and social functioning have become increasingly important as outcome variables in follow-up studies of psychotic disorders (Erickson, et al., 1989; Johnstone et al., 1990; Strauss & Carpenter, 1974). The data suggest that each of the variables discussed in this review contributes something to the prediction of who will function well after a first episode of psychosis and who will not. A useful framework for conceptualizing the nature of the relationship of these variables to each other and to functioning can be found in a model for prevention of psychopathology proposed by Albee (1984) and adapted by Gartner and Riessman (1982). The model suggests the following equation for explaining dysfunction:

\[
\text{Occupational/social dysfunction} = \frac{\text{Constitutional vulnerabilities} + \text{stress}}{\text{Competence} + \text{coping skills} + \text{social support}}
\]

Variables in both the numerator and the denominator have been identified in this review as predictors of outcome in psychotic disorders. The term constitutional vulnerabilities implies factors that are related to neurochemical, developmental, or genetic makeup and, among the variables discussed here, includes diagnosis and diagnosis-related variables (i.e., symptom severity, duration of onset), age of onset, and gender (Flor-Henry, 1990; Murray, O’Callaghan, Castle, & Lewis, 1992). The variables in the numerator—constitutional vulnerabilities and stress—can be thought of as primary causes of occupational and social dysfunction. The variables in the denominator—competence, coping skills (i.e., good premorbid functioning), and social support—are factors that moderate the impact of primary causes on dysfunction. Thus, a person who has a history of relative competence and good coping skills along with good social supports could be expected to experience less dysfunction than a person with a history of relative incompetence, poor coping skills, and an inadequate support system, even if constitutional vulnerabilities and stress are similar for the two persons. Support for this model can be found elsewhere in the literature on outcomes in psychosis (e.g., Nuechterlein et al., 1992).

Albee’s (1984) equation for dysfunction helps explain why premorbid functioning is a consistent predictor of functional outcomes. For a person with good premorbid functioning, the initial episode of a psychotic disorder might have less severe functional consequences. Furthermore, competence, coping skills, and social supports might be protective mechanisms that allow the person to better tolerate repeated episodes of a psychotic disorder with less functional deterioration. The equation also helps explain why adolescents and young adults with psychotic...
disorders appear particularly vulnerable to occupational and social dysfunction. A younger person who develops a psychotic disorder has had less time and therefore fewer opportunities to develop the skills (i.e., competence and coping skills) that may moderate the negative effects of psychosis, and their ability to develop these skills in the future may be compromised by the psychosis. Donahue and Lieberman (1992) have found relationships between measures of social competence and age of onset of psychosis among male and female subjects. The subjects with a later age of onset of a psychotic disorder evidenced better current social competence. Donahue and Lieberman speculate that the onset of psychosis interferes with the development of social competence.

Implications for Occupational Therapy Practice and Research

This review of the psychiatric research literature and the equation for dysfunction, as presented in this article, point to a definitive role for occupational therapy with adolescents and young adults with psychotic disorders. Given the complex nature of occupational and social outcomes for persons with psychotic disorders, it seems clear that for both clinical and research purposes, evaluation of the patient must be multifaceted. In addition to an evaluation of the clinical condition, with its focus on presenting symptomatology and the determination of an accurate diagnosis, any comprehensive workup of a patient presenting with a psychotic disorder (particularly a first episode) should include a thorough evaluation of the patient's premorbid functioning (competence and coping skills) and of his or her environmental supports because these data are likely to be among the most relevant for predicting functioning on outcome.

Occupational therapists are among the members of the psychiatric treatment team who are responsible for the collection of such data. Because occupational therapists consider functioning from a broad perspective, evaluating not only the person's capacity for work, play, and self-care, but also his or her interests, values, and motives that influence engagement in these occupations and the environmental factors that support or constrain engagement, they are well qualified to elaborate on which aspects of current and premorbid functioning might be most predictive of functioning after a psychotic episode.

Within occupational therapy, the Model of Human Occupation (Kielhofner, 1995) and the Cognitive Disabilities Model (Allen, Earhart, & Blue, 1992) often are used to guide evaluation of persons with psychiatric disorders. An assortment of evaluation procedures, compatible with each model, have been developed to evaluate various aspects of functioning. These and other procedures not grounded in a specific practice model are frequently used in mental health practice (see Table 1). Although most of these measures have been subjected to examinations of reliability, and some have been found to discriminate between persons with and persons without psychiatric disorders (e.g., Barris, Dickie, & Baron, 1988; Barris et al., 1986; Ebb, Coster, & Duncombe, 1989; Katz, Josman, & Steinmetz, 1988; Smyntek, Barris, & Kielhofner, 1985), very few data exist regarding the predictive validity of occupational therapy evaluation procedures. Concentrating instrument development efforts on examination of the validity of the existing measures would allow occupational therapists to make important contributions to outcome studies of psychiatric disorders, particularly because in many outcome studies, evaluation of morbidity and premorbid functioning during baseline data collection is limited.

Follow-up studies that identify consistent predictors of functional outcome help to identify those persons who are at risk for dysfunction after an episode of a psychotic disorder. The equation for dysfunction proposed by Albee (1984), suggests that efforts to lessen dysfunction should be aimed at decreasing the factors in the numerator (i.e., constitutional vulnerabilities and stress) or increasing factors in the denominator (i.e., competence, coping skills, and social support) or both. Certainly, psychotropic medications are an important intervention that may alter certain constitutional vulnerabilities. Research data indicate, however, that many persons with psychotic disorders who experience remittance of psychotic symptoms with medication continue to have impairments in occupational and social functioning (Dion et al., 1988; Henry, 1989). For these persons, particularly those with multiple risk factors for poor functional outcomes (e.g., the young male patient with poor premorbid functioning), treatment interventions clearly should extend beyond symptom amelioration. Less clear are the forms of intervention that would be most beneficial in decreasing dysfunction.

The equation for dysfunction (Albee, 1984; Gartner & Riessman, 1982) suggests that the answer lies in strengthening competence, coping skills, and social supports, and within the occupational therapy literature, there are many descriptions of programs designed to strengthen competence among persons with psychiatric disorders (see Munoz in Kielhofner [1995] for a bibliography of treatment programs based on the Model of Human Occupation). Unfortunately, very few studies in occupational therapy have examined the effectiveness of interventions aimed at strengthening competence among persons with mental illness. One study examined the
Table 1
Some Occupational Therapy Functional Assessments Used in Mental Health Practice

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Underlying Practice Model</th>
<th>Areas of Functioning Assessed</th>
<th>Source</th>
</tr>
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<tbody>
<tr>
<td>Observations of behavior</td>
<td></td>
<td>Ability to learn</td>
<td>Allen, Earhart, and Blue (1992)</td>
</tr>
<tr>
<td>Allen Cognitive Level Test (ACL)</td>
<td>CDM</td>
<td>ADL</td>
<td>Allen et al. (1992)</td>
</tr>
<tr>
<td>Routine Task Inventory (RTI)</td>
<td>CDM</td>
<td>Motor and process skills performed while completing IADL</td>
<td>Fisher (1994)</td>
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<tr>
<td>Assessment of Motor and Process Skills (AMPS)</td>
<td>MOHO</td>
<td>ADL</td>
<td>Koibman-Thompson (1992)</td>
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<tr>
<td>Milwaukee Evaluation of Daily Living Skills (MEDLS)</td>
<td>none specified</td>
<td>IADL</td>
<td>Williams and Bloomer (1987)</td>
</tr>
<tr>
<td>Kohlman Evaluation of Living Skills (KELS)</td>
<td>none specified</td>
<td>Task performance and social skills</td>
<td></td>
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<tr>
<td>Bay Area Functional Performance Evaluation (BaFPE)</td>
<td>none specified</td>
<td>ADL</td>
<td></td>
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<tr>
<td>Sutable Self-Care Evaluation</td>
<td>MOHO</td>
<td>Self-perceptions of strengths and weaknesses in volition, habitation, and performance</td>
<td></td>
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<tr>
<td>Volitional Questionnaire</td>
<td>MOHO</td>
<td>Motivation, personal causation, values, and interests</td>
<td>de las Heras (1993)</td>
</tr>
<tr>
<td>Paper-and-pencil self-report instruments</td>
<td></td>
<td>Interests and interests patterns</td>
<td>Matsutani (1968)</td>
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<tr>
<td>Interest Checklist</td>
<td>MOHO</td>
<td>Role identification and role value</td>
<td>Oakley, Kielhofner, Barris, and Reichles (1986)</td>
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<td>Role Checklist</td>
<td>MOHO</td>
<td>Role identification and role value</td>
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<tr>
<td>Self-Assessment of Occupational Functioning</td>
<td>MOHO</td>
<td>Self-perceptions of strengths and weaknesses in volition, habitation, and performance</td>
<td>Baron and Curtiss (1990)</td>
</tr>
<tr>
<td>Occupational Questionnaire</td>
<td>MOHO</td>
<td>Time use patterns and beliefs about time use</td>
<td>Smith, Kielhofner, and Watts (1986)</td>
</tr>
<tr>
<td>Occupational Performance History Interview (OPHI)</td>
<td>MOHO eclectic</td>
<td>Current influences on the ability to return to work</td>
<td>Velozo, Kielhofner, and Fisher (1990)</td>
</tr>
<tr>
<td>Worker Role Interview (WRI)</td>
<td>MOHO</td>
<td>Current occupational adaptation</td>
<td>Watts, Brolley, Bauer, and Schmidt (1988)</td>
</tr>
<tr>
<td>Assessment of Occupational Functioning and Rating Scale (OCAIRS)</td>
<td>MOHO</td>
<td>Current occupational adaptation</td>
<td></td>
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<tr>
<td>Canadian Occupational Performance Measure (COPM)</td>
<td>Occupational performance</td>
<td>Client-identified problem areas in daily functioning</td>
<td>Pollock (1993)</td>
</tr>
</tbody>
</table>

Note: ADL = activities of daily living, CDM = Cognitive Disabilities Model, IADL = instrumental activities of daily living, MOHO = Model of Human Occupation

Findings that suggest the potential for activity-oriented group interventions to enhance social functioning are intriguing given the apparent relationship of premorbid social competence to more positive outcomes among young persons with psychotic disorders. However, obvious questions remain. To what extent can social competence be enhanced in adolescents and young adults already experiencing a psychotic disorder if they previously lacked such skills? What methods are best for teaching these skills? If they can be taught, to what extent will these capacities act to moderate the effects of future psychotic episodes on functioning? Researchers in occupational therapy could make an important contribution to the treatment of adolescents and young adults with psychotic disorders by concentrating research efforts on
questions such as these and could make evident the unique and crucial contribution of occupational therapy to the psychiatric treatment team.

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