Social Functioning of Schizophrenic Patients: Clinical and Research Issues

by Randall L. Morrison and Alan S. Bellack

Abstract

Social dysfunction is generally considered an essential feature of schizophrenia. However, despite considerable interest in the social functioning of schizophrenic patients, the precise nature of the social deficits exhibited by these patients remains unspecified. No widely accepted criterion of social competence has been used to investigate their social functioning. Also, social skills researchers have often failed to recognize the heterogeneity of schizophrenia and the impact that this heterogeneity may have on attempts to implement psychosocial interventions. The adverse findings regarding the social behavior of schizophrenic patients are reviewed. Factors relating to schizophrenia that may affect their social functioning are discussed, as are directions for future research that may lead to more effective psychosocial interventions for schizophrenia.

Severe impairment in interpersonal functioning is considered a hallmark of schizophrenia. Deterioration in social relations is specified in DSM-III among diagnostic criteria for the disorder, and social isolation or withdrawal and impairment in role functioning are listed as frequent prodromal or residual symptoms (American Psychiatric Association 1980). Even when gross psychotic symptomatology (e.g., hallucinations and delusions) is pharmacologically controlled or in remission, many schizophrenic patients typically have marked difficulties in social interactions (Strauss et al. 1974; Serban 1975). Over the past two decades, it has become widely accepted that poor social competence precedes the onset of the disorder (Zigler and Phillips 1960, 1961; Strauss et al. 1977). Moreover, level of premorbid social competence remains one of the best prognostic indicators: the poorer the premorbid adjustment, the poorer the prognosis (Strauss et al. 1977).

Despite the convincing evidence on the poor overall social functioning of schizophrenic patients, there is surprisingly little data on the precise nature or the basis of their difficulties. One of the most widely held hypotheses is based on the behavioral model of social skills (Goldstein et al. 1976; Hersen and Bellack 1976; Trower et al. 1978; Liberman et al. 1981; Liberman 1982). According to this model, social performance depends on the smooth integration of a set of specific behavioral elements or skills. It has generally been presumed that schizophrenic patients either failed to learn requisite skills initially, or lost them as a function of disuse after long periods of hospitalization and/or social isolation.

Clearly, the lack of knowledge about the interpersonal skills of schizophrenic patients is not due to lack of interest. Social skills assessment and social skills training is an area in which there has been a voluminous literature. Entire books have been devoted to social skills training (Bellack and Hersen 1979; Eisler and Frederiksen 1980; Curran and Monti 1982), and journal articles in this area have proliferated throughout much of the last decade. Social skills training has become one of the most widely used psychosocial interventions in the treatment of schizophrenia (Morrison and Bellack 1984).

The basic strategy in social skills assessment and/or training studies...
has been to attempt to identify specific molecular behaviors which schizophrenic patients lack in their repertoires (or emit in excess), and to use a behavioral training paradigm to attempt to overcome these deficits or dysfunctions. A common social skills training methodology emphasizes the use of techniques such as modeling, practice, and feedback. Numerous reports of social skills training using some variant of this basic methodology have appeared in the literature, and most typically attest to the effectiveness of these techniques in changing topographical features and self-reports of anxiety (Wallace et al. 1980). However, as Wallace et al. (1980) have noted, “These changes do not often result in substantial differences in patients’ quality of life” (p. 60). Hogarty and colleagues (Hogarty and Goldberg 1973; Hogarty et al. 1974a, 1974b, 1979), in two investigations of recently discharged, medicated schizophrenic patients, found that a social training intervention that emphasized components of the behavioral skills training model had no beneficial effect on the clinical or social outcome of patients during the first year of treatment above that attributable to antipsychotic medication. In their study of nonrelapsed patients who “survived” beyond 18 months, combined drug and social training management produced significant clinical and social benefits. However, because the random control had been lost through attrition, the study could not lead to generalizable conclusions (Falloon and Liberman 1983). While some studies have produced optimistic results (e.g., Liberman et al. 1981), the consensus of reviews and opinions has been skeptical about the overall gains that have been made using social skills training with schizophrenic patients (Trower 1980). “The technology is promising,” concluded Wallace et al. (1980), “but it must be expanded to include as ‘social skills’ clinically meaningful behaviors’” (p. 80).

The purpose of this article is to review our current knowledge about interpersonal dysfunction in schizophrenic patients and suggest strategies for more productive clinical research in this area.

Behavioral Model of Social Skills and Schizophrenia

The behavioral model of social skill as it has typically been applied to schizophrenia is a molecular conception. Social skills have been construed as specific, observable units of behavior which, when emitted together, determine the individual’s overall level of performance in a given interpersonal situation (McFall 1982). According to the model, interpersonal competence is the ability to emit a set of situationally appropriate behavioral components (e.g., eye contact and voice intonation). Response capability is acquired through learning. Those individuals who, as a result of faulty learning experiences, lack particular skills are said to have social skills deficits. These deficits are considered to be definable, measurable, and subject to remediation through training. Much of the existing literature that has specifically addressed social skills and schizophrenia has been concerned with just these issues, i.e., assessment or training related to specific behavioral deficits. There have been three particular areas of emphasis: (1) response skills assessment; (2) social perception skills assessment; and (3) social skills training. While fraught with methodological shortcomings and lacking in detail, these reports lay the groundwork on which to build more sophisticated efforts in this area.

Assessment of Behavioral Response Skills. There are few data available that identify specific deficits in interpersonal skills of adult schizophrenic patients (Curran et al. 1980; Trower 1980). Unfortunately, many studies of interpersonal behavior have been conducted with mixed groups of psychiatric patients. In some instances, these studies have been helpful, if in no way other than in highlighting the need for greater specificity. For example, Curran et al. (1980) recently examined the incidence of social inadequacy among diagnostically diverse, randomly selected admissions to inpatient and day hospital treatment. Approximately 7 percent of the sample exhibited social inadequacy as demonstrated by ratings from attending physicians. The nature of the social inadequacy was quite variable across patients. Curran et al. conclude that the specific nature of social inadequacy in a given psychiatric patient may or may not include social anxiety, may or may not include self-deprecation, and may include unassertiveness or, conversely, overassertive or aggressive behavior. It is not possible to determine from the data whether patients with specific diagnoses exhibit particular constellations of socially inadequate behaviors. However, the data do provide information about the array of deficits that might exist in schizophrenic patients (or across subtypes of schizophrenic patients).

Other investigators have pursued a converse strategy. They have examined the behavior of patients who were evaluated as being either skilled or unskilled during interactions with a confederate, in order to identify specific component be-
haviors that contribute to “skilled” interpersonal responding (Eisler et al. 1975; Hersen et al. 1975; Trower 1980). The results of these studies have suggested certain significant behaviors that relate to judges’ ratings of “unskilled” or “skilled” responding. However, few studies have evaluated these behaviors among samples of carefully diagnosed schizophrenic patients. It should also be noted that none of the above studies used a nonpatient control group, precluding comparison of the social behavior of patients to response “norms.”

There have been several studies that have assessed the performance of a distinct group of schizophrenic patients. In an early investigation, Longabaugh et al. (1966) found notable deficits in a sample of chronic schizophrenic inpatients in comparison to ward staff. These deficits primarily reflected decreased amounts of interactions with others. Because of the long hospitalization history of their sample, Longabaugh et al. (1966) concluded that the social dysfunctions that they observed could have been an effect of the institutionalization rather than schizophrenia, per se. As we shall discuss further, this is an important notion to consider, and only one of a myriad of factors stemming from the complexity of the disorder that may be related to the poor social functioning of patients.

Argyle (1981) reported that schizophrenic patients have a variety of deficits, including inappropriate facial expression, gestures and posture, and poor synchronizing. The results of studies by Lindsay (1982) and Boswell and Murray (1981) suggest that schizophrenic patients are judged as less skilled than either normals or depressed persons by randomly selected nontrained raters. However, no specific component behaviors that led to these judgments were identified in either study. Conversely, in a series of studies specifically intended to analyze component behaviors on which schizophrenic patients may have deficits, Rutter (1977a, 1977b, 1978) found no consistent differences between schizophrenic patients and patients with other psychiatric diagnoses, or normals. Thus, even the limited data available regarding the interpersonal response skills of schizophrenic patients are quite inconsistent. No clear picture of typical response deficits can be derived.

**Assessment of Social Perception.**

Behavioral response skills are only one component of the social skills model. Unfortunately, social perception and interactive balance have been given even less empirical consideration in the social skills literature (Morrison and Bellack 1981). Platt and his colleagues (Platt and Spivack 1972, 1974; Platt et al. 1975; Platt and Siegel 1976) have conducted a series of studies in which they found that psychiatric patients generate fewer solutions to personal and interpersonal problems than do normals. Also, the solutions generated by psychiatric patients were generally less relevant than those generated by normals. However, these investigators did not provide information about the diagnoses of patients in their studies, and so, again, no specific conclusions can be derived about schizophrenic patients.

Results of investigations by Andorfer et al. (1975) and Livesay (1981) suggest that schizophrenic patients may be less consistent in and less convinced of the accuracy of their interpersonal judgments than nonpsychotic psychiatric controls. Similarly, Walker et al. (1980) found that normal subjects were significantly better than schizophrenic patients on a test of emotion recognition which included photographs depicting facial expressions of eight different emotions. Other studies have failed to note deficits in the perceptual accuracy of schizophrenic patients. Wagener and Hartsoough (1974) found that schizophrenic patients did not differ from alcoholics or normals on a perceptual task requiring subjects to identify pictures of “scolding scenes” vs. neutral scenes. Muzekari and Bates (1977) observed that normals were significantly more accurate in identifying emotions depicted in photographs of posed facial expressions or videotaped enactments than chronic schizophrenic patients. As there was no relationship between Brief Psychiatric Rating Scale (Overall and Gorham 1962) scores and accuracy of judgment, however, the authors conclude that length of institutionalization may affect judgment of emotions more than symptomatology does. Finally, Cutting (1981) reported that acute schizophrenic patients differed from depressed patients and chronic schizophrenic patients on judgments of emotions depicted by photographs of faces. These findings appear to conflict with the conclusions drawn by Muzekari and Bates (1977), and suggest that perceptual deficits may be more critical in acute than in chronic schizophrenia.

While the data regarding the perceptual abilities of schizophrenic patients are inconsistent, they do allude to some basic distortions in the social perceptions of at least some schizophrenic patients. The inconsistency of the findings may reflect the heterogeneity of the disorder, and/or the relationship of social perception deficits to more basic cognitive dysfunction. We will discuss these possibilities in more
detail in subsequent sections of this article.

**Treatment Outcome Studies.** While the data from social skills assessment studies are far from comprehensive, additional support for the behavioral model has been provided by the results of numerous studies designed to evaluate the effects of social skills training. Skills training programs are based on the presumption that specific response deficits underlie more general interpersonal problems such as social isolation or unassertiveness. Thus, the general strategy has been to train patients on such molecular response parameters as eye contact, voice volume, use of physical gestures, and use of feeling statements or “I” messages. For the most part, the response components targeted in training have been selected on the basis of face validity, and/or comparison to assessment data from nonschizophrenic populations (college students and community samples). In most studies, changes from pretreatment to posttreatment on these molecular target behaviors and independent, subjective ratings of improvement are used as dependent measures to assess treatment outcome.

The results of numerous skills training programs have documented the effectiveness of the skills training approach (Morrison and Bellack 1984; Hersen and Bellack 1976; Wallace et al. 1980). Generally, changes in subsets of specific behaviors have correlated with subjective ratings of overall performance. These results provide convergent validation support for the existence of specific skill deficits before treatment. However, there are no clear data documenting the extent of preexisting deficits, or showing their relationship to social behavior in the natural environment. That is, patients might simply perform poorly on analog measures of social performance before treatment, and learn how to perform on these tasks during treatment, regardless of their in vivo performance.

There is also considerable variation in the selection of target behaviors across investigations, and no consensus has emerged about the most appropriate target behaviors on which to train. A number of factors may relate to this failure to achieve agreement. First, different investigators have elected to focus on different aspects of social skill. For example, certain social skills training studies have been concerned almost exclusively with assertion-related behaviors (e.g., Field and Test 1975; Hersen et al. 1975), while others have focused on more general “conversational skills” (e.g., Minikin et al. 1976; Urey et al. 1979; Kelly et al. 1980). Furthermore, few investigators have used an empirical validation approach in selecting target behaviors. The relevance of specific conversational components to evaluators’ ratings of social skill has been socially validated in several investigations (Minikin et al. 1976; Romano and Bellack 1980; Dow et al. 1981). However, most researchers have chosen the specific components for training based on face validity alone, and have arbitrarily judged treatment outcome without reference to criterion levels that may be appropriate in a particular interpersonal context.

A notable exception is recent work by St. Lawrence and her colleagues (Holmes et al. 1984; Hansen et al. 1985) who conducted conversational social skills training with aftercare patients in the community based on socially validated component behaviors. Four conversational skill components were selected for training based on comparisons of frequency of usage between subjects and a normative social validation sample. These were: appropriate self-disclosure, conversational questions, speech acknowledgers and reinforcers, and high-interest content statements. However, no information regarding subjects’ diagnoses was reported. Also, conversational skills represent but one aspect of general social skill, and obviously much further work involving a social validation approach should be conducted for a comprehensive assessment of social deficits and the effect of response skills training.

There have been few reports of skills training for other aspects of social skills, such as social perception. Wallace (1982) has reported on a comprehensive social perception training paradigm which has been shown to have some positive impact on relapse/rehospitalization rates of chronic schizophrenic patients. The training program emphasizes practice in attending to and decoding interpersonal cues that are depicted in a series of videotaped scenarios. However, the authors have not presented comparative data regarding social perception skill of patients from other diagnostic groups or normals. It is not clear whether the perceptual deficits exhibited by their patients represent a dysfunction that is specific to schizophrenia.

**Methodological Shortcomings**

Clearly the results of these studies have been quite variable, and no consistent pattern of social skills deficits has been observed among schizophrenic patients. As Liberman (1982) has cogently stated, “Admittedly, the evidence pointing toward a relationship between social skills and course of schizophrenia is largely indirect, inconclusive, cor-
relational, and based on retrospective analyses” (p. 63). The results of these studies have been confounded by a number of methodological problems. One major problem in the literature on skills deficits among schizophrenic patients has been that the validity of the most commonly used assessment techniques has not been clearly established. Role play tasks have been used extensively for assessment of the response skills of schizophrenic patients. Measures that have been used to assess social perception skills have most typically been some type of photographic or pictorial presentation of social stimuli. These analog tasks may lack sufficient external validity to provide meaningful information about real world social functioning. The issue of the external validity of social skills assessment measures has been discussed in a number of articles (Bellack 1979, 1983; Liberman 1982).

A second shortcoming has been that many of these studies have provided inadequate diagnostic information about the samples. Fifteen of the 31 studies discussed provide no information about diagnosis. In those studies in which a specific schizophrenic sample was studied, information about how the diagnosis was derived was not always provided (e.g., Longabaugh et al. 1966; Lindsay 1982). In other studies, unstructured interviews and/or chart reviews were used to derive diagnoses (e.g., Hansen et al. 1985). Relatively few studies have used structured interviews to derive diagnoses of patients (e.g., Boswell and Murray 1981).

A third shortcoming has been that the social skills assessments used have been incomplete and focused on only one component of the behavioral model of social skills, to the exclusion of others. Social skills have been examined by investigators as though they were static, invariant, dispositional, trait-like behaviors which solely determine schizophrenic patients' level of social functioning. The basic paradigm has been to evaluate a group of patients and conclude either that they do, or do not, lack social skills. If they are found to be lacking social skills, a treatment component is sometimes added on. Only one aspect of social skills is typically assessed. Most often, these are response skills, but as we have seen, some investigators have addressed social perception abilities. Other potential mediating factors of social skill, such as the motivational state of the subjects and external, environmental factors that may affect performance, have been neglected.

Theoretical models of social skill have emphasized the need to consider carefully these and other factors when planning social skills assessments (Curran 1979; McFall 1982). Research has demonstrated that environmental contingencies can affect the social functioning of schizophrenic patients. In a series of studies, Salzinger and his colleagues have demonstrated that social reinforcers could increase target verbal responses in schizophrenic patients' speech (Salzinger and Pisoni 1958, 1961; Salzinger and Portnoy 1964). Also, situational parameters such as satiation and deprivation can affect the social interactions of schizophrenic patients (Gelburn and Anker 1970; Mitchell et al. 1975).

Institutionalization itself has been noted as a factor in the social dysfunction of chronic schizophrenic patients (Gruenberg et al. 1966; Ziman 1966; Gruenberg 1967, 1974; Paul and Lentz 1977). Yet, control of environmental factors has been lacking in social skills assessment studies, and social skills training almost always focuses on topographical change in the individual and not the environment (McFall 1982). While models of social skills training have discussed the necessity of assessing (and promoting) generalization (Hersen and Bellack 1976; Anthony and Farkas 1982), establishment of generalization and maintenance of skilled responding in the natural environment have often been overlooked in training studies.

A final factor that has not been properly evaluated in social skills assessment and training studies with schizophrenic patients has been the role of other “person-by-situational variables” (Curran 1979). We know that social functioning in non-psychotic populations can be affected by a variety of factors other than social skills. These include social anxiety (Arkowitz 1977), depression (Weissman et al. 1971), and dysfunctional or inappropriate cognitions (Bellack 1979). Also, the myriad of other dysfunctional behaviors in schizophrenic patients, including hallucinations, delusions, thought disorder, and information-processing deficits, may be expected to affect the social functioning of these patients. Thus, a fourth major shortcoming of the literature is that the conceptual formulation of schizophrenia underpinning these studies has been incomplete.

Conceptual Requirements for Schizophrenia Research: Some Tenets Revisited

In an insightful treatise, Bannister (1968) proposed five tenets for schizophrenia research, most of which have since gone unheeded. Central among these was a recommendation to link operational and conceptual definitions, and to ensure that relations between specific symptom dimensions were evaluated. The literature on social skills
and schizophrenia has clearly lacked sophistication in this regard. As we have noted, the assessment measures of social functioning have been unidimensional and incomplete. Equally important, there has been little consideration of the complexity of schizophrenia. Most studies have relied on a static, cross-sectional assessment methodology. However, the current consensus is that schizophrenic disorders are not static, but can best be understood from a longitudinal, developmental perspective (Zubin and Spring 1977; Spring and Zubin 1978; Asarnow and MacCrimmon 1982; Nuechterlein and Dawson 1984a, 1984b). The cross-sectional evaluation at a single moment in time does not provide an adequate vantage point from which to evaluate processes involved in the onset, course, and outcome of schizophrenic disorders. Recent emphasis has been placed on evaluating schizophrenic symptoms (and/or behaviors/factors relating to the disorder) as either vulnerability indicators or episode markers. Episode markers are temporary state-like correlates (or manifestations) of psychotic symptomatology. Vulnerability indicators are more enduring, trait-like correlates of vulnerability to schizophrenia, which precede the episodic symptomatology (Nuechterlein and Dawson 1984a).

Nuechterlein and Dawson (1984b) have recently proposed a developmental model of schizophrenia, with emphasis on vulnerability/stress factors. The model posits three major classes of vulnerability characteristics: reduced available information-processing capacity, autonomic hyperactivity to aversive stimuli, and social competence and coping deficits. These characteristics are considered to be response dispositions that are present long before the appearance of psychotic symptoms. The inclusion of social competence deficits is based on an accompanying review by Wallace (1984), in which it is concluded that childhood and premorbid social dysfunction is present in at least some adult schizophrenic patients. Nuechterlein and Dawson indicate that vulnerability characteristics result from genetic influences interacting with early physical and social environmental influences. The model specifically predicts interindividual variability on the vulnerability characteristics. Genetic influences are posited as stronger for certain vulnerability factors. The dysfunctions may be present in subtle form (good premorbid patients) or more gross manifestations (poor premorbid patients). The authors add that other vulnerability factors may also exist. Also, they suggest that certain vulnerability factors may predispose risk to a range of disorders. Finally, Nuechterlein and Dawson suggest that they themselves are not sure of the independence of each factor. In particular they suggest that poor social and instrumental skills and coping strategies during the premorbid period may be a result of the dysfunctions in information processing and autonomic hyperactivity rather than a separate preexisting factor.

Unfortunately, there is a dearth of available data to address the issue of the independence of social skills deficits. Clearly, we know more about the specific premorbid and interepisodic cognitive functioning and autonomic reactivity of schizophrenic patients than we do about social functioning. Studies of premorbid social functioning have relied on retrospective data, based on chart review and the uncertain recollections of patients and significant others. The measures provide a general indication of patients' abilities to cope, but they cannot determine precisely what patients did or did not do in specific social encounters or why they failed to perform adequately (Zigler et al. 1977; Zigler and Levine 1981). Similarly, most data on the early childhood behavior of adult patients are based on retrospective examination of school records. Such data can do little more than determine that teachers noticed some academic or behavioral problems. Also, schizophrenic patients are not uniformly low in premorbid competence; a substantial proportion of good premorbid patients function as well or better than nonpatients and patients from other diagnostic groups (Wagener and Hartsough 1974; Zigler et al. 1977; Keith and Buchsbaum 1978).

Few studies have carefully considered the interepisodic social functioning of patients. We are presently conducting a study of this sort in our own laboratories, in which we are examining the behavioral and cognitive/perceptual social skill of schizophrenic patients over time in relation to variation in psychiatric episodic symptomatology. Further research will be needed to evaluate the orthogonality of social skills deficits in comparison to cognitive and autonomic reactivity factors across premorbid, episodic, and interepisodic or residual phases of the disorder.

Along with the need to consider the complexity of the disorder from a developmental perspective, however, the heterogeneity of the disorder, per se, must also be considered. Here, too, research on social skills and schizophrenia has been lacking. There has been a general failure to examine the manner in which certain social variables may be related to specific overt features of schizophrenia. Few studies have gone beyond the demonstration of a
simple correlation between a social variable and schizophrenia:

The investigators simply suggest that a particular problem may be related to schizophrenia—in general—and then compare heterogeneous groups of schizophrenic and control subjects on a task that presumably measures the ability in question. [Neale et al. 1985, p. 286]

Undoubtedly, a factor relating to the lack of consistency in the findings regarding social functioning and schizophrenia has been the failure to consider the heterogeneity of schizophrenia in terms of episodic manifestations. Different episodic symptoms clearly characterize different subtypes of the disorder, and different vulnerability factors may differentially predict various episodic symptoms. Social skills deficits may be present in only certain subtypes of the disorder, may develop at different points in the course of different subtypes, or may differ across subtypes. For example, it has been suggested that variability in premorbid functioning among schizophrenic patients may relate to particular symptom dimensions (e.g., paranoid/nonparanoid) (Zigler et al. 1977; Gift et al. 1981; Klein 1982). As we noted, it has not yet been adequately determined how performance on measures of premorbid functioning relates to performance on specific social skills measures administered during the course of the disorder. For instance, it is not clear whether the social skills of paranoid patients differ from those of other schizophrenic subtypes. There are few data available regarding the relationship among different vulnerability factors and episodic symptoms of schizophrenia, and possible interactions between variables. Longitudinal studies that assess the episodic and interepisodic functioning of patients with different subtypes of the disorder on social, cognitive, and autonomic measures should be conducted to determine specific relationships between and implications of these vulnerability factors.

While there have not yet been investigations of this sort, there have been longitudinal studies of individual vulnerability factors. In particular, there have recently been numerous longitudinal studies of cognitive functioning in schizophrenic patients. The results of these studies indicate that there are cognitive deficits that persist across acute and partial recovery phases (Asarnow and MacCrimmon 1981, 1982; Saccuzzo and Braff 1981; Frame and Oltmanns 1982). Although the issue of persistent interepisodic cognitive impairments specific to subtypes of the disorder has not been adequately considered, it seems likely that certain subsets of schizophrenic patients may experience cognitive deficits that place continuing limits on functional ability, including social performance.

A possible example of such a relationship between cognitive deficits and social dysfunction is suggested by recent findings involving paranoid schizophrenic patients. These patients have been shown to have a right hemisphere mediated dysfunction in processing cues of facial identity (Magaro and Chamrad 1983). It has not yet been determined whether they also have problems in facial affect recognition, a skill that is also mediated by the right hemisphere (Cicone et al. 1980; DeKowsky et al. 1980; Bradshaw and Nettleton 1981; Etcoff 1984a, 1984b). Problems in facial affect recognition could limit patients' social competence by preventing them from accurately recognizing emotional states displayed by others. Research should be conducted to evaluate longitudinal cognitive and social functioning of paranoid schizophrenic patients, and to separately consider these patients' social response skills and knowledge of the content of appropriate responses.

In other patient subgroups, both cognitive and social dysfunctions may be present but independent of one another. Carefully conducted longitudinal investigations, including assessment of treatment response, may help to tease out the relative independence of concurrent symptoms. For example, psychopharmacological intervention has been demonstrated to affect attention and memory (e.g., Tune et al. 1982; Strauss et al. 1985). If attention and memory deficits underlie social dysfunction in certain subtypes of patients, these patients might show a comitant increase in social functioning in response to pharmacological intervention. Alternatively, social dysfunction that was mediated by independent skills deficits would not be responsive to medication, but presumably would improve with social skills training.

Finally, some subgroups of schizophrenic patients might show persistently impaired performance on either social or cognitive measures, but not both. Similar alternatives exist regarding possible relationships between social and autonomic responding. That is, dysfunctions in autonomic and social responding may occur concurrently in patients, or either dysfunction may be present by itself. Concurrent dysfunctions may be related or independent.

When and if social deficits that exist independent of episodic symptomatology have been identified for specific subgroups of patients, prospective studies of at-risk popula-
tions can be conducted to assess the predictive role of these deficits as vulnerability factors. In turn, results from prospective investigations may indicate specific targets for preventive interventions. Modification of social deficits that are predictive of the development of the disorder could conceivably reduce vulnerability among target groups.

In conclusion, future research on social skills and schizophrenia should address three issues: (1) The complexities of social skills as an interrelated set of component factors must be recognized. Concurrent consideration of social response and perception skills must be provided. Also, mediating factors of social skills that have been found to affect social performance in a wide variety of nonpsychotic populations should be evaluated as they affect the performance of schizophrenic patients. (2) The complex nature of schizophrenia, and the probable differences in social performance across different subtypes of the disorder need to be considered. (3) The relationship of social skills deficits to other symptoms of schizophrenia (or subtypes of schizophrenia) must be evaluated.

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