

Cognitive Rehabilitation of Social Deficits in Schizophrenia: A Direction of Promise or Following A Primrose Path

David L. Penn

David L. Penn, M.S., is a doctoral student in clinical psychology at the University of Nebraska-Lincoln. His research interests are in the area of social cognition in schizophrenia.

Abstract: In this paper, a critical evaluation is conducted with regards to how well the cognitive rehabilitation approach addresses the individual with schizophrenia's social and emotional impairments. Evidence is reviewed from brain-injured and other populations, which suggests that there is some independence between neuropsychological assessment and an understanding of the individual's social/emotional functioning. The ecological validity of a number of popular neuropsychological tasks for assessing the social deficits associated with schizophrenia is then called into question. The paper concludes by discussing some promising techniques that appear to be more sensitive to social impairment than traditional measures.

Introduction

Within the last decade, the cognitive rehabilitation model has emerged as a paradigm in treating individuals with a chronic mental illness (CMI) (Erickson, 1988; Erickson & Binder, 1986; Erickson & Burton, 1986). The rehabilitation approach, in contrast to the medical model, tends to be more idiographic, focuses on the patient's competencies and weaknesses, and applies intervention strategies often directly derived from the measures used for assessment (e.g., an individual with memory impairment training on tasks adapted from the WMS-R). Therefore, training programs are developed to improve the individual's memory, attention, and conceptual abilities, to name a few. An example of this would be the Orientation Remedial Module (ORM) (Ben-Yishay, Diller, & Rattok, 1978), in which individuals with attentional deficits due to head trauma follow a five-module sequence, each of which requires a progressively more complex utilization of attentional skills.

In spite of its promise, rehabilitation strategies based on neuropsychological instruments still need to be evaluated with respect to generalization to everyday activities. This has been a somewhat vexing issue in the neuropsychological literature. For example, as far back as 1942, Hebb observed that a young man who, in spite of losing a great deal of frontal tissue, performed within the normal range on most of the cognitive tests

that he was given. Years later, Heaton and Pendleton (1981) noted that "Despite the obvious importance of predicting patients' capabilities and limitation in everyday functioning, this has been largely ignored as a topic of neuropsychological research in favor of continued preoccupation with diagnostic issues" (p. 807). Eight years later, in his review of the literature on cognitive remediation with individuals who have suffered a brain injury, Benedict (1989) commented that "the hypothesis that improved attention, self-regulation, and memory skills should generalize to related skills and activities of daily living has not been adequately investigated" (p. 623).

The foregoing leads one to ask the question of whether rehabilitation techniques adapted from the neuropsychology field suffer from similar limitations of treatment generalizability as that which have been ascribed to social skills training with individuals with schizophrenia (Lieberman, 1982; Wallace, Nelson, Lieberman, Aitchison, Lukoff, Elder, & Ferris, 1980). This paper will explore this issue. Since assessment is a critical stage of the treatment planning in a rehabilitation model, in the ensuing section, findings will be reviewed pertaining to how well neuropsychological tests do in assessing social functioning among brain-injured and other populations. The second section will briefly describe some of the social impairments typically demonstrated by individuals with schizophrenia and how current, frequently used neuropsychological instruments might fall short in assessing and treating these deficits. The paper will conclude with suggested new directions for the cognitive rehabilitation field.

Issues in the Assessment of Social Functioning

Perhaps the greatest challenge for neuropsychologists is the evaluation and anticipation of how neurological deficits will affect an individual's daily, interpersonal functioning. This issue was forcefully underscored by Lezak (1987), who, following the progress of 39 traumatically brain injured patients, observed that "as these patients recovered speech, some cognitive function, and motor competency, and still remained socially and emotionally dilapidated, it became increasingly evident that the most serious effects of brain injury were just those social and emotional variables that had been originally cast aside for being too untidy" (p. 58). This observation was buttressed by a longitudinal study in which the majority of head trauma victims were found to be functioning within the normal limits on most indices of cognitive functioning by the third year, but were experiencing difficulties in handling their anger, holding down a job, and maintaining close relationships (Lezak, 1983).

A number of studies have demonstrated a relative independence between assessment of cognitive abilities and an understanding of the individual's emotional and social deficits. Freedman, Bleiberg & Freedland (1987)

demonstrated that, although closed head injured and cerebral vascular accident patients did not differ on individual tests on the Halstead-Reitan, WAIS-R, and WMS-R measures, they did differ with respect to anticipatory behavior, that is, the ability to anticipate and avoid a noxious stimulus before it occurs. In a study investigating sub-groups of juvenile delinquents, Tarter, Hegedus, Alterman, and Katz-Garris (1983) found that neuropsychological tests did not differentiate between violent, nonviolent, and sexual offender groups. Fordyce, Roueche, & Prigatano, (1983) compared acute and chronic head trauma patients on neuropsychological (i.e., WAIS-R, WMS-R, Trails, TPT and Finger Tapping test) and emotional/social measures. Although the two groups did not differ on neuropsychological measures, there were significant differences on the emotional/social measures, with the chronic group characterizing themselves as being more emotionally distressed and isolated than the acute group, and being viewed by their relatives as more belligerent, distressed, and maladjusted. Wooten (1983), investigating a similar issue, also did not find a significant relationship between emotional problems and neuropsychological diagnosis among 345 patients referred for neuropsychological evaluation.

One could argue that since the MMPI is part of the Halstead-Reitan Battery, then the studies reviewed above are actually *good* examples of the sensitivity of neuropsychological measures to emotional/social impairment. At the assessment level, this assertion has some merit. The MMPI seems to do an adequate job of determining how an individual feels at a given point in time about his or her emotional and social functioning. Where it might be limited, however, is in assuming that all individuals are good self-monitors, in other words, that all people can accurately introspect and describe their emotional states. Such an assumption may be inappropriate among individuals with a chronic mental illness who often suffer from both social perceptual (Morrison, Bellack, & Mueser, 1988) and frontal lobe impairment (Goldberg & Weinberger, 1988). Another limitation of the MMPI as an appropriate psychiatric/cognitive rehabilitation measure is that one cannot directly train an individual on the various subscales, so as to ameliorate any of the recorded social deficits (i.e., based upon scale elevations). As mentioned in the opening paragraph, an important aspect of cognitive rehabilitation tasks is that they can serve as both assessment tools and as techniques in developing particular skills. While the MMPI does give treatment strategies some direction, cognitive rehabilitation interventions are not immediately inferable from MMPI results.

In an effort to more directly assess those cognitive deficits associated with important social functioning, Lezak (1982) compiled a number of tasks that tap into various aspects of "executive functioning." Under the rubric of executive functioning, Lezak includes goal formulation, planning, and the carrying out of activities. These activities are typically affected by significant injury to the prefrontal areas of the brain (Stuss & Benson,

1984), resulting in a myriad of social impairments, such as apathy and behavioral inhibition (Damasio, 1979) and perseveration (Luria, 1973). Lezak (1982) suggests that the following tasks be added to the neuropsychological assessment: 1) "The Problems of Fact" from the Stanford-Binet scales (Terman & Merrill, 1973) and the "Cookie Jar Picture" from the Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1972) for goal formulation skills; 2) The Porteus Mazes (Porteus, 1959), Rey's Complex Figure Test (Rey, 1941) and the copying of all nine of the Bender-Gestalt designs on one page for planning ability; and 3) The Wisconsin Card Sorting Test (Milner, 1964) and Lezak's own Tinkertoy construction task for the carrying out of activities. The Tinkertoy task seems to have especially good promise, as it was found that patients differentiated by level of dependence with respect to managing daily routines performed differently on this task, with more independent patients creating more complex designs and using more pieces (Lezak, 1982).

The above tasks have hitherto not been investigated thoroughly as cognitive rehabilitation instruments, although the Porteus Mazes have been implicated in a training battery for an individual who had a right temporal lobectomy and improved in IQ, driving, generic social skills, and work-related skills (Rao & Bieliauskas, 1983). Two important issues, however, need to be underscored at this point. First, it is not unusual for studies investigating neuropsychological assessment and rehabilitation to use as dependent measures independent living and vocational functioning (Heaton & Pendleton, 1981), rather than one-on-one interpersonal functioning. These studies may be confusing what Spaulding (1986) calls "macrosocial" functioning (i.e., maintaining certain roles) and "microsocial" functioning (i.e., interpersonal abilities). While it is clear that macro- and microsocial abilities are related, viewing them as interchangeable indices of social and emotional functioning is simplistic and empirically untested.

In essence, the microsocial level of functioning involves a more dynamic and process-oriented approach to assessment and intervention. One needs to explore various components of the social interaction process in order to obtain a complete picture of an individual's social functioning. This would require a detailed analysis of the individual's social perceptual, social categorization, and social problem-solving skills, to name a few. Thus, by concentrating on macrosocial indices of social functioning, a significant aspect of the individual's social experiences may be ignored.

The second issue is that cognitive rehabilitation seems to be operating under the assumption that training in cognitive tasks is adequate for changes in social functioning to occur. This tacitly suggests that "social cognition," the perception, interpretation and processing of *social* information, is an unnecessary component of the rehabilitation process. Ostrom (1984) has pointed out that social cognition differs from traditional cognition in a number of ways, namely that in the former, the objects (i.e.,

social ones) tend to be labile, act as their own causal agent, and tend not to be a neutral stimulus but a meaningful event which may significantly influence the perceiver's personal situation and outcome. Further, the relation between perceiver and the social object tends to be interactional, with the perceiver being more likely to draw upon previous knowledge, biases, and attitudes when confronted with a social object. Relatedly, Holyoak and Gordon (1984) pointed out that unlike traditional cognition, social cognition is more directly concerned with behavior (vs. the emphasis on theoretical mental processes) and with individual differences. Social cognition's orientation toward studying individual differences, influenced according to Holyoak and Gordon (1984) by personality psychology, seems to be especially appropriate for clinical populations, which are noted for their heterogeneity.

Some empirical support for the distinction between cognitive and social cognitive assessment of social functioning was demonstrated by Gotlib and Asarnow (1979), who found that only a more socially sensitive measure of problem solving ability (i.e., The Means-Ends Problem Solving Task; Platt & Spivack, 1972) was able to differentiate between depressed and non-depressed college students, while a non-social problem solving task (i.e., anagrams) did not. Thus, if this distinction between social-cognitive and "purely" cognitive measures (as is typically used in most neuropsychological tests) is a meaningful one, then the utility of most of the above mentioned measures by Lezak will have to be reevaluated. This is because those tasks are more concerned with developing cognitive, rather than social-cognitive, abilities.

Applicability of Neuropsychological Instruments as a Basis for Assessing the Social Impairment Among Individuals with Schizophrenia

The application of the cognitive rehabilitation approach to individuals with schizophrenia is a relatively recent phenomenon. This progression, from rehabilitation approaches with the aged and brain-injured to individuals with a chronic mental illness, is a logical one for a number of reasons: First, individuals with schizophrenia represent a group of people who have a number of neurological deficits, ranging from frontal and temporal impairments (e.g., Kolb & Whishaw, 1983), to left hemisphere (Maaser & Farley, 1988; Tucker, 1981) and, perhaps right hemisphere impairment (Morrison, Bellack, & Mueser, 1988). Second, findings have been mixed with respect to neuropsychological batteries' sensitivity to differentiate between individuals with schizophrenia and brain-injured groups (Moses & Maruish, 1988; Stuve, 1990). In fact, a review of the literature led Stuve (1990) to conclude that "one must question the value of the neuropsychological distinction between schizophrenia and organi-

city” (p. 171). Thus, techniques applied to individuals with a brain injury may be applicable for those with a chronic mental illness, as these groups may share similar neuropsychological impairments. Third, the heterogeneity of schizophrenia lends itself to the idiographic approach typified by cognitive rehabilitation. Townes et al. (1985) underscored this point by demonstrating that neuropsychological impairment was independent of diagnosis and symptomatology among psychiatric patients. Similar findings were reported by Goldstein & Shelly (1987), who found substantial neuropsychological variability among individuals within the diagnostic categories of schizophrenia and alcoholism.

In spite of its potential utility for individuals with schizophrenia, cognitive rehabilitation based upon neuropsychological tasks still suffers from the same limitations for individuals with a chronic mental illness as delineated earlier among individuals who have suffered a brain injury. Further, areas that are often quite impaired among individuals with schizophrenia, such as social perception and cognitive flexibility, may, based upon the discussion in the previous section, be aspects of functioning that are not being addressed adequately. Given the question raised earlier concerning the generalizability of social skills training for individuals with schizophrenia, it is paramount that significant social deficit areas be addressed in order for interventions to be maximally effective. Thus, described below is how current, frequently utilized neuropsychological measures do in assessing social perception and cognitive flexibility among individuals with schizophrenia.

Individuals with schizophrenia have marked impairments in the ability to accurately discriminate among faces and the emotions that they express (Morrison et al., 1988). Such impairments may augment the relapse rate of the individual with schizophrenia, as he or she might tend to be less sensitive to the interpersonal cues given off by significant others. Among tasks from standard neuropsychological batteries, it appears that only the Facial Recognition Test (Benton & Van Allen, 1968) is a measure that might tap into this area of impairment. However, this task only seems to assess facial-perception skills. Feinberg, Rifkin, Schaffer, & Walker, (1981) found that while individuals with schizophrenia did more poorly on facial recognition tasks than a depressed group, the most impairment was found in the areas of emotion recognition and discrimination. Thus, the Facial Recognition Test would be useful only for measuring a sub-domain of the social perception deficits demonstrated by individuals with schizophrenia. One may then question how well training on this task would generalize to the ability to accurately perceive social cues in everyday situations.

It also appears that, among the most frequently used neuropsychological measures, there are none which are able to measure how well individuals with schizophrenia are able to perceive the emotional/thematic content of interpersonal scenes. In essence, this requires the inclusion of nonverbal,

body cues in the stimuli. Gilbert and Krull (1988) underscored the importance of nonverbal social perception among a normative sample by demonstrating that participants formed more accurate impressions of a target person they were watching on a videotape when they were prevented from paying attention to what the target persons was saying.

Nonverbal social perception is an area in which both individuals with schizophrenia (Cramer, Weegmann, & O'Neil, 1989) and individuals with an organic disorder (Cicone, Wapner, & Gardner, 1980) demonstrate deficits. Among the most commonly used neuropsychological tasks, perhaps the Picture Arrangement and Picture Completion subtests on the WAIS-R have the most face validity for assessing nonverbal social perception. However, findings have been mixed with respect to verbal vs. performance IQ deficits among individuals with schizophrenia, with some studies reporting reduced verbal relative to spatial performance (Maaser & Farley, 1988), and others demonstrating the opposite findings (Goldberg, Karson, Leleszi, & Weinberger, in press; Kolb & Whishaw, 1983). Further, in one study comparing WAIS-R performance between depressed and schizophrenic individuals, the latter group actually scored *higher* than the depressed group on PC and PA subtests (Dean, Gray, & Seretny, 1987). Thus, the PC and PA WAIS-R subtests would appear to have questionable validity as measures of social perceptual skills among individuals with schizophrenia.

As noted by a number of researchers (Kolb & Whishaw, 1983; Goldberg, 1985; Goldberg & Weinberger, 1988), individuals with schizophrenia typically experience problems in higher order conceptual processing and cognitive flexibility, skills which are most typically associated with the prefrontal area. Tasks used to assess this area of functioning include those mentioned in the previous section by Lezak (1982), as well as the Categories and Trails A and B tasks from the Halstead-Reitan Battery. Originally, it was felt that individuals with schizophrenia could not benefit from training on complex conceptual tasks, such as the Wisconsin Card Sort (e.g., Goldberg, Weinberger, Berman, Pliskin, & Podd, 1987), although, recent research suggests that this might not be true (Bellack, Mueser, Morrison, Tierney, Podell, 1990; Green, Ganzell, Satz, Vaclav, 1990; Spaulding, Storms, Goodrich, & Sullivan, 1986). But, as brought up repeatedly throughout this paper, the extent to which such training enables the individual to be more cognitively flexible in his or her daily life has hitherto not been investigated.

It is possible that these conceptual, higher order tasks may be prone to the aforementioned criticism that nonsocial stimuli differ qualitatively from social stimuli. For example, correctly doing a Wisconsin Card Sort or Categories task requires one to learn a given rule, based upon feedback. This rule is a clearly defined criterion, such as the color of the stimulus, or the quadrant it appears in. Individuals who do poorly on these tasks are

said to be cognitively rigid and unable to abstract from the information given in trying to determine a particular rule. In daily life, the “rules” are not so clearly defined. Social situations, for example, may not be differentiated as easily as one does the different rules on the Wisconsin Card Sort. In fact, research has demonstrated that individuals naturally categorize various social situations in a hierarchical manner according to “family resemblance” (i.e., degree of attribute overlap with a prototype) (Bower, Black, & Turner, 1979; Cantor, Mischel, & Schwartz, 1982). Thus, the individual has to form a gestalt of a situation and compare it to a prototypical representation before deciding if a given situation fits into a certain category. As with natural categories, the borders are fuzzy (Rosch & Mervis, 1975), so that the individual must be able to abstract across various situations and individuals, which have differing numbers of “qualifying” attributes for “rule” or category membership, in determining how one conceptualizes a given situation.

In thinking about the foregoing, one has to wonder how well training in a Categories or Wisconsin Card Sort Task will generalize to the everyday functioning of the individual with schizophrenia. Can we expect the individual with schizophrenia, who has been trained on these tasks, to see the similarities between the necessity of using his or her assertiveness skills in a social skills role playing task (e.g., telling another patient who changed a television channel that he was watching to change it back) and a situation in daily life, which at face value, may seem different than the role play, but may pull for the same sort of response (e.g., dealing with a colleague who uses your ideas to impress the boss). Thus, the “rule” in this example might be, “when someone takes advantage of you, be assertive.” However, the individual has to compare the similarities and differences across the two situations before deciding whether to apply the rule or not. In essence, finding the rule is not the only issue here (as it is in a Wisconsin Card Sort); determining the context in which a given rule may be applicable is clearly a critical part of the process. This point is underscored by Bower, et al., (1979) who noted that “different instances of an activity seem to bear a family resemblance to one another, but they may possess no common features” (p. 183). Therefore, to return to the question raised earlier: Will training in a Wisconsin Card Sort or Categories task facilitate an individual’s ability to apply what he or she has learned in one context to different situations, and thus be more *social-cognitively flexible*? This is, quite clearly, an empirical question, and one which needs to be addressed in order for cognitive rehabilitation to maximally address and treat the social impairments of the individual with schizophrenia.

New Directions and Concluding Comments

Cognitive rehabilitation offers a promising base in the assessment and treatment of the cognitive deficits demonstrated by individuals with

schizophrenia. However, its ability to address social and emotional deficits, for not only individuals with schizophrenia, but also individuals with a brain injury, is questionable. Researchers are thus behooved to develop more socially sensitive measures which will more adequately capture the processes which contribute to everyday social functioning. This paper would be remiss unless it noted that a number of innovative measures, not typically associated with traditional neuropsychological techniques, show great potential in this regard. The first of these is the task requiring the generation of alternation perceptions to TAT cards (Schlank, 1989; Spaulding, et al., 1986). This task requires the individual to make up as many different stories to a particular TAT card as possible. Used in this way, the TAT task moves from its traditional role as a projective technique to one which enhances the ability to change social cognitive sets or schemata. Social schemata play an influential role in how we perceive, process, and retrieve social information (Fiske & Taylor, 1984; Taylor & Crocker, 1981). By developing an individual's ability to see the world in different ways and thus recruit different schemata, one may develop a more effective means of addressing the cognitive rigidity of the individual with schizophrenia or the individual with a brain injury.

A second promising direction for assessment and rehabilitation instruments to follow is that of nonverbal information. One such task that assesses skills in this area is The Profile of Nonverbal Sensitivity (PONS; Rosenthal, Hall, Archer, DiMatteo, & Rogers, 1979a). This task assesses one's ability to evaluate body movements, facial expressions, and voice intonation. The comprehensive nature of this task seems especially suitable to the heterogeneous cognitive and organic deficits associated with groups suffering from a psychiatric disorder and/or a brain injury. This is underscored by research demonstrating that among split-brain patients, the right hemisphere was more effective at evaluating facial expressions vis-a-vis body movements, while the opposite pattern emerged for the left hemisphere (Benowitz et al., 1983).

An innovative approach to investigating nonverbal perception among individuals with a brain injury was undertaken by Cicone et al., (1980). These researchers developed a task in which the subject is presented with a target drawing of a particular emotional situation (e.g., someone being robbed). The subject was then presented with a set of four drawings and asked to select the person in the drawing who is feeling the same way as the person in the target drawing. The four drawings were arranged so that one conveyed a similar emotional theme (e.g., someone sinking in quicksand), another, the opposite emotional theme (e.g., someone receiving money) and two neutral pictures, one of which would share visual features with the target drawing (e.g., a man aiming a gun at the target).

It appears to be a worthy hypothesis that this type of task may be tapping into important aspects of the social cognition process. For example,

how one originally categorizes a particular social situation may strongly influence the cognitive set (i.e., schema) which guides the individual in the perceiving and processing of subsequent social information. For individuals who have deficits in the social categorization process, this might lead to frequent misinterpretations of social cues and an increased incidence of frustration in social interactions. One could imagine how an individual recovering from a brain injury or psychiatric disorder, who misconstrues the innocuous looks of others as demeaning (thus, classifying the situation as one involving threat), may then misperceive all other friendly interactions as being due to others trying to manipulate and/or con him or her. Such a processing style could engender a defensive/paranoid behavior pattern by the recovering individual, which might militate against him or her forming supportive friendships with others. Thus, by concentrating on both the social categorization process and the flexibility in utilizing various social cognitive "sets" (as described earlier), we may more accurately address those information processing deficits that significantly impair the social behavior of the individual with a psychiatric disorder or brain injury.

A third pressing area is that of assessment of conceptual abilities. While it is apparent that tasks such as the Wisconsin Card Sort and Categories form a solid basis for the assessment of active problem solving and conceptual abilities, greater external validity is needed. For example, the use of humor, sarcasm, and metaphors in everyday discourse may be extremely difficult for the cognitively rigid individual to understand. This involves abstracting from the literal content of a message so that the *intended* content of the message is comprehended. Therefore, it may be more clinically meaningful to assess how abstraction deficits impair comprehension of everyday communication, rather than that involved in a laboratory task. Since it has been demonstrated that individuals with right hemisphere damage demonstrate deficits in understanding humor (Bihrlé, Brownell, Powelson, & Gardner, 1986; Gardner, Ling, Flamm, & Silverman, 1975), sarcasm (Jacobs, Brownell, & Gardner, 1985), metaphors (Winner & Gardner, 1977) and inferences (Brownell, Potter, Bihrlé, & Gardner, 1986), then this may be a worthy area to investigate with individuals with schizophrenia.

Neuropsychologists and cognitive rehabilitation psychologists may also be advised to look toward the social cognition field for input into more socially sensitive measures. For example, a more appropriate way of assessing how well individuals can abstract across social situations would be to investigate how they group social situations together. This approach has been used by a number of researchers (Cantor, Mischel, & Schwartz, 1982; Forgas, 1976) and is administered by giving the participant a series of cards describing a social situation, with the instructions being simply to put the cards into stacks according to whether they go together. The po-

tential relevance of this task to social skills training cannot be ignored; in order to apply the acquired social skills one has to be able to abstract across different situations so as to determine whether the learned social response is appropriate for that particular context. Along the same lines, Cantor et al. (1982) developed a task in which individuals had to rate how "comfortable" a given personality type (e.g., outgoing) would be in different social settings (e.g., a church). It can be hypothesized that the ability to understand person/setting matches and mismatches is a useful complement to developing skills in abstracting across social situations.

Another social cognitive paradigm that should be pursued is that of script theory (Abelson, 1981; Schank & Abelson, 1977). While research from social psychology has demonstrated that individuals have "consensual" knowledge about the sequence of events that comprise social situations (e.g., going to a doctor's office) (Bower, Black & Turner, 1979), such issues have not been thoroughly investigated among individuals with a psychiatric disorder, although recent research suggests that individuals with right hemisphere damage do have deficits in this area (Ostrove, Simpson, & Gardner, 1990). Returning to the social skills training issue, if patients do not have access to or have lost their consensual knowledge base about social situations, then the teaching of individual social behaviors may be occurring in a "social vacuum!" In other words, the acquisition of a particular social skill may not be maintained by the patient because he or she may not be aware of where the acquired social skill fits in among the larger sequence of social behaviors. Thus, an interface between clinical and social psychology seems to be the next logical step in the development of the cognitive rehabilitation field, as has been suggested for the clinical psychology field in general (Leary & Maddux, 1987).

On a final note, in the schizophrenia field itself, a number of advances have been made in the assessment and rehabilitation of social functioning. In particular, it appears that multi-level cognitive therapy approaches have come to the fore as state-of-the-art treatment modalities (e.g., Brenner, Hodel, Kube, & Roder, 1987). In such programs, interventions begin with training at a purely cognitive level and advance towards progressively more molar social skills. The social perception stage, involving group discussion concerning patients' impressions of an interpersonal scene, has good potential with a schizophrenic population (Brenner et al., 1987).

Another approach, albeit not a new one, is that of social problem solving. While the applicability of this concept to schizophrenia has been questioned (Bellack, Morrison, & Mueser, 1989), recent research suggests that different aspects of social problem solving, such as the ability to generate alternative solutions to a problem, perceived self-efficacy in the problem solving domain, and role playing problem-solving behaviors may contribute differently to various indices of information processing and ward behavior (Spaulding, Weiler, & Penn, 1990). Thus, a comprehensive

battery of tasks that tap into different aspects of social problems-solving ability may be a fertile direction to follow in the assessment and rehabilitation of social deficits.

It is hoped that the foregoing has provided some important issues to consider in the assessment and treatment of social deficits among individuals with schizophrenia. The purpose of this paper was not to disparage the importance of investigating neuropsychological and non-social cognitive functioning, but, rather, to underscore that a more comprehensive approach must be adopted. By constantly re-examining our measures for their ecological validity and relevance to individuals' social functioning, we are taking notice of Cromwell's (1975) perspicacious and, hopefully, never to be forgotten observation that no individual with schizophrenia has ever been jailed or hospitalized for having slow reaction time!

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