Practice Principles of Cognitive Enhancement Therapy for Schizophrenia

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Abstract

Cognitive Enhancement Therapy (CET) is a developmental approach to the rehabilitation of schizophrenia patients that attempts to facilitate an abstracting and "gistful" social cognition as a compensatory alternative to the more demanding and controlled cognitive strategies that often characterize schizophrenia as well as much of its treatment. Selected cognitive processes that developmentally underlie the capacity to acquire adult social cognition have been operationalized in the form of relevant interactive software and social group exercises. Treatment methods address the impairments, disabilities, and social handicaps associated with cognitive styles that appear to underlie the positive, negative, and disorganized symptom domains of schizophrenia. Style-related failures in secondary rather than primary socialization, particularly social cognitive deficits in context appraisal and perspective taking, are targeted goals. Illustrative examples of the techniques used to address social and nonsocial cognitive deficits are provided, together with encouraging preliminary observations regarding the efficacy of CET.

Key words: Social cognition, cognitive rehabilitation.

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As we have described in our companion report (Hogarty and Flesher, this issue), a psychiatric disorder such as schizophrenia that is characterized by clear developmental anomalies probably requires developmental rehabilitation. This article describes the goals, methods, and procedures of a new intervention called Cognitive Enhancement Therapy (CET) and comments on important differences between CET and the techniques embodied in other cognitive rehabilitation programs. We encourage the reader to refer to the theoretical foundation of CET (Hogarty and Flesher, this issue) for a more detailed description of social cognition and its likely developmental failure in schizophrenia.

Goals of CET

The first and foremost goal of CET is to facilitate attainment of social cognitive milestones. Among these normal developmental milestones are a "gistfulness" in social exchange that is appropriate to the healthy adult, in contrast to a reliance on the details of "verbatim" memory or concrete thinking that is associated with earlier developmental periods (Brainerd and Reyna 1990). Further, these milestones include an effortful and active processing of social content that is typically acquired by early adulthood, rather than the more passive reception of information that is often characteristic of the prepubertal child. Other acquired milestones of adult cognition include cognitive flexibility (e.g., "divergent" thinking that accommodates multiple alternatives and sources of information), a tolerance for ambiguity and uncertainty, and a personal comfort with abstraction. By contrast, reliance on or preference for specific rules and formulas that direct the performance of appropriate behavior often characterize an earlier developmental period (Selman and Schultz 1990). CET seeks to help patients attain these milestones by providing personally meaningful and self-directed experiences tailored to the performance of adult roles that require social cognitive competence. This approach minimizes responses based on practiced performance of contrived roles that are perfected by instruction, modeling, role play, and rehearsal.

Second, CET encourages behavior appropriate to unrehearsed social contexts, including awareness of one's response and its effect on another person. These secondary socialization competencies require context

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appraisal and perspective-taking abilities (Berger and Luckman 1966; Brim 1966; Baldwin 1992) and thus take precedence over the training in such primary socialization skills as voice tone and volume, eye contact, and prescribed prosocial and refusal statements. The novel and unrehearsed exercises of CET might be perceived as arousing and even mildly stressful to some patients, perhaps more so than the conventional training and practiced performance of generic cognitive tasks. However, these unpredictable encounters have impressed us as being precisely the everyday experiences that patients often avoid; when successfully negotiated, such encounters foster social cognitive growth. Given the context of increased risk taking, CET is applied in a learning environment that is focused, safe, and predictable by providing structure as a way to control unwanted stimulation. A broad written agenda for the learning experiences; the provision of explicit rules of order; and the cueing, coaching, support, and environmental control offered by clinicians during each exercise provide an atmosphere in which a developmentally compromised social cognition can be addressed.

Third, CET seeks to develop a personally relevant understanding of schizophrenia by providing an educational program wherein patients can inquire and respond to information regarding their social and nonsocial cognitive deficits. This exercise in psychoeducation is designed to guide a patient's active participation in forming and maintaining a treatment plan, including an appraisal of their own cognitive difficulties and strengths, rehabilitation goals, and the strategies needed to achieve these objectives.

Fourth, as is common among traditional cognitive rehabilitation programs, CET also attempts to address the influence of neuropsychological (nonsocial) cognitive deficits on behavior, but in a manner that is more characteristic of an experiential, interactive process than a formal didactic exercise.

In brief, CET stimulates a patient to think more as a young adult and less like a prepubertal or early adolescent subject. From a developmental perspective, adult thinking is guided by an appreciation of the other person's point of view (Selman and Schultz 1990). Adults are expected to give an interpersonally sensitive and affectively appropriate "motivational" account of their position, one that is targeted to a specific audience (Mills 1940). Adult thinking also includes an awareness of how this account would likely be received and responded to by other people (Baldwin 1992). The social exchanges that characterize adult cognition also include verbal references to historical precedents and the details of a current exchange that constitute a shared social context between the sender and a receiver of information. The problem some schizophrenia patients have in failing to provide clear, cohesive references in speech is well known and in its more severe form often leaves the listener confused (Andreason et al. 1985). The ability to provide shared social context is an important product of adult, secondary socialization experiences.

The capacity to negotiate potential impasses and ambiguities is also characteristic of adult exchanges, rather than the use of declarations that resemble demands, threats, or exhortations, or the adoption of a noncommunicative position frequently observed among younger subjects (Selman and Schultz 1990). Healthy adults tend to guide their behavior in difficult contexts by spontaneously ascertaining a set of implicit rules, whereas prepubertal subjects more often follow explicit prescriptions for situations, typically those laid down by another adult (Berger and Luckman 1966; Brim 1966). Furthermore, adult cognition carries with it the responsibility to be coherent and gistful, whereas children are often idiosyncratic and concrete in their discourse. In more traditional treatment programs, when adult patients make idiosyncratic statements, therapists often tend to respond much like parents by restating the patient's account in a more gistful manner ("I think I hear you saying. . ."). A rehabilitation program that supports adult cognition would deliberately but sensitively shift the burden of coherent explanation to the patient. Thus, the competent exercise of adult social cognition requires an ongoing active mental effort and rarely includes impoverished, disorganized, or constricted responses that confuse the listener.

Methods

CET is a psychosocial rehabilitation program for adult schizophrenia outpatients that is administered each week in two 1–1.5-hour sessions. It is applied in the context of maintenance antipsychotic treatment; principles of supportive psychotherapy; and provision of basic services related to obtaining needed entitlements and medical care, as well as food, shelter, and clothing.

Reducing Heterogeneity. In our attempt to transform CET theory into a relevant and viable clinical practice, we discovered a clear and compelling need to address two potential constraints posed by schizophrenia. The first was the widely recognized heterogeneity both in symptom presentation and associated cognitive processes. The second constraint was the equally diverse adaptive responses of patients to these cognitive impairments, coping strategies that might account for the numerous disabilities and social handicaps of schizophrenia. A relevant point of entry, a concept recommended by many rehabilitation authorities (e.g., Green 1993), therefore not only serves to reduce heterogeneity in symptom presentation, cognitive processing, and adaptation, but also provides the opportu-

nity to focus on the common deficits that exist within a circumscribed number of cognitive processing and adaptation styles. Selecting clinically stable outpatients as candidates for CET, rather than acutely symptomatic inpatients, also reduces the heterogeneity in symptom presentation and cognitive dysfunctioning. Limiting the initial application of CET to more stable patients provides an optimal test of potential efficacy since more symptomatic patients might not comprehend or easily engage in the cognitive exercises. Nuechterlein and Dawson (1984) have reported that patients who experience acute psychotic symptoms often require longer stimuli presentations for simple cognitive tasks or experience difficulty in recognizing even the familiar stimuli of "low processing loads." These authors speculate that acute symptoms might further reduce a limited processing capacity or disrupt automatic processing potential.

In an effort to reduce heterogeneity, many studies (Buchanan and Carpenter 1994; Andreason et al. 1995) have attempted to classify the acute symptom presentations of schizophrenia patients. A growing consensus has emerged that at least three domains can be consistently identified. Some feel that these domains correspond to distinct "etiopathophysiologic" models that have been variably supported by studies of cerebral blood flow and metabolism (Liddle et al. 1992; Buchanan and Carpenter 1994). Other investigators have sought to establish and validate a neuropsychological cognitive foundation to these three symptom domains as well (Liddle 1987; Liddle and Morris 1991; Brown and White 1992; Norman et al. 1997). The symptom and cognitive style classifications most often cited are positive symptoms (and a corresponding "reality distortion" cognitive style); negative symptoms (and a "psychomotor poverty" cognition); and a domain of cognitive impairment called "disorganization" that characterizes both symptoms and cognitive style. Unfortunately, all but one study (Arndt et al. 1995) has focused on the cross-sectional assessment of symptoms among more acutely ill patients (most often hospitalized patients), thus limiting an elaboration of the associated cognitive processing styles among recovering outpatients who are either less symptomatic or in symptom remission. Clearly, disorganized and negative symptom behavior, and by inference the corresponding cognitive styles, continues to be characteristic of many recovering schizophrenia outpatients (Arndt et al. 1995), as our early experience with CET has confirmed (see below). But prominent positive symptoms of hallucinations and delusions that constitute "reality distortion" are, by definition, less apparent among stable outpatients. In fact, neuropsychological support for the "reality distortion" syndrome has yielded inconsistent findings (Liddle 1987; Norman et al. 1997). The best that one can conclude from the relevant longitudinal study available is that the positive symptom domain persists but is less severe over time, is poorly correlated with earlier assessments, and is not clearly characterized at followup (Arndt et al. 1995). However, Magaro (1981) provides a clue to the residual cognitive processing of previously delusional patients, describing a cognitive style among paranoid individuals that is characterized by controlled and rapid processing that attempts to accommodate "rigid" cognitive schemata and assembly processes.

In our attempt to reduce heterogeneity related to symptom presentation, cognitive deficits, adaptations, and thus treatment planning, we chose as our point of entry to focus on the domain-related styles descriptive of "impoverished," "disorganized," and "rigid" cognitions. Our Cognitive Styles Inventory, a rating scale that serves the dual purpose of establishing eligibility for CET and providing the criteria for improvement, has yielded high intraclass coefficients among six raters ($r > 0.78$) and low F ratios between raters ($p < 0.10$) for each style. (Thirty-six patients participated in one or more of these pilot studies.) However, considerable modification and redefinition of the terms associated with the rigid style were required before acceptable reliability was achieved. The continuing phenomenological study of remitted schizophrenia patients will provide a better understanding of this style. Our experience to date has led us to consider the rigid cognitive style of some recovering patients as "cognitive constriction" or a "residual distortion" of beliefs about the world, reflecting a relative absence of hallucinations but the persistence of mild delusional thinking. While these might ultimately prove to be more relevant descriptions, for the sake of continuity we shall refer to this cognitive processing style as "rigid" throughout the report. Without such styles to guide both patient and clinician's understanding of cognition, a seemingly endless and confounded list of nonsocial and social cognitive deficits would need to be addressed. Cognitive styles provide a structure that allows an individualized approach to rehabilitation.

Cognitive Style Impairments, Disabilities, and Handicaps. The methodological approach of many cognitive rehabilitation programs typically targets the neuropsychological (nonsocial) impairments of schizophrenia, such as those identified through formal tests of attention, memory, and problem solving. While it is a matter of debate whether these cognitive impairments can be durably improved by training (Benedict et al. 1994), the emphasis on functional cognitive disabilities and social handicaps represents a remediation of specific social behaviors and adaptive responses through didactic training rather than through an experiential socialization of the patient. The

latter is a process that CET uniquely emphasizes, particularly in its response to social handicaps.

The methods of CET approach the impairments, disabilities, and handicaps of schizophrenia through the symptom domain–associated cognitive styles. It needs to be underscored, however, that the style-related cognitive deficits of schizophrenia patients have not been well described in literature to our knowledge. Typically, symptom domains drawn from rating scale assessments of positive and negative symptoms as well as attentional impairment among acutely ill patients have first been correlated with neuropsychological tests that are alleged to reflect cortical and subcortical impairments as understood from the test results of brain-damaged subjects (Cummings 1993). The behavioral sequelae of focal or neural system deficits have then been indirectly inferred from the test results of schizophrenia patients. An emerging literature describes the cognitive deficits that might be associated with these symptom domains (Buchanan and Carpenter 1994; Norman et al. 1997), but most recognize that the study of the underlying neurobiology and behavioral sequelae is in its infancy (Arndt et al. 1995). We rely largely on our own clinical experience, as well as selected citations, when describing the impairments, disabilities, and handicaps of the three targeted cognitive styles.

Patients with an "impoverished" style appear to lack relational schemata and are believed to experience "effortful processing" in retrieving stores of social cues and expressive language (Allen et al. 1993). The basic impairments that underlie this style are thought to include poverty of speech and gestures, executive functions, and vocal inflection and a restricted or blunted affect that might reflect anomalies of the dorsolateral prefrontal cortex and caudate (Buchanan and Carpenter 1994; Norman et al. 1997). Disabilities often appear both in the initiation as well as the planning of behavior. Affected patients seem most handicapped when language does not adequately express their needs, preferences, or opinions, a problem that often precludes the ability to give a credible (motivational) account of their behavior. An associated reduction in stamina and interest often seems to lead to social withdrawal and the absence of a vocational life.

Impairments that underlie the "disorganized" or cognitive impairment style relate more to ineffective inhibition (Broen and Storms 1966) and affect dysregulation than to foresightful planning capacity (Taylor and Cadet 1989; Malla et al. 1995). Formal thought disorder, poverty in the content of speech, inattentiveness, derailment, distractibility, inappropriate affect (Buchanan and Carpenter 1994), and a reduced ability to develop integrated cognitive schema also appear to be characteristic impairments. These underlying impairments have been associated with either orbital prefrontal cortex or anterior cingulate cortex anomalies (Norman et al. 1997), or features of the left superior temporal gyrus (Buchanan and Carpenter 1994). Functional disabilities, in our experience, are reflected in imprecise or chaotic planning, failure to stay on task, and difficulty selecting a preferred problem-solving alternative. Failures to "chunk" or categorize memory stores also appear disabling. These patients seem most handicapped by inappropriate responses that are not self-edited and at times by language that is not coherent (Liddle and Morris 1991). Vocational plans, goals, and often employment itself seem to change indiscriminately.

Those with a "rigid" cognitive style appear most impaired by difficulties in developing alternative responses to social problems as the requirements of contexts change. The neuropsychological evidence for the acute positive symptom domain that is associated with the reality distortion syndrome has been traced to left temporal lobe dysfunction (Norman et al. 1997), but the association appears stronger for hallucinations than delusions (Buchanan and Carpenter 1994). These residually paranoid patients seem frequently disabled by fixed, inflexible, and restricted cognitive schema and a reduced tolerance for ambiguity (Magaro 1981). In day-to-day life, patients appear most handicapped by a single-minded pursuit of inappropriate goals or career plans and by narrow if not stereotyped or mildly delusional attributions to the motivation and behavior of others (i.e., severe limitations in perspective taking). This often idiosyncratic thinking, in turn, can serve to desocialize and isolate the patient.

In response to style-related deficits, the methodological approach of CET places relatively greater emphasis on the functional handicaps of schizophrenia using the process of secondary socialization. It is hoped that these exercises in experiential learning will have reciprocal effects on the associated impairments and disabilities. CET seeks to improve the impoverished style by encouraging greater elaboration and more gistful construction of cognitive schema, particularly spontaneous representations of the cognitive, affective, and behavioral states of self and others that often appear deficient in negative symptom patients (Frith and Corcoran 1996). An emphasis is placed on decreasing the patient's reliance on a more demanding verbatim memory and facilitating gist extraction during performance of social cognitive exercises. An active, abstract processing of neuropsychological tasks is similarly encouraged. Among disorganized patients, enhancement of an attentive, gistful, cognitive organization and foresightful planning is sought, one that would facilitate the ability to apprehend and appropriately communicate the central point in neuropsychological tasks and social exchanges. For rigid patients, multiple solutions to a specific neuropsychological exercise are encouraged. Greater flexibility in considering the perspectives of

other persons and their behavior as well as a greater appreciation of the often subtle norms that necessitate cognitive flexibility in different social contexts is pursued in the social group exercises.

In the following description of the social and nonsocial cognitive exercises, we do not imply that a separate group of exercises are exclusively reserved for patients with a specific cognitive style. In fact, assessment of the first 59 patients admitted to the CET program revealed that only 25 patients (42%) met criteria on a single style (most often the disorganized style), while 26 (44%) manifested two style patterns, and 8 (14%) had qualifying scores on all three styles. Thus cognitive styles are more dimensional than categorical. The most prominent (highly rated) style was disorganized, characterizing 46 percent of patients, while 39 percent had an "impoverished" style and 15 percent, the "rigid" style. A relevant mix of exercises, particularly among the (nonsocial) neuropsychological tasks, variably addresses a patient's prominent style or styles, but all patients are exposed to the entire package of software and group exercises. For example, in an impoverished patient, more time might be spent on exercises that encourage a cognitive effort in "coming to" and sustaining attention. Memory exercises that facilitate "chunking" or categorization abilities might be stressed in the treatment of a disorganized patient, and a problem-solving task that invites multiple solutions would be emphasized for patients with a rigid cognitive style.

Enhancement of Nonsocial Cognition. While it might appear to be counterintuitive to a developmental rehabilitation of social cognition to employ exercises that target nonsocial cognitive impairments in attention, memory, and problem solving, an existing literature does document the influence of these basic deficits on the acquisition of primary social skills (Green 1996). Further, as described in our companion report (Hogarty and Flesher, this issue), the neuroanatomical sources of nonsocial cognitive impairment might also influence, directly or indirectly, the neural systems that support social cognition. However, fidelity to CET theory requires that enhancement of nonsocial cognition be focused on such metacognitive abilities as gist extraction and automatic processing. An understanding of the abstract principles that underlie task requirements, for example, would be more valued than ultimate task proficiency. While enhancement of social cognition has priority over nonsocial cognition, in practice the CET exercises are truly integrated. Each attempt to address a problem in nonsocial cognition, for example, occurs during the socialization of the patient. Logical distinctions between the approaches are made for purposes of clarification and discussion.

The nonsocial cognitive exercises are also designed to promote a number of abilities that are related to social cognition. For example, these software exercises facilitate in vivo working relationships with therapists and other patients regarding cognitive dysfunctions and evoke a constant awareness of personal deficits and strengths as well as the requirement for a plan that fosters an adjustment to disabilities and handicaps. The exercises also provide experiences for success and mastery and they familiarize patients and therapists with each other before the introduction of the social cognitive group curriculum. In essence, nonsocial cognitive enhancement is primarily an attempt to facilitate gistful solutions to tasks and to build cognitive stamina for the mental effort that will ultimately be required during the more demanding (social cognitive) group activities. Software routines further help to reduce distractibility such that important information contained in the social exchanges that occur during the nonsocial cognitive exercises can be processed more efficiently. The software tends to not only increase patients' awareness of their own cognitive style, but also consistently provides the opportunity to deemphasize a verbatim, serial approach to neuropsychological tasks by supporting the organization and cognitive flexibility that underlie gistful cognition. Of great importance, patients appear to gradually acquire an understanding of the culture within which cognitive training occurs. While they are informal in nature, the subtle norms that govern appropriateness, confidentiality, and support for other patients, as well as the coaching priorities of clinicians, require ongoing perspective taking and context appraisal of the neuropsychological training environment.

All patients are first assessed with a battery of formal neuropsychological tests, computer exercises, and a structured (videotaped) interview in order to characterize their prominent cognitive processing style(s) and determine both their micro- and macro-impairments, -disabilities, and -handicaps. While each patient has a primary clinician, the treatment team participates in the cognitive evaluation and in the formation of a corresponding treatment and coaching plan. Following a sensitive explanation of the patient's pattern of cognitive strengths and weaknesses, the treatment plan is formed with the active participation of the patient. The plan is written on poster board and displayed during all CET exercises, so that the patient's primary cognitive problem and individually crafted goals and strategies are always in evidence. For example, following the baseline assessment and orientation to the software exercises, a disorganized patient formulated the following treatment plan with the help of his coaches:

- *Problem:* Following conversations
- *Short-Term Goal:* To get the main point in family conversations
- *Long-Term Goal:* To get the main points of conversations outside my home
- *Strategies:*
  a. Practice getting the gist from reading brief stories
  b. Remember key words
  c. Try to forget unimportant details
  d. Use the memory software
  e. Try to focus on at least one gist in a conversation.

After a year of intensive experience with the nonsocial and social cognitive exercises, patients are asked to reevaluate their cognitive problems, goals, and strategies. The changes made are often striking, realistic, and highly individual. In the above example, the patient came to realize that social discomfort preceded his attentional, memory, and abstracting difficulties.

Close attention is paid to a patient's response to the interpretation of cognitive assessments since many patients have denied the existence of "schizophrenia," let alone its impairments, disabilities, and handicaps. Until they are confronted with social and nonsocial cognitive challenges during training, patients are often unaware that cognitive difficulties do in fact hold singular importance to their social and vocational lives. ("Is this schizophrenia?" is a common inquiry during cognitive exercises.) A glossary of cognitive language is also provided, often in metaphorical form, such as the term flooding, which describes being overwhelmed by irrelevant information or feelings when doing a task. The glossary also holds considerable practical value. For example, patients much prefer to talk about their problem in gist extraction or perspective taking than their symptoms of schizophrenia. Adjustment to disability and the search for ways to compensate are recurrent themes throughout the nonsocial cognitive exercises.

Following the initial evaluation and an orientation to the software routines of attention, memory, and problem solving, a patient is paired with another patient confederate. Those who sustain denial of cognitive difficulties, are residually paranoid, or who appear overwhelmed by the social stimulation of having to work with another patient are permitted to observe other pairs performing software exercises before they participate. Pairings are most often based on contrasting cognitive styles, although interpersonal compatibility and accommodation to the availability of new admissions to the program are also important factors. Each pair collaborates on software exercises and patients help each other to maintain records of performance as a covert form of cognitive training. An individual patient also benefits from the practice by becoming an empathic enabler to a colleague. While not always practical, ideally patients work in single pairs for 3 months and then three or four pairs are combined. These six to eight patients are then allowed time to socialize and work together on the software exercises for an additional 3 months. The three or four pairs ultimately constitute a formal group that eventually participates in the social cognitive training curriculum. Prior to initiation of social cognitive group exercises, CET patients spend approximately 2.5 hours per week for 6 months performing nonsocial cognitive exercises. The remaining half hour of CET provides supportive therapy, medication, and case management that is offered to all subjects, both experimental and control, who currently participate in a study of CET.

The two methodological characteristics of nonsocial cognitive training are "saturation cueing and fading" and therapist "coaching," both of which are characteristics of the Ben-Yishay rehabilitation program for patients with traumatic brain injuries (Ben-Yishay et al. 1985*a*, 1985*b*). Exercises, particularly those that address attention deficits, variably contain motivational, visual, and/or auditory cues. All tasks, be they attention, memory, or problem solving in nature, are graduated in terms of the cognitive challenge to a patient. This graduated induction of training avoids the negative outcomes that seem associated with therapeutic intensity (Goldberg et al. 1977; Hogarty et al. 1995, 1997*b*). The demands of a task (e.g., the length of a preparatory interval, stimulus presentation, or level of task complexity) can be increased, or if this leads to task failure, decreased according to a patient's level of performance. An exercise initially begins by using the maximum cues available and the least difficult version. Once a patient's optimum level of performance on a task appears to have been reached, the cues and coaching are systematically eliminated, or "faded," leaving the patient able to succeed at the task only by generating the cues internally. Conceptualizing the principles needed to succeed (getting the gist of the task) is the metacognitive ability facilitated in all software exercises. This is the same ability that is ultimately reinforced during each of the social cognitive group training exercises.

Coaching or cognitive mediation is the method by which therapists identify and influence the cognitions that are operating during the performance of a given task. Coaching is also a principal method used during the later social cognitive group exercises. It is used not only to elicit more gistful thinking about a task, but also to increase the patient's understanding of an impairment and the associated functional disabilities and handicaps. For example, if an outlying score on an attention test has indicated distractibility, the coach might ask, "What made you miss by so much? Your computer is a daydream detector

machine; if you drift off and lose focus, the computer will detect it." Patients often become more sensitive to the conditions in which attention becomes impaired, as well as the need to maintain an active rather than passive information processing posture. Initially, patients seem more inclined to passively process information rather than actively engage a requisite cognitive organization, vigilance, and search for contextual meaning. Followup questioning of the patient's task performance or ongoing monologue is at the heart of coaching. An impoverished patient whose answers are too concrete will be coached to think more abstractly. A disorganized patient is questioned in a way that facilitates better conceptual organization and editing of a response. Rigid patients are encouraged to be more flexible in their organization of cues and gists underlying a task. Each followup question always includes the risk for an incomplete, embarrassing, or even psychotic response. Therapist skill in assessing how the question has been understood, together with observational astuteness, can often refocus the patient on the gist or principle that needs to be articulated.

Attention. Attention deficits are among the most serious cognitive impairments in schizophrenia (Nuechterlein and Dawson 1984). CET software exercises are used to enhance vigilance, inhibit irrelevant stimuli, shift attention between auditory and visual modalities, and foster rapid decision-making. These exercises include three of Ben-Yishay's programs from the Orientation Remediation Module (ORM; Ben-Yishay et al. 1985*a*) that facilitate reaction time in a temporal mode using auditory cues (the Attention Reaction Conditioner), spatial focusing with visual cues (the Zero Accuracy Conditioner), and temporal vigilance with auditory and visual cues (Time Estimates). More challenging routines that address visual discrimination and the integration of attention functions are drawn from the Bracy (1986) programs that have also been designed for patients with brain injuries. These include multiple attention tests that demand vigilance when performing divided attention tasks; complex attention tasks that necessitate the patient's performing several conceptual steps; visual scanning that requires rapid shifts in attentional focus; and selected routines from the Soft Tools program, such as "Radar," that challenge a patient to make rapid attentional decisions.

An example of attention training, and the relative emphasis that CET attempts to place on gistful, automatic processing, can be found in the Time Estimates exercise from Ben-Yishay's ORM. Among the more basic of the attention training tasks, Time Estimates provides many patients with nonthreatening evidence of an attention deficit, an explanation that patients seem to prefer to the self-attribution of being "schizophrenic." In this task, a 12-second "clock," for example, is presented on the screen with four equidistant dots between each second. (The number of seconds in the hypothetical "hour" can be manipulated.) The instruction to the patient is to press the lever when the second hand reaches a predetermined time that can be variably set, e.g., at 5, 10, 12, or 25 seconds. A "beep" accompanies each move of the second hand. A minimally difficult challenge would have the criterion time set at 5 seconds. Early or late responses to the targeted time will remove one of the interval dots, thus providing patients with visual evidence of having under- or overestimated time. Motivational cues can include "You nailed it!" or "What were you thinking for the two seconds after you missed the target?" The therapist can fade any one or all of the auditory, visual, and motivational cues gradually. A more difficult form of this task would set the response target at 25 seconds (twice around the clock plus 1 second), with no 1-second beeps, no second-hand display, and no motivational encouragement or coaching. Fading of these cues stimulates the patient to cue internally, thus improving concentration during the preparatory interval. On a superficial level, this task might seem little more than providing patients with the experience of counting silently to themselves. However, patients also experience the need to suppress internal stimuli and to ignore external distraction in order to concentrate on a task. Twenty or 30 seconds of active concentration requires more mental effort than most patients are accustomed to. After several hours of working on this task, performance usually improves and patients typically report improved attention outside the clinic. One patient remarked, "My mind used to wander when I did my housework. Now I just hear those beeps in my head and I stay focused."

Memory. While memory training has a rich history in the rehabilitation of head injuries, schizophrenia patients rarely, if ever, present with profound amnesia or a loss of ability to encode information. Systematic attempts at memory training in schizophrenia have therefore been rare. However, increased attention has been drawn to "working memory" deficits in schizophrenia as a source of functional disability (Goldman-Rakic 1990), that is, the inability to maintain in consciousness short-term stores of information needed to execute online tasks. The enhancement of a working memory deficit attempts to focus on developing a schematization or categorizing capacity, cognitive flexibility, an abstracting attitude, and executive (decision-making) functions. CET software exercises that facilitate these abilities include sequential, delayed, spatial, visual, auditory, and verbal memory routines that are contained in the Bracy Memory I and II programs and various Soft Tools exercises. Again, the goal of CET is to

develop a more gistful appreciation of abstract principles that underlie a working memory exercise, rather than a reliance on verbatim, declarative, or rote memory skills. Once memory training begins, patients have already been paired with a confederate, which provides many opportunities to share and reinforce metacognitive approaches to working memory. While cueing and fading are less possible with memory and problem-solving routines, props such as worksheets, written instructions, and active encouragement can be removed over time.

"Categorizing exercises" are one form of working memory training common among many rehabilitation programs. While we begin with the less challenging categorization tasks contained in the Bracy Memory II module, patients quickly move to our own more challenging exercises. In the following example, designed by Flesher, patients are asked to group 20 words into four coherent categories, each with a common theme:

love	iron	air	home
nylon	human	spider	sand
stone	food	clay	wood
steel	water	pig	paper
virus	flower	ink	glass

Two of the categories are relatively apparent ("living things" and "things one needs to live"), but the remaining two are sufficiently ambiguous to require abstracting. Regarding these latter categories, the first instinct of many patients is to group stone, iron, wood, glass, and steel into a category of "building materials" and to group ink, paper, clay, sand, and nylon into a second category "art supplies." Patients who make these selections are tactfully told that there is a better way to sort, a response that leads to some frustration if not a fear of failing among many patients. With subtle coaching, patients are encouraged to seek a more abstract basis for sorting (e.g., "Does nylon really have anything in common with sand?"). Eventual success is achieved when patients reason that stone, wood, iron, sand, and clay are all "raw materials," and that ink, paper, glass, steel, and nylon are "fabricated materials." Patients need to remember not only the solutions already attempted and the challenging words that require further categorization, but also the 20 words themselves.

These memory exercises contain a degree of risk such that both therapists and the patients might feel they are on an endless search for a more abstract solution. This sense of tension and ambiguity, however, provides patients with the means to move from a position of passivity and amotivation to one of active thinking. Less experienced CET therapists might attempt to protect patients from such risk and uncertainty, a clinical stance that patients often come to expect. But when challenged intellectually, most patients seem able to generate more gistful responses and their demeanor clearly appears to change as well. An emphatic expression, "Don't tell us, we will get it on our own," is an unexpected but common response from patients who previously were quite impoverished and amotivated. The paradox of CET training is that without exposing patients to some small risk of failure, little sense of mastery, success, and growth can be experienced. Patient collaboration on a challenging memory task and the open dialog that leads to success are also essential characteristics of a secondary socialization experience that requires negotiation, perspective taking, and context appraisal.

Problem Solving. The executive functions that underlie problem solving appear to be compromised in many schizophrenia patients, as demonstrated on various neuropsychological tests such as the Wisconsin Color Card Sort (Braff et al. 1991). Impairments are thought to reflect prefrontal cortex anomalies (Cummings 1993). The CET problem-solving software specifically targets analytic logic, effortful executive functions, strategic and foresightful planning, and intuition, abilities that support the gistful, abstract thinking that is fundamental to social cognition. All exercises are drawn from the Problem Solving, Soft Tools 86 and 89, and Visuospatial II programs of Bracy. These include Checker Exchange, Logicmaster, Designer Patterns, Number Manipulations I and II, Deduction, and Knights Challenge.

One of the more challenging exercises in this problem-solving module is the Checker Exchange routine. A patient can perform this task alone or with a partner if an experience in social exchange is desired. An ordinary checkerboard is projected on the screen. The patient moves the 12 red checkers and 12 black checkers in turn by using the arrow keys. The rules of the traditional checker game have been substantially modified such that there are no jumping or backward moves, and the goal of the game becomes one of exchanging all the positions of the red checkers with those of black checkers, such that a mirror image of the original board is created. The patient receives 1 point for each checker exchanged, and 24 points represents a perfect score. The more a patient plans before starting the game, the greater the chance of success. Initially, most patients tend to respond impulsively and without planning so that gridlock develops at the center of the board. Initial trials typically result in a score of 3 or 4. Patients are encouraged by the coach to think out loud about a new strategy. The therapist will typically demonstrate that the patient will score higher if he or she develops a strategy. Over time, patients discover that active mental effort is required, but that high scores are indeed possible with strategic planning. Because it is

practically impossible for most human beings to memorize 30 or more discrete moves in advance, a preparatory gist or solution principle needs to be conceptualized. Since the exercise typically takes 30 minutes or more to complete, it also reinforces perseverance, stamina, and concentration. Invariably, successful completion of the Checker Exchange rewards patients with a degree of personal satisfaction and impresses on them the value of improved problem solving. The therapist stresses ultimate application of this newly acquired "problem-solving ability" to human relationships.

Enhancement of Social Cognition. The process of social cognitive enhancement begins with small-group, secondary socialization exercises that might naturally foster acquisition of gistful perspective taking and social context appraisal using the improved cognitive abilities developed through concurrent exposure to the nonsocial cognitive tasks. These group exercises are also graduated in difficulty and are manipulated by cueing and coaching. The exercises are provided in a structured format for 1.5 hours each week, over a 56-week period. During an additional 6 weeks, the structure and cues (such as notebooks, the treatment plan, session outlines, and worksheets) are removed and online coaching is reduced through a gradual method that ensures comfort and predictability. This typically involves providing opportunity to observe the performance of other patients and coaches, a presession agenda review with a therapist-coach without extensive rehearsal, opportunity to actually perform, and opportunity to review one's own videotaped performance with a coach. Eleven thematic activities and multiple exercises for each have been largely adapted from the program of Ben-Yishay (e.g., 1980), who graciously extended numerous opportunities for CET therapists to visit his program. Unlike the 6-hour, 4-day-per-week experience for 20 weeks that characterizes this program for patients with traumatic brain injuries, CET group exposure is limited to 1.5 hours per week in recognition of many schizophrenia patients' sensitivity to therapeutic overload. One or two exercises have also been adapted from the Spaulding and Reed manual (1989), also generously provided. This manual reflects components of the Integrated Psychological Treatment approach (Brenner et al. 1992). (All software and group exercises are in a comprehensive CET manual that will be made available if a successful test of CET is realized.)

Group exercises begin with a patient being challenged to state his or her cognitive problems, goals, and strategies. When paired with a partner, other exercises include conceptualizing and effectively communicating "sound bites," or simple summations, from op-ed pieces, such as those that appear in *USA Today*. Other exercises include the elaboration of motivational accounts, the formation of "condensed messages" (typically eight- to ten-word "telegrams" that reflect an interpersonal crisis in need of resolution), and the gistful solving of real-life social dilemmas, where the pros and cons of patient-generated choices are systematically reviewed and negotiated between participants. More challenging routines are the center-stage exercises, such as "Introduce Yourself" or "Introduce a Friend," adapted from the Ben-Yishay program. Unlike traditional skills training that rehearses appropriate performance in well-defined contexts, CET patients are encouraged to "think on their feet" during these minimally rehearsed and novel interpersonal encounters. Each activity has various levels of possible participation, from nonparticipant observer to center-stage player, as well as multiple cognitive goals that range from maintaining attention to the development of perspective taking in complex social situations.

While patients who are not selected for an exercise are silent, they are by no means passive. These observers are expected to take notes and give feedback to the onstage members regarding the intellectual, emotional, and collaborative aspects of their performance. Feedback requires that the observing patient develop the ability to not only attend and remember, but to tactfully and coherently organize a commentary. Since this process is a regular feature of each group session, ample opportunity is available for patients to improve upon impoverished, disorganized, or constricted feedback and to move toward increasing levels of tactfulness, proficiency, and elaboration. In addition, coaches offer feedback to the central players in each exercise, thus providing corrective information while at the same time modeling a higher level of social cognitive performance. If a patient fails to tailor a communication to the audience, the coach intervenes to encourage a more socially meaningful and relevant response.

A social cognitive group session begins with a review of the homework assignment, which is typically based on a previous psychoeducation presentation. Each group session contains a 15-minute education component reserved for the discussion of the symptoms and vulnerabilities of schizophrenia as well as the characteristics of effective and ineffective cognition, both social and nonsocial. Patients take notes on the educational content and are asked to apply these concepts to a real situation in their life as a homework assignment. The first 30 minutes of a session are allowed for homework review by group members. Coaches typically ask followup questions designed to stimulate deeper and more abstract thinking about the topic at hand. Following a review of the homework and presentation of the psychoeducational component, most activities require that two patient members of the group

work as a team on one of the social cognitive tasks during each session, a process that fills the remaining 45 minutes. With the help of a coach, the participating pair must negotiate aloud both the intellectual and emotional issues represented in the task. The coach intervenes to restore collaboration when a team member fails to either elicit or respond to the input of a partner. Nearly all exercises mandate that one of the patients take the other's perspective in order to succeed, a task that requires maintaining the details of working memory (or "discourse plan" [Andreason et al. 1985]) when deciding what the message is intended to convey. Patients are encouraged to elaborate the details of their social cognitive schemata (such as "if-then" proposals [Baldwin 1992]) and to provide the relevant details needed to establish a shared context. When patients assume the challenging responsibilities and unpredictable consequences of being a chairperson, partner, or commentator, they are concurrently acquiring the secondary socialization skills needed for negotiating complex roles and contexts in their personal lives. Examples of two activities, one basic and the other advanced, serve to illustrate the process through which enhancement of social cognition is attempted.

A Basic Activity. The homework assignment, a fundamental component of each session, is an excellent illustration of how the group experience is designed to ensure secondary socialization. Assignments typically involve two or three questions that are provided at the end of the group session. Patients have a week to prepare their homework and are encouraged to use their notes to formulate a response, as well as to consult with a coach between sessions. One of the group members volunteers to be chairperson, and each person who speaks, including the coaches, must be recognized by the chair. Each week a different patient is required to volunteer, which provides even the least motivated patient with the experience of initiating behavior. Being chairperson also challenges a patient to sustain attention on the subsequent discussions. This is not a trivial exercise since the chairperson must maintain constant vigilance to whose hands are raised and remember as many as ten names. When two people raise their hands, the chairperson must make a determination as to who should respond, a problem that becomes particularly challenging when two of the coaches raise their hands simultaneously. The patient must determine who to call upon, while giving nodding recognition to the other. Additionally, the chairperson's role constitutes a rare experience in setting "cultural" norms. Since the primary obligation is to keep the discussion targeted and to recognize people in order, the chairperson learns not to speak out of turn or to begin a discourse on another subject. Patients come to appreciate these implied norms that govern social exchanges. For example, since each group member is expected to participate, when a patient fails to raise his or her hand, the chairperson will invite a response. Such norms emerge as early elements in the secondary socialization process. Even the patient with the most disorganized, inattentive, or impoverished style learns to function as chairperson, often with considerable poise, and group members come to treat their fellow patients who assume this role with consideration and respect, often a unique experience for those who have been chronically ill. This outcome appears to be universal for every group.

The orderly structure of the homework discussion is again intended to have a paradoxical effect. The pattern of hand raising in response to homework questions is almost always followed by an inquiry from one of the coaches. Because the group process is so predictable, the intellectual and social content of the interactions provoked by coaches can become more complex. The followup questions of coaches are designed to support patients and at the same time make them aware of the social cognitive subtleties of their response and to stimulate spontaneous and gistful answers. Most followup questions serve to return patients to their own cognitive problems and strategies posted on the ever-present treatment plan. Coaches begin at the most obvious level. If the response is disorganized or irrelevant, the coach will express interest in the response but also disappointment that certain aspects remain unclear. The coach will then ask the patient to briefly extract the gist of his or her comments. "What is it that you are trying to get across? What do you want us to remember?" If a patient fails to answer the question or gives a response that is unintelligible, the coach will typically express puzzlement. "I liked the way you started, but something seems to be missing. There is a beginning and an end, but I lost the middle part. Can you help me out and fill in the piece?" More often than not, patients do give a more complete account.

Sometimes the patient's language is idiosyncratic and the vocabulary chosen for the response might leave the audience confused. For example, in a homework assignment that asks the patient to take a family member or friend's perspective on a difficult issue, one patient described his father's perspective in the following way: "He distributes his attitude optimistically." The therapist responded, "Mike, you used a lot of big words, but I am having a hard time understanding what you are trying to say. Can you explain your point in everyday language?" The patient returned to the challenge with, "Well, he likes to keep a positive outlook." In a situation like this, the therapist will reward the patient, not so much with praise but with information: "I get it now, your dad is an upbeat fellow. That is much clearer." When a group member fails

to provide the requisite shared context, the coach will also interrupt. For example, one patient remarked, "The person whose perspective is difficult to see is Ellen. When I wake up in the morning she comes to me and I have to smoke a cigarette before I can deal with her." The coach intervened with the comment, "Sally, what do you think is missing about that description? Look around the room; don't people seem puzzled?" The patient thought for a moment and supplied the missing piece of context: "Why . . . oh, I get it. Ellen is my daughter." At other times, a patient might provide an intelligible response but one unrelated to the question. "I am a bit lost," the coach will respond. "You gave an interesting answer, but I do not think it was related to the question."

Over time, most patients provide increasingly cogent and context-relevant answers to homework assignments, but an astute coach will come to realize that some are capable of a deeper level of understanding. Followup questions will subsequently direct these patients to a higher level of abstract social cognition. Again, an example from the perspective-taking homework assignment is illustrative: "Bill, your observations about your mother's perspective are interesting, but where do you really think she was coming from? What was she thinking and feeling; how would she likely behave?" The most important type of homework questions are those that stimulate patients to focus on their own as well as the coaches' and other patients' perspectives.

If a patient forgets to do a homework assignment or seems unconnected to other group members, the coach will likely inquire, "Whose homework impressed you today and why?" Some of the homework questions are designed to enhance relationships among group members. "Who in the group have you learned something from and what did you learn?" When one group member acknowledges learning from another, both have profited. The first learns what it is to initiate and connect with another human being and the second is almost always visibly moved, which in turn provides important feedback to the first group member. This process is qualitatively different from traditional role-play and rehearsal exercises, where the desired outcome of an interaction is often a predictable and polished response to the therapist.

An Advanced Activity. The exercises in the Center Stage activity are socialization experiences that serve most of the goals of CET: foresightful planning; working memory; a gistful, motivational account directed to a specific audience; perspective taking; sensitivity to the context within which one's personal life and value system are shared; and a coherent presentation endowed with appropriate affect. One such exercise, again drawn from the Ben-Yishay program (Introduce Yourself), asks patients to (1) present a few important facts about themselves, (2) identify two personal qualities in themselves that they most admire, (3) give an example of each, and (4) tell why they value these qualities. This activity is particularly difficult because it is one of the few that does not involve a partner; rather it requires the engagement of all group members. With a coach, patients prepare for their presentation, not with the goal of crafting a flawless performance, but rather to reinforce the importance of planning. Otherwise, many patients tend to embark on a global yet disorganized discourse about their lives or offer an impoverished or constricted account in a sentence or two.

The presentation should be 5 to 10 minutes long and must accurately reflect the outline and the expectations of the intended audience. Inappropriate or incomplete offerings are challenged by a request from the coach to return to the outline. Typically, the preparatory presentations that fail expectations include impoverished accounts such as, "What is there to admire in me?"; statements that are minimally connected to the outline ("I admire my bowling scores"); and irrelevancies such as the response from a patient who never worked yet described herself as "enterprising," based on operating a lemonade stand at the age of 8. Less often, there are psychotic accounts ("I am courageous because I did not lose faith in God when people were trying to poison me"). Patients who develop these kinds of accounts are encouraged to prepare a more appropriate and relevant description. During preparation, patients also have an opportunity that reinforces important features of different social contexts; namely, the "backstage" review with a coach follows informal rules of conduct that contrast with the formal rules associated with a "frontstage" presentation to an audience. (Backstage/frontstage social contexts represent another important component of the curriculum.)

During the formal presentation, the outline to be followed is clearly posted and a coach (preferably someone other than the patient's CET therapist) gives a brief induction regarding the obvious and abstract features of the task, a charge that is personalized and drawn to the patient's known cognitive deficits and goals. "Bill, I know you have trouble remembering and staying on task, and I realize that you have been working on it. You and your coaches have labeled the problem as one of working memory. This exercise is designed to help you with your memory and I will be at your side to remind you about the task if you get into trouble. Remember, your job is not to recite a memorized script, but to connect with us emotionally, while holding the outline of the presentation in your head. Try to engage your audience and keep them involved." If the presentation seems deprived of apparent logic or emotional tone, the coach will intervene. Such interruptions are important, since only patients who main-

tain a "working memory outline" or discourse plan can easily return to their presentation. Those with a carefully rehearsed script tend to become derailed by the interruption. In more advanced Center Stage exercises (e.g., presentations of a CET theme), patients are asked to give their presentation without notes or a visible outline, thus reinforcing the CET strategy of fading cognitive cues. Following a presentation, all group members and coaches provide feedback regarding each topic in the outline. In our experience to date, repeated participation in the Center Stage exercises has led to a decrease in impoverished performances, disorganized diversions, and rigidly held cognitive scripts.

During the weekly social cognitive group sessions, patients spend the remaining 1.5 hours of CET continuing with the performance of nonsocial cognitive tasks (1 hour) and receiving individual supportive therapy and medication management.

CET and Other Rehabilitations

There are similarities and obvious differences between behavioral skills training programs and CET. Clearly, social skills training (SST) directed to discrete behaviors, social perception, and social problem solving appears to improve behavioral functions that rely on attention, memory, and problem solving (Scott and Dixon 1995). Most studies of skills training have involved severely impaired inpatients, and even the most recent contrast between selected skills-training modules (and occupational therapy) that were applied to male outpatients with "persistent and unremitting forms of schizophrenia" showed a differential effect of skills training on such parameters as the management of money and possessions and food preparation (Liberman et al. 1998). Such outcomes could not have been realized in the absence of an improvement in cognitive competence.

A distinguishing characteristic of CET might be found in the process, which is more developmental than behavioral. Social competence improvement following SST, such as problem-solving or social perception skills, might first reflect a process that begins with more declarative learning of the primary socialization type. However, if repeated practice leads to independent applications, these exercises might ultimately evolve to procedural learning that can be attained through the "experiential" process of secondary socialization, one that CET directly targets. Whether skills training directly or indirectly affects the molecular components of social cognitive processes that we have described (Hogarty and Flesher, this issue) is largely moot at this time, given the absence of relevant and valid measures of social exchanges that are unrehearsed, personally meaningful, and spontaneous. In the last analysis, the value of any rehabilitation approach can ultimately be found in its effectiveness among diverse schizophrenia samples. For the most impaired patients, primary socialization deficits in such behaviors as voice tone, volume, eye contact, and prosocial and assertive communications have required the didactic skills-training process of modeling, rehearsal, and critique, or learning the stepwise sequence of receiving, synthesizing, and delivering responses to specific social problems (Liberman et al. 1986). This has been a necessary and often sufficient method for realizing the recovery potential of many severely impaired patients. By contrast, CET has initially targeted the less severely impaired half of recovering schizophrenia outpatients, who characteristically have a formal IQ greater than 80; who are either in symptom remission or whose behavior is not governed by residual positive symptoms; who are medication compliant; and who are without such comorbid diagnoses as organic brain syndrome, substance abuse, or personality disorder. Some of the better candidates for CET have, in fact, been prior recipients of SST or Personal Therapy (PT), a recent intervention designed to achieve patient mastery of the earliest affective, cognitive, and psychophysiologic prodromes of psychotic relapse (Hogarty et al. 1995; 1997*a*, 1997*b*). The efficacy of other approaches in forestalling relapse and enhancing basic social competencies clearly appears to be helping prior recipients of SST and PT to acquire and consolidate the social cognitive gains derived from CET.

CET's development has also been greatly influenced by the process of cognitive rehabilitation found in the Integrated Psychological Treatment (IPT) approach (Brenner et al. 1992; Hodel and Brenner 1994; Spaulding et al. 1994) and more directly by the process and the content of the Ben-Yishay et al. (1985*a*, 1985*b*) program. The latter program, which addresses the needs of patients with traumatic brain injuries, is particularly encouraging because it demonstrates support for an enhanced social cognition. The Ben-Yishay program is a "general stimulation," holistic approach that seeks to move patients through a process of engagement to an awareness, mastery, and more fluid (as opposed to "mechanistic") control of cognitive functions (Ben-Yishay et al. 1985*b*). The ultimate goals are acceptance of residual disability and establishment of an identity as a worthwhile, functionally competent individual. However, CET involves less intense training, a longer duration, and greater diversity of treatment. Various evaluations of the holistic approach have documented a systematic improvement in attention, as confirmed by parallel tests, with the requisite evidence that cognitive training generalized to the enhancement of self-esteem and self-appraisal as well as interpersonal empathy, cooperation, and vocational success (Ben-

Yishay et al. 1985*a*; 1985*b*). In a quasi-experimental, sequential sample study, the holistic program was further shown to be superior to its component parts, and effects again generalized to untrained behaviors (Rattok et al. 1992). Posttreatment "awareness and acceptance" of deficits best predicted subsequent employment (Ezrachi et al. 1991). Effects have been maintained at 6-month followup.

The most similar approach to CET to be found in the psychiatric rehabilitation literature is the IPT approach of Brenner et al. (1992), an intervention that appears to have been tested primarily among more severely if not acutely ill inpatients (Hodel and Brenner 1994) and has resulted in improvement of symptoms and selected aspects of cognition. While IPT was originally designed as a 3- to 4-month, intensive, sequential process that progressed from neuropsychological training to social problem-solving or other skills exercises, CET is integrated during most of the less intensive, 24-month treatment exposure. CET also includes a formal memory training module, and its attention training appears more rigorous than the sorting and categorizing tasks of IPT. In addition, CET places more emphasis on active cognitive processing during the performance of these exercises. The role-play and rehearsal approach to IPT problem solving is distinctly different from the developmental approach of CET. Complex emotions are often identified through slide presentations in IPT, while CET participants identify and respond to their own and others' affect during secondary socialization experiences. Homework and psychoeducation are other distinguishing components of CET, as is the requirement for regular patient rotation and active participation in each exercise. Note taking, the foundation for subsequent cognitive strategies that are targeted to an explicit treatment plan, is a further characteristic of CET. Since IPT has nearly always been practiced among inpatients, therapists appear to have more control over and day-to-day knowledge of the behaviors and faulty cognitions of patients and seem better able to make interim adjustments to format than is possible with weekly CET sessions.

A recent test of three IPT subprograms was uniquely characterized by enrollment of the largest sample to date (n = 90), randomization, and an appropriate treatment exposure (6 months) (Spaulding et al. 1999). In the context of a comprehensive program of rehabilitation, predominantly schizophrenia inpatients were assigned to either the group-oriented IPT approach or to a supportive group psychotherapy condition. At 3 months, all patients (experimental and control subjects) were further exposed to three skills-training modules related to improving medication management, interpersonal problem solving, and leisure skills. Relevant to the goals of CET, the principal finding of IPT was more efficient interpersonal problem-solving skills on the "articulation" and "content" subscales of a standard assessment, that is, improved abilities to describe problems and potential goals and to generate appropriate solutions. While the improved social cognitive competencies described were based on responses to videotaped vignettes and were offered in the absence of information on long-term effects or generalization to community behavior, the results are both rare and encouraging. Formal training in cognitive operations clearly appears to generalize to important social cognitive abilities. Results are even more striking since they occurred in the context of an otherwise enriched treatment environment that might well have operated against the possibility of leaving much residual treatment variance to explain.

In many regards, CET and Spaulding et al.'s use of IPT share treatment methods that respond to the interactive manner in which schizophrenia patients process social information. In contrast to CET, this focused application of IPT seemed specifically designed to address cognitive deficits in social perception, verbal communication, and cognitive differentiation with the goal of achieving a subsequent effect on interpersonal problem-solving abilities. CET, on the other hand, more broadly attempts to address metacognition processes that support cognitive functioning in general through a "holistic" approach. Further, IPT appears appropriately more structured and less demanding given the inpatient population that is targeted, while CET is less structured but more cognitively demanding for less severely impaired outpatients. If CET was moved to an inpatient setting and applied to more cognitively compromised patients, or IPT was administered to less impaired outpatients, the differences between IPT and CET might well be less. Only further study can determine whether CET is more effective than IPT among severely impaired inpatients, or whether IPT contains selected benefits for recovering outpatients.

Preliminary Observations and Confounds

To date, 92 (of an eventual 120) patients have been randomized to CET plus supportive therapy, or to supportive therapy alone as a control condition. All patients are maintained on antipsychotic medication and will be treated for 2 years. Data on the first 44 patients who completed 1 year of treatment show systematic and statistically significant changes for CET recipients between baseline and 1 year on nearly all parallel tests of nonsocial cognition (i.e., tests of attention, memory, and problem solving on which patients had not been trained), as well as on clinician assessments of social cognition and disability. Only a rare and marginally significant improvement has

characterized control subjects on these within-treatment, paired *t* tests. Some of these CET findings also survive the more stringent analysis of covariance, although the small sample size to date precludes reliable testing. CET patients also show a nonsignificant but encouraging improvement in self-esteem. The disorganized cognitive style has been significantly improved with CET, with positive but nonsignificant change observed for the impoverished style as well. To date, the rigid cognitive style has not been differentially affected.

Unfortunately, problems in the assessment of social cognition persist. To our knowledge, there is no reliable, valid, and independent assessment of "hot" social cognition available. We are attempting to construct a scale that might be useful in assessing the videotaped recordings of the social cognitive group exercises. Approximate scales, drawn from the field of behavioral skills training, have not been fruitful to date. Scores on the Corrigan and Green (1993) Social Cue Recognition Test, for example, have had a ceiling effect among our recovering outpatients studied thus far, with baseline scores clustering around the mean of nonpatients. The Response Generation Test (Bellack et al. 1994) has yet to be scored, but social problem-solving responses to vignettes have not appeared to evoke a personal investment among study patients. Even the evidence of significant improvement on nonsocial cognitive tests must be tempered by the reality that an improved attitude toward test taking (e.g., familiarity with the computer or a practice effect on tests that are similar to the parallel assessments) might possibly be the dynamic being measured. Enhanced "comfort" in more "familiar" social exchanges as suggested by Corrigan et al. (1996) might strongly contribute to the gains observed in social cognition. At the moment, we lack the data needed to speculate upon a likely "mechanism of action."

We are encouraged that a more hopeful rehabilitation of cognitive functioning is possible. However, only the successful completion of a 2-year controlled treatment trial, with followup, will allow a more definitive statement regarding the nature, magnitude, generalization, and maintenance of CET effects.

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