

Research Update on the Psychosocial Treatment of Schizophrenia

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***Objective:** This review is an update on the research evidence supporting psychosocial treatment for schizophrenia. It extends previous review articles by summarizing the literature on social skills training, family interventions, cognitive rehabilitation, and coping with residual positive symptoms. **Method:** The authors reviewed controlled treatment outcome studies of social skills training and family interventions. Different models of family therapy were contrasted. The current literature on cognitive rehabilitation and coping with residual positive symptoms was also examined. **Results:** Social skills training produces improvement on specific behavioral measures, although changes in symptoms and community functioning are less pronounced. Family interventions (i.e., family psychoeducation and behavioral family therapy) are highly effective for reducing families' expressed emotion and improving patients' relapse rates and outcomes. Furthermore, family interventions are also associated with reduced family burden. Cognitive rehabilitation and training in coping with positive symptoms appear to be promising interventions, but more controlled, group trials are needed before definite conclusions can be drawn. **Conclusions:** The efficacy of a variety of different family intervention models, as well as social skills training, is supported by a large body of research. Future work needs to address improving delivery of existing psychosocial interventions, integrating these interventions with other psychosocial approaches (e.g., vocational rehabilitation and case management), identifying which patients will benefit from which treatments, isolating the "active" ingredients of family interventions (i.e., psychoeducation versus behavioral intervention), and identifying the amount of treatment (e.g., number of sessions) needed before treatment response is expected.*

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Schizophrenia is characterized by pervasive impairment in social, cognitive, affective, and daily functioning. Although pharmacotherapy is effective for treating acute symptoms and reducing vulnerability to relapses (1), it does not alleviate residual cognitive and social deficits (2), such as impairments in social skill (3). Such skills may have been lost because of chronic disuse or may, as a result of poor premorbid functioning, have never fully developed. Thus, psychosocial interventions are needed to help prepare persons with schizophrenia to cope with their illness, strive for greater self-sufficiency, and achieve a better quality of life.

Until the 1980s there was little evidence that psychosocial treatments could improve the course of schizophrenia. Following a number of encouraging reports on the effects of family therapy and social skills training (4-6), controlled research in this area grew dramatically. With the rapid accumulation of knowl-

edge in this area, there is a need for the synthesis of new information, both to inform clinicians of the most promising treatments and to suggest future avenues for research. In this article we provide an update on the psychosocial treatment of schizophrenia, with an emphasis on reviewing research completed since previous reviews (7-9). Four major approaches will be described: social skills training, family therapy, cognitive rehabilitation, and coping with residual psychotic symptoms. In the conclusion we 1) underscore the need to integrate these psychosocial interventions with other psychosocial strategies, including vocational rehabilitation and case management, 2) pose unanswered questions, and 3) suggest new research directions.

SOCIAL SKILLS TRAINING

Research Findings

Since 1984 six controlled group trials of social skills training for patients with schizophrenia have been conducted. These studies included rigorously diagnosed patients and examined a diversity of outcome measures, including symptoms, social skill, social adjustment, and

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TABLE 1. Controlled Studies of Social Skills Training for Patients With Schizophrenia

Study	Treatment Conditions	N	Frequency and Duration of Treatment	Symptom Outcome	Relapse	Social Adjustment
Bellack et al. (4), 1984	Social skills training Control treatment	29 14	3 hours/week for 3 months	6 months: social skills training better than control	1 year: social skills training same as control	—
Lieberman et al. (5), 1986	Social skills training Holistic health treatment	14 14	10 hours/week for 9 weeks ^a	2 years: social skills training better than holistic treatment	2 years: social skills training same as holistic treatment	2 years: social skills training better than holistic treatment
Hogarty et al. (6, 10), 1986, 1991	Social skills training	23	Social skills training: weekly for 1 year, then biweekly for 1 year	2 years: all conditions equal	2 years: family psychoeducation same as combination, better than social skills training and control; social skills training and control equal	2 years: combination equal to or better than family psychoeducation; family psychoeducation equal to or better than social skills training; social skills training equal to or better than control
	Family psychoeducation	22				
	Control treatment	35				
Dobson et al. (11), 1995	Social skills training Social milieu	15 13	4 sessions/week for 9 weeks	Positive symptoms at 9 weeks: social skills training same as milieu; negative symptoms at 9 weeks: social skills training better than milieu; 6 months: social skills training same as milieu	12 months: social skills training same as milieu	—
Hayes et al. (12), 1995	Social skills training Discussion group	— ^b — ^b	36 75-minute sessions over 18 weeks	6 months: social skills training same as discussion	6 months: social skills training same as discussion	6 months: for social skill, social skills training better than discussion; for community functioning, social skills training same as discussion
Marder et al. (13), 1992, and unpublished data ^c	Social skills training Supportive group therapy	43 37	3 hours/week for 1 year, 90 min/week for 1 year	2 years: social skills training same as group therapy	2 years: social skills training same as group therapy	2 years: social skills training better than group therapy

^aFamilies of patients who received social skills training received behavioral family therapy, and families of patients who received holistic health treatment received family therapy oriented toward "holistic health."

^bTotal N=63; numbers of subjects assigned to individual conditions were not listed.

^cS.R. Marder, R.P. Liberman, W.C. Wirshing, J. Mintz, T.A. Eckman, K. Johnston-Cronk: "Management of risk of relapse in schizophrenia."

relapse. Table 1 summarizes the results and methodological characteristics of the studies. Studies described in previous reviews (8, 9) are summarized in table 1 but not discussed in depth in the text (4–6, 10). In general, in these studies social skills training was superior to a control treatment in reducing symptoms (4, 5) and increasing social adjustment (5, 6, 10). However, social skills training was not more effective than control interventions in reducing relapse rate (4–6).

Two recent studies showed that social skills training was minimally superior to social milieu (11) or discussion groups (12) among outpatients with schizophrenia. Specifically, although social skills training was superior to a control intervention (i.e., a discussion group) in improving social skill (12), social skills training did not significantly (relative to a control intervention) lower relapse rate, reduce symptoms, or improve community functioning (11, 12). As evident from table 1, a major limitation of both of these studies was the relatively brief treatment periods, 9 and 18 weeks, respectively.

The preceding, essentially negative findings are in contrast to the positive results of a recent longer-term study of social skills training for 80 men with chronic schizophrenia, all receiving low doses of fluphenazine decanoate, who were studied in a 2x2 randomized experimental design (13 and unpublished study of Marder et al.). Half of the participants received 2 years of social skills training, and the other half received the same amount of supportive group therapy. Also, half of the participants were assigned to receive supplemental oral fluphenazine during an incipient relapse and the other half received placebo. Results indicated that the patients who received social skills training, even those who were moderately to severely symptomatic, learned the targeted skills and retained them for 1 year (unpublished data). Moreover, the patients who received social skills training showed evidence of implementing the skills in their living environments, and they achieved significantly greater social adjustment than those who received supportive group therapy. An interesting find-

ing was the difference in results between the medication and placebo conditions. Participants receiving a combination of supplemental placebo and social skills training were better protected from relapse than were participants receiving a combination of supplemental placebo and supportive group therapy. In contrast, there were no differences in the protective value of social skills training and supportive group therapy for the patients receiving supplemental medication. This study provides strong evidence for the impact of social skills training on social functioning in the community for men with schizophrenia. Future work should investigate whether these promising findings can be demonstrated with female schizophrenia patients.

Summary and Recommendations for Future Research

The results of the controlled studies on social skills training suggest the following conclusions:

1. Individuals with schizophrenia can be taught a wide range of social skills, ranging from simple behaviors, such as gazing and meshing, to more complex behaviors, such as assertiveness and conversational skills.

2. The improvement in social skills associated with social skills training is evident for specific behavioral measures but is less pronounced for changes in symptoms and community functioning.

3. Social skills training needs to be provided over an extended period of time, such as more than 1 year (10, unpublished study by Marder et al.), for positive effects to accrue.

It remains unclear whether behavioral approaches in general, or social skills training in particular, are associated with improvement in outcome. Furthermore, the effects of any one social skills training program have not yet been replicated. Thus, while the findings offer some hope for the efficacy of social skills training, and contrast sharply with the negative results of clinical trials of psychodynamic treatment (14), its clinical benefits have not yet been convincingly demonstrated.

Aside from the need for replication and generalization studies, future research should examine the cognitive and symptom factors that mediate acquisition and maintenance of social skills (15, 16). In a similar vein, work needs to be conducted to determine the key components of group social skills training, i.e., those associated with treatment efficacy (17). Finally, the identification of procedures for enhancing treatment generalization is still in its infancy. There is some evidence that generalization can be "built in" to the rehabilitation setting with the utilization of cues and prompts in novel environments (18). Research of this type may augment the efficacy of social skills training for evincing changes in social adjustment.

FAMILY INTERVENTIONS

Evidence pointing to the impact of negative affect in the family (i.e., "high expressed emotion") on the

course of schizophrenia (19), as well as the distress experienced by the relatives coping with the illness (20), has led to the development and evaluation of several different models of family intervention over the past two decades. In fact, among the variety of psychosocial interventions examined in recent years, behavioral family therapy or psychoeducation has been the most extensively researched modality. Furthermore, as will be summarized, family interventions have produced the most promising results.

All recently developed family intervention programs begin with a few educational sessions covering basic information on the etiology, treatment, and prognosis of schizophrenia. Family intervention approaches differ, however, in their treatment focus in subsequent sessions. Techniques used in different family treatments include identification of stressors associated with relapse (21), having relatives with high expressed emotion observe the behavior of those with low expressed emotion (22, 23), reframing, advice giving, setting of realistic expectations, social/vocational homework activities (6, 10), and cognitive behavioral techniques, such as stress management (24, 25) and training in communication and problem-solving skills (26, 27). Family interventions are organized around the central goal of providing family members with more information about the disorder and strategies for managing common problems.

General Research Findings

All controlled outcome studies comparing the effects of family intervention on relapse rates with the effects of standard (nonfamily) treatment are summarized in table 2. In each of these studies, all subjects received routine treatment, such as pharmacotherapy and case management. Examination of table 2 indicates that most studies showed that family interventions produce rates of relapse over 1–2 years that are lower than those for standard treatment. In addition to the overall pattern of positive results in these studies, it appears that the duration of treatment is related to the outcome of family intervention. Among the three studies that provided treatment for 3 months or less (21, 29, 31), only one (21) showed a beneficial effect on relapse rate. In contrast, among the 10 studies that provided at least 9 months of treatment (10, 23, 25, 27, 28, 32–36), only two *failed* to show a beneficial effect on relapse (28, 36).

Of the two studies that demonstrated negative findings for long-term family intervention, one employed a psychodynamic approach to family intervention (28) (in contrast to all the other studies, which used either broad-based psychoeducational or behavioral family models). The other study (36) differed from the other long-term studies in two respects: 1) the subjects were immigrant Hispanic Americans and 2) only a small proportion (three of 42) of the key relatives were categorized as having high levels of expressed emotion. An interesting finding was that behavioral family management exacerbated symptoms for individuals classified as "poorly acculturated." Therefore, cultural or clinical

TABLE 2. Controlled Studies Comparing Family Intervention With Standard Treatment for Patients With Schizophrenia

Study	Treatment Conditions	N	Type of Family Intervention	Frequency and Duration of Treatment	Relapse
Goldstein et al. (21), 1978	Moderate dose of fluphenazine decanoate plus family intervention	25	Crisis-oriented psychoeducation	6 weekly sessions	6 months: moderate dose plus family intervention better than moderate dose without family intervention; low-dose conditions were equal and were inferior to the moderate-dose conditions
	Moderate fluphenazine dose plus customary care	28			
	Low fluphenazine dose plus family intervention	27			
	Low fluphenazine dose plus customary care	24			
Kottgen et al. (28), 1984	Family intervention, high expressed emotion	15	Psychodynamic; separate groups for patients and relatives	Weekly or monthly up to 2 years	2 years: family intervention equal to customary care for families with either high or low expressed emotion
	Customary care, high expressed emotion	14			
	Customary care, low expressed emotion	20			
Falloon et al. (26, 27), 1982, 1985	Behavioral family therapy	18	Home-based behavioral family therapy	Weekly for 3 months, biweekly for 6 months, monthly for 15 months	2 years: behavioral family therapy better than individual management
	Individual management	18			
Leff et al. (22, 23), 1982, 1985	Family intervention	12	Psychoeducation to help relatives with high expressed emotion model coping of low-expressed-emotion relatives	Biweekly for relatives' groups for 9 months	2 years: family intervention better than customary care
	Customary care	12			
Glick et al. (29, 30), 1985, 1990	Family intervention	37	Crisis-oriented psychoeducation	Average of 8.6 sessions over 5-week inpatient stay	18 months: for women, more improvement in family intervention group with poor pre-morbid functioning than in all others; for men, conditions equal
	Customary care	55			
Tarrier et al. (24, 25), 1988, 1989	Behavioral family therapy, enactive	16	Behavioral family therapy comprising stress management plus training in goal setting	Three stress-management and eight goal-setting sessions over 9 months	2 years: behavioral family therapy better than education or customary care; education and customary care equal
	Behavioral family therapy, symbolic	16			
	Education only	25			
	Customary care	20			
Vaughn et al. (31), 1992	Single-family psychoeducation and support	18	Psychoeducation	10 weekly sessions	9 months: single-family education and support equal to customary care
	Customary care	18			
Mingyuan et al. (32), 1993	Multiple-family psychoeducation and support	2,076	Clinic-based lectures and discussions	Ten lectures and three discussion groups over 12 months	1 year: multiple-family education and support better than customary care
	Customary care	1,016			
Randolph et al. (33), 1994	Behavioral family therapy	21	Clinic-based behavioral family therapy	Weekly for 3 months, biweekly for 3 months, monthly for 6 months	2 years: behavioral family therapy better than customary care
	Customary care	18			
Xiong et al. (34), 1994	Behavioral family therapy	34	Clinic-based psychoeducation, skills training, medication/symptom management	Bimonthly for 3 months; family sessions for 2 years (plus individual sessions with family members and patients); maintenance sessions every 2-3 months	18 months: behavioral family therapy better than customary care
	Customary care	29			
Zhang et al. (35), 1994	Multiple- and single-family psychoeducation and support	39	Multiple-family clinic-based psychoeducation, counseling, medication/symptom management	Individual and group counseling sessions every 1-3 months for 18 months	18 months: family education and support better than customary care
	Customary care	39			
Telles et al. (36), 1995	Behavioral family management	— ^a	Clinic-based behavioral family management	Weekly for 6 months, every 2 weeks for 3 months, monthly for 3 months	12 months: for total group, conditions equal; for "poorly acculturated" patients, individual management better; for "highly acculturated" patients, conditions equal
	Individual case management	— ^a			

^aTotal N=42; numbers of subjects assigned to individual conditions were not listed.

TABLE 3. Controlled Studies Comparing Different Models of Family Intervention for Patients With Schizophrenia

Study	Treatment Conditions	N	Type of Family Intervention	Frequency and Duration of Treatment	Relapse
Leff et al. (47), 1990	Multiple-family psychoeducation and support Single-family psychoeducation and support	11	Multiple-family groups in the clinic; single-family sessions at home	Biweekly for 9 months; varying amounts afterward	2 years: conditions equal
		12			
Zastowny et al. (48), 1992	Behavioral family therapy Single-family psychoeducation and support	13	Hospital-based behavioral family therapy; hospital-based single-family psychoeducation and advice on handling common problems	Weekly for 4 months, monthly for 12 months	16 months: conditions equal
		17			
McFarlane et al. (49), 1995	Multiple-family psychoeducation and support Single-family psychoeducation and support	83	Multiple-family groups or single-family sessions in the clinic	Biweekly sessions for 2 years	2 years: multiple-family condition better than single-family condition
		89			
Schooler et al. (50), in press	Applied family management Supportive family management	157	Applied family management comprising home-based behavioral family therapy sessions plus supportive family management; supportive family management comprising clinic-based multiple-family groups	Applied family management: behavioral family therapy weekly for 3 months, biweekly for 6 months, and monthly for 3–6 months plus concurrent monthly supportive family management for 24–28 months; supportive family management: monthly for 24–28 months	2 years: conditions equal
		156			

factors may have contributed to the poorer effectiveness of behavioral family management in this study. These findings underscore the need to modify intervention strategies to be culturally sensitive. Otherwise, interventions may be received unfavorably, resulting in untoward outcomes.

Thus, there is ample evidence suggesting that long-term family intervention oriented toward educating family members and improving their coping skills reduces patients' vulnerability to relapses over 1–2 years. In one study (37) a 9-month intervention was even associated with a lower relapse rate for as long as 8 years. Fewer studies have examined the impact of family interventions on other dimensions of patient social functioning, but several reports indicate positive effects in line with reduced relapse rates (10, 38, 39).

A corollary of the question of how family intervention affects the course of schizophrenia is, What are its effects on the family unit? Surprisingly, only two studies have examined both patient *and* relative outcomes following family intervention (28, 40), and only the psychoeducation intervention resulted in improvements in both patient functioning and family burden. In line with these findings, several other studies that have examined the effects of short-term family educational programs on burden (but not patient outcomes) have also showed beneficial effects on family burden (41–46). These findings indicate that family interventions provide benefits for both patients and their relatives.

Comparison of Different Models

The studies reviewed thus far indicate that both broad-based psychoeducational and behavioral approaches are efficacious in reducing relapse rate and im-

proving outcome. However, these studies do not answer the question of whether different models of family intervention are equally effective in reducing relapse rate. One study summarized in table 2 compared two types of family intervention ("enactive" versus "symbolic" family therapy) to standard treatment (25), and it showed that the two approaches reduced relapse rates to comparable degrees. Four other studies (47–50) compared different approaches to family intervention but did not include a treatment-as-usual group. The characteristics and results of these four studies are summarized in table 3.

For three of these studies (47, 49, 50), a single-family intervention was compared to a multiple-family intervention. The fourth study (48) compared behavioral family therapy with supportive family treatment, both provided on a single-family basis. Despite variability across the studies in the specific models of single- or multiple-family therapy, as well as other methodological differences, the overall results are strikingly similar; three studies showed no difference in relapse rates between different models of family intervention (47, 48, 50), while only one study demonstrated a lower relapse rate for multiple-family intervention than for a single-family treatment (49). The superiority of multiple-family intervention was most pronounced for patients at greater risk for relapse (i.e., patients whose psychotic symptoms were only partially remitted at discharge) (49). It is also noteworthy that the relapse or rehospitalization rates over 2 years for different family interventions provided to stabilized outpatients (47, 49, 50) were generally low (below 50%) and comparable to the relapse rates for the studies summarized in table 2, in contrast to the higher rates reported for standard treatment (usually over 50%).

Summary and Recommendations for Future Research

The studies reviewed all lead to the conclusion that long-term family intervention is effective for lowering relapse rate, reducing expressed emotion, and improving outcome (e.g., social functioning) among individuals with schizophrenia (51). The superiority of family intervention over customary outpatient care has been demonstrated. Furthermore, there is some evidence that family intervention reduces family burden. Finally, the treatment gains of family intervention are fairly stable; gains may be maintained for as long as 2 years.

Despite family intervention's proven effectiveness, a number of issues need to be addressed in future research. First, the mechanisms underlying the efficacy of family intervention are still unknown. As most models of family intervention overlap considerably in the therapeutic techniques employed, the question of underlying mechanisms can best be resolved by "dismantling" the components of different models (e.g., psychoeducation and skills training) and comparing their efficacy (52). The study by Tarrier et al. (25) represented a step in this direction, but it was limited by the small number of subjects. Second, little is known about the characteristics of families and patients who do *not* benefit from family intervention. Identifying factors associated with treatment nonresponders may lead to the development of interventions that are effective for these families. Similarly, comparing different family intervention models may facilitate identification of which patients and relatives respond best to which models of family therapy. Finally, family interventions differ in frequency and length of treatment sessions and in contact during follow-up periods. Research needs to establish criteria for the minimum amount of treatment (e.g., session frequency) with which a treatment response can be expected. Otherwise, comparisons across treatment studies will be uninterpretable, and the cost-effectiveness of family intervention may be compromised.

COGNITIVE THERAPY TECHNIQUES

Individuals with schizophrenia have pervasive cognitive deficits. According to Spaulding et al. (53), there are two general approaches to addressing cognitive dysfunction in schizophrenia: process and content approaches. The goal of process interventions is remediation of basic information-processing skills, such as memory, vigilance, and conceptual abilities. Therefore, this approach is commonly referred to as "cognitive rehabilitation." The rationale underlying cognitive rehabilitation is that relapses may be prevented by addressing the cognitive deficits that serve as vulnerability markers for future psychotic episodes.

Content approaches focus on changing the nature of, or one's response to, the content of dysfunctional thoughts. Examples of this approach include modifying thoughts or beliefs associated with delusions (e.g., that one's thoughts are being broadcast to others) and teach-

ing ways to cope with auditory hallucinations (e.g., listening to music). Content interventions, which typically focus on residual positive symptoms, are "coping oriented." Therefore, unlike cognitive rehabilitation, content approaches tend to focus more on stress management than on enduring vulnerability markers.

In this section, research on the efficacy of these two approaches will be reviewed. Unlike outcome investigations of social skills training and family interventions, this research includes few trials involving control groups. Thus, conclusions regarding the effectiveness of these interventions are tentative.

Cognitive Rehabilitation

Cognitive rehabilitation has its roots in the treatment of individuals with brain injuries (55). An important impetus to applying this technology for brain-injured patients to individuals with schizophrenia was the inability of neuropsychological tests to discriminate between these two groups (54–56). If brain-injured patients and individuals with schizophrenia have similar cognitive deficits, it was hypothesized that similar interventions should be effective.

Research findings. Most of the research on cognitive rehabilitation has focused on remediation through repeated practice or related techniques. A number of case studies suggested that this approach is associated with improved attention, greater cognitive flexibility, and reduced paranoia (53, 57). Various studies have indicated that performance on the Wisconsin Card Sorting Test, a measure of executive functioning, can be improved through monetary reinforcement, instructional modifications (e.g., providing information about the sorting rules), procedural training, or a combination (58–65). Thus, schizophrenia patients' deficits in conceptual skills, at least their results on the Wisconsin Card Sorting Test, appear to be remediable.

Two recent well-controlled studies have investigated the effects of cognitive rehabilitation on tasks involving vigilance and attention (66, 67). Benedict et al. (66) randomly assigned 38 outpatients with chronic schizophrenia either to attentional training or to a no-treatment control group. Attentional training comprised 15 hours of repeated practice on computer-administered vigilance tasks of graduated difficulty. The findings did not support the efficacy of cognitive rehabilitation; although the subjects' performance on the training tasks improved, there were no significant effects of training on outcome measures of vigilance (i.e., Continuous Performance Test and Span of Apprehension Test). Benedict et al. suggested that the negative findings may have resulted from a number of factors, including small number of subjects and inadequate outcome measures (i.e., lack of changes in the outcome measures might have been more an issue of generalization than of remediation). The authors concluded by suggesting that teaching of compensation strategies may have more impact on schizophrenia patients' cognitive deficits than do repeated practice approaches.

Kern et al. (67) randomly assigned 40 inpatients with schizophrenia to one of four interventions for improving performance on a measure of span of apprehension: repeated administration, instructional cues only (i.e., preparatory prompts), monetary reinforcement only (i.e., 2 cents for every correct response), and instructional cues plus monetary reinforcement. Performance was assessed at four times: baseline, intervention, immediate postintervention, and 1-week follow-up. The findings revealed that the combination of monetary reinforcement and instructional cues was superior to the other interventions in improving performance on the span of apprehension task. These findings are in accord with previous work showing the combination of monetary reinforcement and instructional cues to be effective in remediating other cognitive skills (i.e., Wisconsin Card Sorting Test performance [58]).

These studies have a number of characteristics in common; all focused on a specific cognitive deficit (e.g., vigilance), and training was conducted on an individual basis. This approach to cognitive rehabilitation suffers, however, from three limitations. First, its narrow scope does not address the wide range of cognitive deficits characteristic of schizophrenia. Second, there is no systematic program by which recovered cognitive skills should facilitate the remediation of other cognitive deficits. Third, individual-based treatment may not be cost- or time-efficient. In an effort to address these limitations, Brenner et al. (68) in Switzerland developed a comprehensive cognitive rehabilitation program administered in a group format, which they termed "integrated psychological therapy."

Integrated psychological therapy comprises five stages or modules: cognitive differentiation, social perception, communication skills, interpersonal problem solving, and social skills training. The rationale for integrated psychological therapy is that remediation of cognitive deficits will facilitate acquisition and maintenance of more complex skills (e.g., social skills). Only the first two stages, cognitive differentiation and social perception, are classically "cognitive rehabilitative" in content and structure; individuals are engaged in various cognitive exercises designed to improve attention and conceptual skills (e.g., sorting objects into various categories). During the social perception stage, group members are shown slides of people either alone or interacting with others. The exercises are of graded difficulty, beginning with mere identification of who is in the slide and where they are (e.g., outside a house) and progressing to judgment about the thematic content of the scene (e.g., friendly). The last three stages resemble those typically used in social skills training and family therapy interventions.

There is evidence from European studies that integrated psychological therapy improves cognitive functioning and reduces symptoms (68). In the early 1990s, a 5-year federally funded study was undertaken to compare a 6-month trial of integrated psychological therapy with supportive group therapy for inpatients with chronic schizophrenia (W. Spaulding, principal investi-

gator). Findings indicate that integrated psychological therapy is superior to supportive group therapy in reducing psychotic disorganization and in improving social-cognitive problem-solving skills and early attentional processing (i.e., performance on the Span of Apprehension Test) (W. Spaulding et al., unpublished data, 1995). Analyses have yet to be conducted on either the 1-year follow-up data or patient characteristics (e.g., premorbid functioning) that may differentially mediate response to integrated psychological therapy. Thus, these findings, although promising, should be reviewed as preliminary.

Summary and recommendations for future research. The studies reviewed do not lead to any consistent conclusions regarding the efficacy of cognitive rehabilitation. There is a growing consensus that performance on the Wisconsin Card Sorting Test can be improved with monetary reinforcement and instructional or procedural cues. The findings also indicate that cognitive processes such as attention and vigilance may be amenable to similar interventions. However, the majority of studies in this area are small-scale case studies, and the durability of the obtained effects is unclear. Thus, more controlled, group studies need to be conducted before the usefulness of cognitive rehabilitation is known.

A particular challenge for future research will be to establish whether cognitive rehabilitation generalizes to more complex levels of functioning (56, 69–71). In fact, it has yet to be established whether remediating cognitive processes underlying a particular task (e.g., Wisconsin Card Sorting Test) even generalize to performance on related tasks (e.g., the Tower of London). Thus, there is currently little support for the hypothesis that improved cognitive functioning produces concomitant improvement in social skill acquisition or social adjustment. If cognitive remediation is domain specific—without leading to a change in vulnerability, acquisition of skills, or social functioning—then the utility of this intervention may be limited. Therefore, the value of cognitive rehabilitation may lie in its ability to affect systemic functioning within a diathesis-stress framework.

Content Approaches

Content approaches traditionally focus on modifying two types of residual positive symptoms: hallucinations and delusions. Tarrrier et al. in Great Britain have developed a systematic method for treating residual psychotic symptoms, coined "coping strategy enhancement" (72, 73). Coping strategy enhancement is intended to build on the natural coping strategies employed by the patient when faced with residual symptoms. The procedure is as follows: 1) explain the treatment rationale; 2) elicit each psychotic symptom through a structured interview (e.g., Present State Examination); 3) analyze behavior to determine the frequency, duration, antecedents (e.g., environmental determinants), and consequences (e.g., withdrawal) of the symptoms; 4) rate the degree of conviction in, preoccupation with, and interference of the symptoms; 5) elicit coping methods used

by the patient (e.g., listening to music when auditory hallucinations are present); 6) identify a target symptom and appropriate coping strategy; 7) practice the coping strategy under simulated conditions during the session (e.g., teach the patient to ignore or disregard therapist-generated "voices"); 8) assign homework; and 9) reevaluate conviction in, preoccupation with, and interference of symptoms.

Research findings. In a series of preliminary case studies (72), coping strategy enhancement produced clinical improvement in residual auditory hallucinations. In a controlled group study (73), outpatients with schizophrenia were randomly assigned to coping strategy enhancement, problem-solving therapy, or a no-treatment waiting-period condition. Both coping strategy enhancement and problem-solving therapy were superior to the waiting-period condition in reducing psychotic symptoms. Although coping strategy enhancement resulted in greater changes in symptoms (especially delusions) than did problem-solving therapy, this finding may have been due to large differences between groups in pretreatment scores. A greater proportion of subjects receiving coping strategy enhancement than those receiving problem-solving therapy showed a 50% reduction in symptoms; the difference approached statistical significance ($p=0.06$). However, at 6-month follow-up the difference in improvement between the groups disappeared.

Two other pertinent findings from this study should also be noted. First, coping strategy enhancement was most effective in reducing the severity of delusions, rather than hallucinations. Second, symptom improvement after coping strategy enhancement did not generalize to improvement in mood, negative symptoms, or social functioning. Thus, the scope of the effectiveness of coping strategy enhancement may be limited. However, the results should be interpreted as preliminary because of the small number of subjects.

An alternative method for coping with residual hallucinations was recently reported by Bentall et al. (74). These authors hypothesized that coping techniques (e.g., distraction) would not produce lasting benefits because they do not address the fundamental cognitive bias underlying hallucinations (i.e., misattribution of internally generated events to an external source). Thus, the primary goal of cognitive behavioral therapy for auditory hallucinations should be the reattribution of voices to the patients themselves. In a series of case studies, reattribution-enhancing techniques (i.e., focusing on the characteristics and meaning of the voices) led to reductions in the frequency of and distress related to auditory hallucinations for three out of six patients (74). These findings have promise and need to be replicated with a larger group of subjects.

Chadwick et al. (75-77) have applied the cognitive behavioral techniques of verbal challenge and reality testing to the reduction of delusional beliefs. The verbal challenge is not confrontational but adheres to the philosophy of "collaborative empiricism" to dispute irrational beliefs; the internal inconsistency of the belief

system is questioned, and alternative explanations for the belief are offered. Then the delusion and the therapist's alternatives are assessed in light of the available information. Reality testing often requires the formulation and implementation of a "behavioral experiment," an activity that could invalidate the delusion. For example, Chadwick et al. (77) reported on a patient whose threatening auditory hallucinations led to the belief that someone wanted to kill her. The behavioral experiment was to have her wear heavy industrial earmuffs; if she could still hear the voice, then it must have been internally generated.

Results from three studies (single-subject design) indicated that cognitive behavioral therapy reduced conviction in and preoccupation with delusional beliefs for most of the subjects. Furthermore, a small number of patients rejected their delusions outright. The most effective procedure for reducing delusional beliefs was verbal challenge followed by reality testing; reality testing alone appears to be a weak intervention (77).

Summary and recommendations for future research. The studies reviewed in the preceding section suggest that cognitive behavioral techniques have promise for reducing residual psychotic symptoms, especially delusional beliefs. These techniques may augment patients' ability to cope with persistent symptoms, thus reducing the likelihood of relapse. All of these studies need to be replicated, however—with more subjects, across different settings, with appropriate control groups, and with different investigators—before conclusions can be drawn.

Future work should identify factors that limit acquisition and application of coping skills. For example, schizophrenia patients with basic attentional deficits may have difficulty ignoring, or focusing on, auditory hallucinations. Therefore, cognitive rehabilitation may have to precede coping/content techniques, in order for the latter intervention to be maximally effective. Furthermore, the mechanisms underlying coping/content techniques should be explored. Preliminary work in this area has already been undertaken by Bentall et al. (78), in their research on hallucinations, and Chadwick et al. (77), in their work on delusional beliefs. It is hoped that identifying such mechanisms will lead to more efficacious cognitive behavioral treatments.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The search for effective psychotherapeutic interventions for schizophrenia has been a long one. Fortunately, with advances in psychosocial treatment we have reached the point where cautious optimism is merited. As evidence supporting benefits of psychosocial treatment for schizophrenia has accumulated, so too has the realization that the benefits may be temporary and that many patients require ongoing intervention to maintain their treatment gains (8). This understanding is compatible with the recognition that schizophrenia is a lifelong disability, and it

promotes more realistic expectations on the part of therapists, patients, and patients' relatives. Such an insight may also lead to explorations of the impact of even longer-term psychosocial treatments for schizophrenia, such as the positive preliminary results of the "personal therapy" of Hogarty et al. (79) (an individual model based on education, stress management, and skills training) delivered over 3 years.

The absolute clinical gains resulting from family and individual psychosocial treatment tend to be modest. However, these positive results should be taken as encouragement by practitioners in the field, especially because of the rapidity of progress over the past 20 years. Before the 1970s there was little evidence from controlled research that any model of psychotherapy (including either cognitive behavioral approaches or other methods) could be beneficial for persons with schizophrenia. Now there is evidence, replicated across studies, supporting the efficacy of a variety of different family intervention models, as well as social skills training; other cognitive behavioral approaches (e.g., cognitive remediation, teaching of coping skills) continue to be developed and tested. Much work remains to be done in understanding how to better deliver existing psychotherapies, identifying which patients will benefit from which treatments, and developing more effective interventions.

In addition to the further work needed in developing and evaluating psychotherapeutic interventions, attention must also focus on understanding the interaction between these strategies and other psychosocial treatment approaches, such as vocational rehabilitation and case management. Just as advances have been made in refining social skills training and family interventions, progress in other areas of psychosocial treatment is also evident. For example, six controlled studies of supported employment, which emphasizes rapid job placement, competitive work in integrated settings, and long-term follow-along supports (80, 81), have found it to produce better vocational outcomes for severely mentally ill persons than does other vocational rehabilitation (82–86). Similarly, the authors of a review of over 30 controlled studies on case management for severely ill psychiatric patients (87) concluded that there is strong evidence that more intensive interventions, such as assertive community treatment (88) or intensive case management (89), reduce hospitalization rates and stabilize living conditions for vulnerable patients.

The progress made across the wide range of psychosocial interventions presents us with the unique challenge of discovering how to integrate the growing array of empirically validated treatments. Questions such as "How and under what circumstances can social skills training be provided in the context of supported employment?" and "Which family intervention approaches are most feasible for delivery by case managers working on assertive community treatment teams?" exemplify the need to develop guidelines, based on research, for the selection, integration, and sequencing of the multiple treatment options now available. Last, we

must attend to the fidelity of treatment implementation and attempt to isolate the critical environmental factors (e.g., provider, financing structures) that determine the quality of program implementation. The success achieved in recent years bodes well for continuing progress in the psychosocial treatment of schizophrenia.

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