

Psychosocial Treatments for Schizophrenia: An Evaluation of Theoretically Divergent Treatment Paradigms, and Their Efficacy

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Abstract

General Purpose: This paper chronologically examines four theoretically divergent psychosocial treatments for schizophrenia, each intended to augment pharmacological treatment. The goal is to familiarize readers with a sample of well-established psychosocial treatments to provide an enhanced perspective on newer and future psychosocial treatments for schizophrenia. Clinical implications and future research directions are discussed. **Methodology:** Social skills training, cognitive behavioral therapy, cognitive remediation, and social cognitive training therapy paradigms were searched and the extant literature is summarized for each, with particular focus on: 1) the rationale for treatment methodology; 2) particular methods of treatment; and, 3) meta-analytic data regarding their efficacy and/or effectiveness. **Results/Conclusions:** Each of the four treatment methodologies discussed evinces particular strengths and specific weaknesses for clinical practice, with no clear superior methodology across all clinical populations/situations. Future research must continue to examine social cognitive treatments, as well as the effects of combined psychosocial treatments.

Key Words: Schizophrenia, Treatment, Social Skills Training, Cognitive Behavioral Therapy for Psychosis, Cognitive Remediation, Social Cognitive Training

Introduction

Schizophrenia is a severe, persistent, and debilitating mental disorder that affects approximately 1% of the population worldwide. The classic diagnostic hallmarks of schizophrenia include, most prominently, recurrent delusions about the content of experience, recurrent hallucinations in

any sensory modality regarding the content of perceptions, but also grossly disorganized speech and behavior. In addition to these “positive” symptoms, schizophrenia is also classically characterized by a range of “negative” symptoms, including flat affect, alogia (poverty of thought and speech), and avolition (inability to persist in goal-directed behavior) (1).

This pattern of symptoms—in combination with additional deficits and associated features (e.g., deficits in independent living, personal relationships, occupational functioning, and leisure) (2)—makes schizophrenia one of the most functionally debilitating mental disorders, and creates enormous burdens for patients in terms of social and occupational functioning, and also in overall quality of life (3). For example, patients often experience poor social outcomes, with overall unemployment rates of 80% (4), a sui-

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cide rate of 5% (5), and up to 13% of people with the disorder having moderate to severe suicidal behavior (6).

Although great advances have been made in pharmacological treatments for the above listed positive symptoms of schizophrenia, residual negative symptoms and poor functioning in the domains of rudimentary social skills, basic neurocognitive processes, and essential social cognitive abilities have historically made *recovery* from the disorder extremely difficult (7, 8). Recovery from mental illness generally refers to increased awareness of the perspective of the “patient” as an active agent in the treatment process as opposed to a passive recipient of paternalistic or unresponsive services from the medical community for chronic mental health conditions (9). In this paradigm, patients are volitional “consumers” of services from medical and psychiatric services who choose personally meaningful directions in therapy toward personal growth and learning despite having a mental illness (10). In recognition of the need to address mental health issues from a more recovery-oriented perspective, and consolidate disparate definitions and conceptualizations of the movement, the Substance Abuse and Mental Health Services Administration met in 2005 and developed a list of ten characteristics of effective recovery-oriented services, including: self-direction, individualized and person centered, empowerment, holistic, nonlinear, strengths based, peer support, respect, responsibility and, perhaps most importantly, hope (11; see also 12 and 13 for further reviews of the recovery movement). This movement toward person-centered care, in combination with research findings that indicate the inability of antipsychotic medications to *independently* improve functioning, has led to increased interest in pairing pharmacological treatment with adjunctive psychosocial treatments. The thinking here is that the medications may be able to control the symptoms that might otherwise interfere with the focus on addressing specific areas of psychosocial deficit (7).

There have been many distinct psychosocial therapeutic paradigms that have attempted to bridge the treatment gap between pharmacological symptom reduction and functional recovery in schizophrenia. A total of four treatment paradigms will be explored in this paper: social skills training, cognitive behavioral therapy, cognitive remediation, and social cognitive therapies. These are discussed in the rough order that they were developed and implemented over the past fifty years or so, and provide a good framework from which to examine how conceptions of schizophrenia have changed (both in terms of etiology and, consequently, how it *ought* to be treated) in tandem with treatments for it. In this way, a chronological overview of the above four psychosocial treatments for schizophrenia should not only provide an overview of treatment efficacy, but also nicely mirror the changing conceptualizations of schizophrenia over the same timeframe. The hope here is that this kind of historical overview, augmented with up-to-date data on efficacy and effectiveness, will better inform future directions in both the conceptualization and treatment of schizophrenia. For each of the above four treatments, the rationale, specific methods, and evidence of efficacy/effectiveness will be briefly examined. The most recent pair—cognitive remediation and social cognitive interventions—will be examined in greatest detail; however, both are well placed contextually, followed by a discussion of earlier-developed treatment methods. It should be stressed here that each of the following psychosocial treatment methodologies is not intended to be implemented in lieu of pharmacological treatments for schizophrenia, but rather as an adjunct to these treatments.

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Method

An electronic search of PsychINFO and PUBMED databases (end time of the revision: February 2013) was conducted using the following key words “psychosocial treatments+schizophrenia,” “social skills training+schizophrenia,” “cognitive behavior therapy+schizophrenia,” “cognitive behavior therapy+psychosis,” “cognitive remediation+schizophrenia,” “cognitive training+schizophrenia” and “social cognitive and interaction training.” Following this electronic search, manual searches of the reference lists of these articles were performed, and forward citation searches were performed on the most recent meta-analyses and reviews using the Web of Science database. The resulting body of

literature was synthesized into reviews for each of the above treatment modalities, focusing specifically on: 1) rationale for treatment methodology; 2) specific methods associated with the treatment modality wherever possible; and, 3) evidence of efficacy and/or effectiveness.

Results

Social Skills Training for Schizophrenia

Deficits in social skills are a classic diagnostic symptom of schizophrenia and have been related to worse overall psychological adjustment, and impairment in social, occupational, and recreational domains (9). Mueser and colleagues (14) noted that fully 50% of a psychiatric sample was found to be less socially skilled than the least skilled member of a control group, which was stable across a one-year follow-up period. Additionally, these deficits have been noted to predate the actual onset of schizophrenia itself, and have proven relatively stable over the lifespan if not successfully treated (15). Because of these impacts on everyday functioning, social skills are a reasonable target for formal psychosocial intervention.

In essence, the core of the social skills training paradigm for schizophrenia is based on the fact that behaviors can be trained, regardless of psychotic symptomatology, with the hope that improvement in social skills will generalize to better relationships, and hence a better overall quality of life.

Formal training of social skills for patients with schizophrenia arose out of the learning-based paradigms of the 1960s and 1970s. Gradual application of these learning-based approaches to skills training proved effective in research and practice, finding that learning-based strategies could be effectively used to target behaviors even in populations that were experiencing psychotic symptoms (8). This is not to say that positive symptoms and thought disorders are not salient facets of the illness; rather, that specific behavioral excesses and deficits can be ameliorated in these populations regardless of the extent to which they are experiencing psychotic symptoms. In essence, the core of the social skills training paradigm for schizophrenia is based on the fact that behaviors can be trained, regardless of psychotic symptomatology, with the hope that improvement in social skills will generalize to better relationships, and hence a better overall quality of life.

Early application of the social skills training approach relied heavily on providing tangible rewards for desired behavior in patients, such as immediate primary reinforcement or token economies. However, over time more indirect forms of instruction were adapted for this purpose, such as role playing, prompting, coaching, modeling, rehearsal, and behavioral demonstrations (8). Where training of social skills was once carried out almost exclusively in inpatient settings and based on the clinician's view of which skills the patient was in need of learning, it is now administered in a variety of settings (including outpatient) and tends to be more client oriented, focusing on the particular skills the client believes are germane to his specific issues in relating to other people.

Evidence of the efficacy of social skills training for schizophrenia has accumulated over the past several decades. In the latest comprehensive meta-analytic review of the literature, Kurtz and Mueser (15) examined twenty-two separate studies conducted between 1973 and 2006, including over 1,500 participants. The authors analyzed a variety of outcome variables ranging from what they termed "proximal" measures—such as content-based exams taken directly from skills training material—to more "distal" measures such as relapse. As hypothesized, they found large effect sizes for the content of the exams ($d=1.20$), moderate effect sizes for improvements in community functioning ($d=.52$), and small effect sizes for more distal outcomes like relapse ($d=.23$). The authors note that this generally positive finding is in contrast to other reviews of similar literature evaluating the effectiveness of social skills training for patients with schizophrenia, which were less enthusiastic about the positive effects of the treatment (see 16-18). The authors note that this ambiguous literature has produced some confusion in clinical settings regarding best practices. For example, as of 2008, social skills training for schizophrenia was supported by the Patient Outcomes Research Team in the United States, but not the Institute for Clinical Excellence in Great Britain.

Cognitive Behavioral Therapy (CBT) for Schizophrenia

Where social skills training focuses on the quality of relational interaction between patients with schizophrenia and members of their environment, cognitive behavioral therapies focus on the relationships among inner thoughts, feelings and behavior of the patient. The hope here is that patients will come to better understand the relationships among these various components of mental life, and begin to make more accurate and less detrimental appraisals of their initial psychotic thoughts, which should have positive effects on all aspects of functioning (7).

Cognitive behavioral therapies for schizophrenia developed in response to accumulating evidence in the 1980s demonstrating that psychotic type symptoms were not limited to clinical groups. Indeed, preliminary work by Bentall et al. (19) found that up to 25% of the normal population has had the experience of a hallucination at least once, and follow-up work has supported this finding, noting a 4–5% annual incidence rate of hallucinations in the general population (20), and most recently that 30% of the normal population experiences paranoid ideation (21). These findings, in combination with evidence suggesting that level of distress seemed to moderate the relationship between more and less functionally impaired groups (see 22, 23), seemed to suggest a stress-vulnerability etiological pathway for the development of schizophrenia and that, therefore, classic cognitive behavioral methodologies could be utilized within the realm of schizophrenia to help patients better understand their symptoms, and thereby make less functionally damaging appraisals of these experiences (7).

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The core of cognitive behavioral approaches to treating schizophrenia relies foremost on engaging the patient and forming a strong therapeutic alliance. Once this alliance is established, the therapist makes efforts to normalize psychotic experiences following the logic discussed above: if a great proportion of the normal population experiences delusions and hallucinations, differences between normal and control groups are a matter of degree rather than kind (24). Next, the therapist attempts to work on problems related to, but separate from, the psychotic symptoms themselves that may be helping to maintain these symptoms such as anxiety or depression. Only after these ancillary symptoms are addressed in therapy can the cognitive behavioral approach move to work with the core symptoms of the disorder: delusions, hallucinations, and thought disorder. Delusions are addressed via “reality testing,” wherein the therapist questions the veracity of the patient’s negative beliefs about delusional thoughts. Similarly, hallucinations are “tested” against reality via a variety of methods (i.e., cameras, tape recorders, etc.) and are discussed in relation to specific coping strategies. After these positive symptoms are addressed, the latter half of therapy deals with negative symptoms, strategies for adherence to medication, and routing dysfunctional beliefs. Finally, the patient and therapist collaboratively work on relapse prevention strategies. Booster sessions are provided as necessary (24).

Is this method of treatment effective in moving schizophrenia patients toward recovery? Since the application of CBT to schizophrenia populations several decades ago, many studies have been undertaken to examine its efficacy and have generally concluded that CBT is indeed efficacious for this clinical population (25). However, as is often the case when treatments are moved from a research to a clinical setting, it is rare that effect sizes remain at the level observed in the research setting. Wykes et al. (25) conducted a meta-analysis of thirty-four separate CBT clinical trials in schizophrenia and concluded that there were overall positive moderate effect sizes in the .4 range for a variety of outcome measures, including positive symptoms, negative symptoms, functioning, mood, and social anxiety. However, suspecting that the range of trials selected was heterogeneous in terms of methodological rigor, Wykes et al. (25) rated each of the thirty-four trials on the Clinical Trial Assessment Measure (CTAM) (see 26 for CTAM methodology), and analyzed the effect sizes of the studies in relation to their CTAM scores. Essentially, the CTAM rates clinical trials in terms of six main areas of trial design: sample size and recruitment method, allocation to treatment, assessment of outcome(s), control group(s), description of treatment(s), and analysis (26). The CTAM method assigns points for each of these domains, up to a total maximum of 100, where 100 is meant to represent the most rigorous trial, and zero the least. Results indicated that although the average effect size of examined clinical trials was in the .4 range, division of the trials into high and low CTAM scores revealed a large discrepancy between effect sizes. For example, where low CTAM trials (i.e., low-quality trials) produced effect sizes in the high .6 range for improvements in mood as a result of cognitive behavioral therapy, more rigorous studies with higher CTAM scores produced an average effect size of .084 for improvements in mood, with the lower end of the 95% confidence intervals below zero. More specifically, Wykes et al. (25) noted that there was an inflation of effect sizes by approximately 50–100% in trials in which the raters of patient outcome were aware of treatment-group allocation. These numbers urge caution in relying on cognitive behavioral techniques alone to bridge the gap between pharmacologic symptom reduction and functional recovery in this clinical population.

Cognitive Remediation for Schizophrenia

Basic deficits in neurocognitive functioning in areas such as attention, memory and executive functioning have been characteristic of schizophrenia since the inception of the diagnostic category, and are commonly measured to be a whole standard deviation below the mean of the normal population (27). Poor functioning in these areas is thought

to contribute to deficits in more distal areas of community functioning and social/occupational interaction, as each of these relatively complex cognitive tasks is contingent upon a variety of basic skills such as being able to remember phone numbers or faces, or planning of any kind (2). Importantly, deficits of this type have been found to be more predictive of future functional outcome than either positive or negative symptoms (28). Despite these fairly obvious connections between neurocognitive deficit and functional outcome, it was not until relatively recently that researchers began making the empirical connection between these areas.

In 2000, Green and colleagues (29) reviewed more than forty studies examining deficits in neurocognitive domains and functional outcome and found solid support for the link between deficits in these two domains. They found that many areas of neurocognitive functioning were linked to at least one area of deficit in functional outcome (such as immediate verbal memory to psychosocial skill acquisition), while others were linked to several (such as secondary verbal memory to community/daily activities, social problem solving, as well as psychosocial skill acquisition). In many cases, four or more studies supported these links between deficit domains. Cognitive remediation for schizophrenia is predicated on the notion that these neurocognitive deficits provide reliable and relatively easily amendable targets for intervention and training. Formally, it can be defined as “a behavioral training based intervention that aims to improve cognitive processes (attention, memory, executive function, social cognition or metacognition), with the goal of durability and generalization” (30, p. 472).

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The actual content of cognitive remediation varies widely in the literature, as many computer-assisted training paradigms now exist. However, all remediation paradigms have in common massed practice on training tasks of increasing difficulty across a wide array of neurocognitive domains. For example, memory training tasks may require participants to remember the location of symbols on the backs of two overturned cards among larger and larger grids of cards. Similarly, logical training tasks may require the participant to select groups of symbols based on abstract concepts such as size, shape or content, with an increasing number of logical conditions. Additionally, two distinct

variants of cognitive remediation have become prominent in the literature: “drill and practice,” and “strategy based” (30). As the name would suggest, drill and practice style cognitive remediation involves participants simply completing practice tasks in repetitive manner, in hopes that improvements in performance occur across trials and sessions. In contrast, strategy-based approaches attempt to isolate problem areas contributing to patients’ poor performance and address them systematically in order to improve task performance across trials and sessions. The thought here is that if neurocognitive deficit is contributing to deficits in the domain of functional outcome, direct training in these areas ought to have the opposite beneficial effect. McGurk and colleagues (31) found that drill and practice type interventions were more efficacious at improving overall cognitive functioning, but that strategy-based approaches were superior to drill and practice approaches for improving overall psychosocial functioning.

In order to assess the overall efficacy of cognitive remediation paradigms in schizophrenia from a growing literature in the area, Wykes et al. (30) conducted a meta-analysis of forty separate studies including over 2,100 participants. They found an overall positive mean effect size of .448 for improvements in global cognition, composed of a heterogeneous set of effect sizes across several specific cognitive domains. Attention, speed of processing, and verbal working memory benefited from small effect sizes in the .25–.35 range; verbal learning and memory benefited from a moderate improvement of .41; and, reasoning/problem solving and social cognition benefited from the largest increases in the .55–.65 range. Only one area of neurocognitive ability failed to achieve a significant improvement: visual learning and memory. Similar to the results of increases in neurocognition, Wykes et al. (30) found significant positive mean effect sizes for reduction of symptoms with an effect size of .177, and overall functioning with an effect size of .418. At follow-up testing (at different time intervals for different studies), the meta-analysis revealed durable, significant effect sizes in the small to medium range for both global cognition (.428) and functioning (.372), but not for symptoms (.174).

Importantly, Wykes et al. (30) also commented on several possible moderator effects in the existing literature. First, in contrast to the meta-analysis of cognitive behavioral therapy in schizophrenia, the current meta-analysis found no relationship between the methodological quality of the study (again measured by the Clinical Trial Assessment Measure) and cognitive outcomes or functional outcomes. Additionally, they found no effect of age across the forty studies examined, noting, however, that lower symptoms at baseline were associated with greater gains in global cognition. Although the effect sizes for improvements in cogni-

tion across all levels of symptom severity remained significant, the average effect size masks greater improvements at lower levels of baseline symptoms and lesser improvements in global cognition at higher levels of baseline symptoms.

These results indicate that cognitive remediation for schizophrenia is indeed efficacious in moving patients closer to functional recovery, with overall mean effect sizes in the .4 range for both global cognition and, more importantly, overall functioning. However, Wykes et al. (30) note that cognitive remediation yielded significantly stronger effect sizes for overall psychosocial functioning when paired with adjunctive psychiatric rehabilitation. For this reason, cognitive remediation is likely best utilized when paired with other types of rehabilitation as opposed to a stand-alone intervention. It is thought that cognitive remediation may play a supportive role in rehabilitation by promoting the ability to better learn new skills offered in the rehabilitation process. Wykes and colleagues (30) conclude:

It is safe to conclude that there is a small to moderate durable effect of cognitive remediation on cognition and functioning that is not affected by study methodology. If the target is to improve functioning, then adjunctive therapy is essential, with the best effects being shown when a more strategic cognitive remediation approach is adopted. (p. 483)

Social Cognitive Training for Schizophrenia

Despite the strong evidence for efficacy of cognitive remediation in schizophrenia, relatively recent literature reviews and empirical work have given researchers in the field reason to believe that there may in fact be a more proximal or immediate target for intervention in this clinical population. As mentioned above, Green and colleagues (32) noted the association between neurocognitive deficits and deficits in functional outcome. However, they estimated that only 20–60% of the variance in functional outcome could be accounted for by deficits in neurocognition—leaving roughly 40–80% of that variance to be explained by some other factor, or set of factors. Their suggestion that “social cognition” might mediate the relationship between raw neurocognitive deficits and measures of global functional outcome spurred the broadening of the literature in this area to include investigations of the relationships among these three constructs: neurocognition, social cognition and functional outcome. Social cognition is variously defined in the literature, but recent efforts to consolidate disparate definitions of the term have conceptualized it as the mental operations that underlie social interaction, including the processes that perceive

and interpret the behaviors, intentions, and dispositions of others, and generate responses to them (32). Typically, social cognition is thought to be composed of four key subdomains, including emotion perception (the ability to correctly ascertain emotional information from faces); theory of mind (the ability to understand that other people have different mental states than our own and make correct inferences about them); social perception (the ability to ascertain social cues from behavior in a social context); and, attributional style (one’s characteristic tendencies in explaining the causes of life events on the dimensions of hostility, aggression, and blame) (33).

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Although it is clear that social cognition relies on neurocognition to some degree (e.g., as in paying attention to a specific conversation, or memory for faces), a variety of studies utilizing a variety of methodological and statistical methods have essentially confirmed Green and colleagues’ (29) hunch about the mediational role of social cognition (see 34–36). Much of this work has been consolidated in a recent meta-analysis regarding the nature of the relationship between neurocognition and social cognition in schizophrenia. Fett and colleagues (2) examined fifty-two separate studies comprising over 2,600 participants and confirmed that social cognition was indeed more strongly related to community functioning than neurocognition, noting specifically that 6% of the variance in community functioning was accounted for by neurocognitive factors compared to 16% for social cognitive factors. These results strongly implicate social cognitive processes as having a salient role in the development, course, and outcome of schizophrenia—and especially so in the context of functional recovery, where community functioning is the central outcome of interest.

For this reason, social cognitive skill domains have increasingly become targets for intervention and remediation in recent years. Although this area of research is fairly new, especially when compared to treatment paradigms like social

skills training which have been around for several decades, social cognitive training has produced some fairly encouraging results. One such treatment program is Social Cognitive and Interaction Training (SCIT) (37). SCIT is a novel, group-based, 18- to 24-week manualized treatment program designed to improve social cognitive abilities in patients in the hopes that these gains will then more easily generalize to global functioning. Specifically, SCIT focuses treatment on three of the four subdomains of social cognition mentioned above: emotion perception, theory of mind, and attributional style. Again, the thinking here is that if patients are able to better judge emotion from people's faces, better understand people's thoughts and motivations, and attribute less hostility, aggression, and blame to those around them, they should be better able to function in the community and remove existing roadblocks to personal, social and occupational success.

SCIT is comprised of three primary phases. The first addresses emotions and emotion-recognition abilities directly by educating participants about emotions and updating guesses about the emotions of others (emotion perception); the second addresses attempting to distinguish facts from guesses in social situations, with an emphasis on helping patients not jump to conclusions about what others may have been thinking in a given social situation, or their propensity to attribute hostile intent or blame others (theory of mind and attributional style). Finally, the third component of SCIT focuses on integration of previously learned material and application of the lessons learned to the patients' idiosyncratic life situation (38).

Although SCIT has only been implemented in the last several years, a handful of studies have been conducted demonstrating preliminary efficacy and effectiveness with magnitudes that are at least in line with other psychosocial treatments for schizophrenia. It should be noted here that the content of SCIT is still quite malleable, as the authors have been adding to the treatment protocols in areas that did not demonstrate gains of the expected magnitudes, as well as trimming areas that seem not to be needed to achieve the desired therapeutic results (39).

Combs and colleagues (40) evaluated the efficacy of SCIT by comparing eighteen inpatients with schizophrenia who underwent SCIT with ten control patients who received a standard coping skills group for the same length of time. Results indicated that while symptom severity remained constant across treatment groups as measured by the Positive and Negative Syndrome Scale (PANSS; 41), measures in all three targeted areas of social cognition improved as expected. The PANSS consists of thirty items that measure positive, negative and disorganized symptoms of psychosis,

and more general forms of psychopathology such as anxiety and depression. Items are clinician rated and are scored on a seven-point Likert scale. Total scores on this scale provide a good indication of the current clinical status of patients. The PANSS has proven to have good psychometric properties, with interrater reliabilities in the .8 range, internal reliability in the mid to high .7 range, and good evidence of criterion-related validity via relatively high concordance with other measures of positive and negative symptoms in schizophrenia. Facial emotion identification and discrimination significantly increased, theory of mind generally increased, and measures of attributional style also increased, at the $p < .01$ level.

Here, theory of mind was measured via a task designed to evaluate how well participants were able to detect the true intentions of ambiguous speech utterances (the Hinting Task; 42); attributional style was measured via a task designed to assess the degree to which participants assigned negative intentionality to situations (the Ambiguous Intentions Hostility Questionnaire; AIHQ; 43). The Hinting Task is a simple test of Theory of Mind (ToM) skills in patients with schizophrenia, which consists of ten very brief hypothetical scenarios read aloud to participants. For each scenario, the participant is asked to infer the intentions of one of the two characters in the scenario. Participants are given a score ranging from 0–2, for a maximum possible score of 20 across the ten scenarios. Although no psychometric properties are available for the Hinting Task (see 44), a 2006 meta-analysis (33) of social cognition in schizophrenia cited it as the only consistently used measure of ToM in schizophrenia in all reviewed articles. Similarly, the AIHQ consists of fifteen written vignettes portraying a range of accidental and intentional acts that participants are asked to respond to by indicating why they think the person acted the way they did. Answers to the fifteen scenarios produce a variety of relevant indices such as a Hostility score, an Intentionality score, an Anger score, a Blame score, and an Aggression score. The AIHQ has demonstrated good psychometric properties (43).

However, most importantly to Combs and colleagues' analysis, social functioning (as measured by the Social Functioning Scale [SFS], 45) also showed significant increases at the $p < .01$ level in the domains of social engagement and interpersonal interactions. The SFS is composed of seventy-nine items, which patients complete themselves. The questions enquire about seven distinct areas pertaining to specific abilities and performances in the social domain: withdrawal/social engagement, interpersonal communication, independence-performance, independence-competence, recreation, prosocial, and em-

ployment/occupation. The SFS has been widely used in the schizophrenia literature and has been shown to be a reliable, valid and sensitive measure of social functioning in patients with schizophrenia. Although Combs and colleagues' original study provided no information on the durability of effects over time, Combs et al. (40) later reported on six-month follow-up data indicating that facial emotion identification, social engagement scores, and interpersonal contact all remained significant at the $p < .05$ level six months after treatment.

Roberts and Penn (46) conducted a similar evaluation of SCIT in a population of outpatients with schizophrenia, and generally replicated results concerning facial emotion perception and overall functioning, but failed to find significant time by group interactions on scores for their primary outcome measures for theory of mind and attributional style using the same outcome measures as Combs et al. (40). However, the authors note that a high proportion of those who completed social cognitive training scored in the normal range for theory of mind and attributional style measures, suggesting little room for improvement in these domains via training in this sample.

Finally, Roberts and colleagues (47) examined SCIT in the context of community rather than research settings and found fairly encouraging results for both the effect of the treatment itself, and its feasibility and acceptability in community settings. The findings—based on fifty outpatients living in the community—found significant pre-post differences for facial emotion perception and theory of mind, but not for attributional style. Evaluative feedback was collected from both patients and clinicians and was generally very positive. Almost all of the patients rated the treatment as “helpful” or “very helpful,” which was corroborated by a relatively high rate of attendance (69%), and a low rate of drop-out (24%). Similarly, all seven clinicians involved in the trial rated the SCIT manual and overall treatment paradigm as “helpful” or “very helpful.” This provides preliminary evidence for the effective transportability of SCIT into community settings and its relatively low burden and high acceptability for both patients and clinicians.

Limitations of Current Reviews

The above meta-analyses and reviews of specific psychosocial treatments for schizophrenia offer insight into each of the treatment methodologies and provide a good preliminary sense of the efficacy and methods of operation for each. However, despite the large volumes of empirical data that they synthesize, the present reviews of psychosocial treatments for schizophrenia fall short of answering several basic questions about non-pharmacological treat-

ments that remain critically important for the further development of such interventions. Beyond simply calculating an effect size for a given psychosocial treatment, future reviews should consider which treatment outcomes are most appropriate for the calculation of such results. For example, should future quantitative measures of efficacy be based on proximal domains of treatment focus (i.e., specific social skills, neurocognitive enhancement, etc.) or on more distal measures of overall functioning in the community? An additional consideration here is the choice of informant for real-world functioning. Important recent work is being conducted to clarify the nature of the relationship between self- and clinician-rated measures of both neuropsychological performance and real-world functioning in schizophrenia (see 48). Future analyses should aim to include only the most valid reports of functional outcome in order to obtain a more valid effect size for the treatment modality (or modalities) of interest.

Additionally, present reviews are unable to answer critical questions about what correct or optimal dosage of psychosocial treatment is needed (either alone or in combination with other pharmacological or non-pharmacological treatments) to produce a meaningful therapeutic effect. Similarly, beyond simple six- to twelve-month follow-ups, the present reviews cannot comment on the durability of treatment effects over the long term, nor whether intermittent booster sessions might be beneficial in maintaining treatment effects. Might there be an “achievement threshold” after which treatment gains in a given modality would be maintained indefinitely? At this point we simply are not in a position to know given the state of the literature.

Another interesting question which remains largely unanswered is whether or not—or to what degree—measurably effective psychosocial treatments for schizophrenia are impacting the structure or function of the brains of the recipients (but see 49). Further neuroimaging research should be conducted in tandem with efficacy and effectiveness trials as an indicator of neural plasticity in regions typically associated with cognitive, social, and occupational deficit.

Finally, and perhaps most importantly, present reviews are not able to speak to the question of which psychosocial intervention might best match which particular clients. Might it be the case that certain patterns of deficit or symptom expression in schizophrenia are best suited to a particular psychosocial treatment? Or perhaps even to a particular combination of psychosocial treatment and pharmacotherapy? Again, present reviews offer little insight into these questions. However, it should be noted that these open empirical questions remain not because the present reviews have failed to address them, but rather because the research

upon which the reviews are based has yet to satisfactorily provide answers. With increasing attention paid to these critical details, future meta-analyses should be well placed to answer these more nuanced questions.

Conclusion: Clinical Implications and Future Directions

Functional recovery in schizophrenia requires more than pharmacotherapy. As mentioned above, drug treatments for schizophrenia have made much progress in the last several decades, but still primarily focus on symptom reduction rather than functional recovery from the disorder. Several psychosocial treatments for schizophrenia have been designed to fill this need in this clinical population and capitalize on several of the core characteristics of treatments consistent with the recovery movement: self-direction, individualized and person centered, empowerment, holistic, nonlinear, strengths based, peer support, respect, responsibility, and hope (11). This paper has examined only four of the plethora of psychosocial treatment paradigms that now exists to fill this need. Social skills training is a generally efficacious method of improving the social knowledge base and skills of people with schizophrenia with effect sizes in the .4 range, although there is the issue of generalizability as discussed by Kurtz and Mueser (15). If improved psychosocial and community functioning is the goal, researchers must take care to distinguish success based on effect sizes in this more moderately distal domain.

Cognitive behavioral therapy for schizophrenia appears to be effective at reducing target symptoms, though the high negative correlation observed between methodological rigor and effect sizes, in combination with lower limits of some 95% confidence intervals below zero, provides serious reason for caution in applying this method of therapy by itself. Cognitive remediation for schizophrenia is also efficacious, with overall effect sizes for global cognition in the .4 range. Effects have been shown to be durable for global cognition and functioning, but not for symptoms. However, cognitive remediation appears to achieve significantly greater effect sizes when paired with another form of treatment, contra-indicating it as a stand-alone treatment. Finally, social cognitive treatments for schizophrenia are the latest and least evaluated forms of psychosocial treatment, but have demonstrated encouraging, if not wholly reliable, improvements in social cognition and functional outcome.

Moving forward, the next steps in advancing psychosocial treatments to promote functional recovery in schizophrenia are to: 1) conduct more research on social cognitive treatments to ascertain whether these treatments are as effective, durable, and accessible as existing treatments; and,

2) move toward testing the effects of combined treatment approaches to maximize the benefit from what each of these unique treatment paradigms has to offer.

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