

Psychosocial Treatments for Schizophrenia

Kim T. Mueser,¹ Frances Deavers,²
David L. Penn,³ and Jeffrey E. Cassisi²

¹Center for Psychiatric Rehabilitation, Department of Occupational Therapy, Boston University, Boston, Massachusetts 02115; email: mueser@bu.edu

²Department of Psychology, University of Central Florida, Orlando, Florida 32816; email: fdeavers@knights.ucf.edu, jeffrey.cassisi@ucf.edu

³Department of Psychology, University of North Carolina, Chapel Hill, North Carolina 27599-3270; email: dpenn@email.unc.edu

Annu. Rev. Clin. Psychol. 2013. 9:465–97

First published online as a Review in Advance on January 16, 2013

The *Annual Review of Clinical Psychology* is online at <http://clinpsy.annualreviews.org>

This article's doi:
10.1146/annurev-clinpsy-050212-185620

Copyright © 2013 by Annual Reviews.
All rights reserved

Keywords

psychosis, comorbid, prodrome, cognitive behavior therapy, randomized controlled trial

Abstract

The current state of the literature regarding psychosocial treatments for schizophrenia is reviewed within the frameworks of the recovery model of mental health and the expanded stress-vulnerability model. Interventions targeting specific domains of functioning, age groups, stages of illness, and human service system gaps are classified as evidence-based practices or promising practices according to the extent to which their efficacy is currently supported by meta-analyses and individual randomized controlled trials (RCTs). Evidence-based practices include assertive community treatment (ACT), cognitive behavior therapy (CBT) for psychosis, cognitive remediation, family psychoeducation, illness self-management training, social skills training, and supported employment. Promising practices include cognitive adaptive therapy, CBT for posttraumatic stress disorder, first-episode psychosis intervention, healthy lifestyle interventions, integrated treatment for co-occurring disorders, interventions targeting older individuals, peer support services, physical disease management, prodromal stage intervention, social cognition training, supported education, and supported housing. Implications and future directions are discussed.

Contents

PSYCHOSOCIAL TREATMENTS FOR SCHIZOPHRENIA	466
CONCEPTUAL FRAMEWORKS GUIDING TREATMENT	467
The Recovery Model of Mental Health	467
Stress-Vulnerability Model	468
EVIDENCE-BASED PRACTICES	470
Assertive Community Treatment	470
Cognitive Behavior Therapy for Psychosis	471
Cognitive Remediation	472
Family Psychoeducation	473
Illness Self-Management Training	474
Social Skills Training	475
Supported Employment	475
PROMISING PRACTICES	476
Cognitive Adaptive Therapy	476
Cognitive Behavior Therapy for Posttraumatic Stress Disorder	477
Comorbid Medical Disorders	477
First-Episode Psychosis Intervention	478
Healthy Lifestyle Interventions	478
Integrated Treatment for Co-occurring Substance Use Disorder	479
Interventions Targeting Older Individuals	479
Peer Support Services	480
Prodromal Stage Intervention	481
Social Cognition Training	481
Supported Education	482
Supported Housing	483
SYNTHESIS AND FUTURE DIRECTIONS	483
Treatments Targeting Domains of Functioning	483
Interventions for Different Stages of Disorder or Age Groups	486
Human Service System Gaps	486
CONCLUSIONS	487

PSYCHOSOCIAL TREATMENTS FOR SCHIZOPHRENIA

Schizophrenia is a serious mental illness characterized by psychotic symptoms (e.g., hallucinations, delusions), negative symptoms (e.g., anhedonia, apathy), and impaired cognitive functioning (Heaton et al. 1994). A core feature of schizophrenia is its impact on reduced psychosocial functioning, including self-care and independent living skills, quality of social relationships, and the capacity to work, go to school, or parent (Ursano et al. 2004). Psychotic symptoms tend to fluctuate over time, with periodic symptom relapses requiring temporary hospitalization for pharmacological stabilization. Cognitive impairment and negative symptoms are more stable over time and are more strongly associated with impaired functioning (Green 2006, Pogue-Geile & Harrow 1985). Mood problems are common, with depression being a common first sign of the illness (Häfner & an der Heiden 2008), and increased rate of suicide of 5% to 7% is also associated with schizophrenia (Inskip et al. 1998). The net impact of schizophrenia is that individuals often have

difficulty getting their basic needs met and leading a fulfilling life, leading to heavy reliance on family members and disability payments in Western countries (Mueser & McGurk 2004, van Os & Kapur 2009).

The prevalence of schizophrenia is approximately 1% throughout the world, with moderate variation across countries and cultures (Jablensky 1997, McGrath & Richards 2009). The onset is usually early adulthood, between the ages of 18 and 35, although a later age of onset may also occur (Almeida et al. 1995). Schizophrenia rarely develops before the age of 16, and onset during childhood is considered to be a different disorder (Remschmidt et al. 1994). For most people, schizophrenia persists over the long term, although many have partial or complete remission of symptoms and restoration of functioning, usually later in life (Harrison et al. 2001). The prevalence of schizophrenia is similar between men and women, but women have a later age at onset and experience a more benign course of illness, including fewer hospitalizations and better functioning (Riecher-Rössler & Häfner 2000).

The direct health costs of treating schizophrenia in the United States, including drugs, outpatient care, all inpatient care, and long-term care, were \$22.7 billion in 2002 (Wu et al. 2005). The estimated indirect costs of schizophrenia are even larger: \$32.4 billion in the United States in 2002 (Wu et al. 2005). These costs are due to lost productivity, premature mortality, and opportunity costs for family caregivers.

Antipsychotic medications are the mainstay in the treatment of schizophrenia, substantially reducing symptom severity and relapses (Lieberman et al. 2005). However, antipsychotics are most effective at reducing psychotic symptoms, and they have minimal effects on negative symptoms, cognitive impairment, or functioning. Furthermore, medication adherence is often poor (Weiss et al. 2002), leading to high rates of relapse and hospitalization.

Psychosocial interventions are usually provided in addition to pharmacological management and play an important role in the treatment of schizophrenia, especially in improving functioning. Substantial research in recent decades supports the effectiveness of a range of psychosocial treatments. This review summarizes both empirically validated and promising psychosocial interventions. We also consider important topics for future research on treatment of schizophrenia. We first describe two conceptual frameworks that have influenced the development of psychosocial programs.

CONCEPTUAL FRAMEWORKS GUIDING TREATMENT

Over the past several decades there has been a sea change in how schizophrenia (and other serious mental illnesses) is understood and treated. Two conceptual models have emerged that have challenged the Kraepelinian assumption that schizophrenia is strictly a biological disease with an invariably downward trajectory and little hope for improvement (Kraepelin 1919/1971). The recovery model and the stress-vulnerability model have given individuals hope that meaningful recovery from schizophrenia can occur and that they can learn how to improve the course of illness.

The Recovery Model of Mental Health

The modern origins of the recovery model date back to the consumer movement beginning in the 1960s and 1970s, which emerged in the wake of deinstitutionalization and rose in objection to traditional approaches to treatment. These challenges led to a reformulation of how serious mental illnesses are viewed and the goals of treatment. Although the field is still in the midst of change, this new conceptualization has had important treatment implications.

The Consumer Movement. Coinciding with the discharge of large numbers of people from long-term mental health settings beginning in the 1960s, and the trend toward community-based treatment, laws were enacted to protect people from involuntary hospitalization in the absence of evidence that they were a danger to themselves or others (Applebaum 1994). As people with a mental illness regained basic civil rights, they also began meeting together to support one another and express dissatisfaction with their treatment (Chamberlin 1978). These individuals objected to the term “patient” as implying a passive role in treatment, with those in the United States opting for the term “consumer” and those in Great Britain for “service user.”

Consumers objected to several aspects of the mental health system. They protested the presumption of treatment providers that disorders such as schizophrenia were invariably chronic, pointing to long-term follow-up studies showing significant rates of functional recovery (Häfner & an der Heiden 2008), and noted that the frequent communication of this was demoralizing (or “spirit breaking”) to individuals with these conditions (Deegan 1988). Consumers argued for a more nuanced and personally meaningful definition of recovery not based on symptom remission but instead on the process of learning and growing in spite of having a mental illness (Anthony 1993, Deegan 1996, Roe & Chopra 2003). Although the concept of recovery continues to be debated (Bellack 2006), it has had a major impact on broadening the focus of treatment to areas of functioning of concern to individuals. This shift was not solely the result of the consumer movement but also reflected a growing understanding of the long-term course of schizophrenia (Strauss & Carpenter 1977) and research on social learning theory demonstrating the feasibility of improving psychosocial functioning (Ayllon & Azrin 1968, Paul & Lentz 1977).

Consumers also objected to the traditional hierarchical, often coercive nature of treatment (Carling 1995). They noted that their concerns were often ignored, and rather than giving them the care they needed, they were often traumatized by the very system that was supposed to serve them (Fisher 1992, Jennings 1994). Consumers argued that they needed to be the ones to set the goals of treatment, and they demanded respect and collaboration from treatment providers (Segal et al. 1993).

Consumers began to look to their peers as critical to their own empowerment. Peer support approaches developed, as did a growing body of writings by consumers testifying to the importance of illness self-management for regaining control over their lives (Leete 1989). As the focus on self-management approaches grew, so did curriculum, groups, and treatment services responding to this need.

Recovery-oriented Services. The concept of recovery from serious mental illness has served as a rallying point for recognizing the importance of each individual’s unique experience of learning how to grapple with a mental illness as well as meeting their basic human needs and desires. Recovery thus refers to the attainment of a meaningful and valued life, rather than recovery from a disease, and the absence of symptoms (Deegan 1988, Roe et al. 2007).

Recovery-oriented services are mental health services that are informed by the values inherent in this new understanding of recovery. Such services are person-oriented (rather than illness-oriented), involve the individual in the planning and implementation of services, show respect for self-determination and choice, and focus on health and resiliency (Farkas 2007). Thus, recovery-oriented services address the nature of how individuals with serious mental illness are engaged and involved in treatment.

Stress-Vulnerability Model

The stress-vulnerability model has had a major influence on how schizophrenia is conceptualized (Nuechterlein & Dawson 1984, Zubin & Spring 1977). The model posits that the primary cause

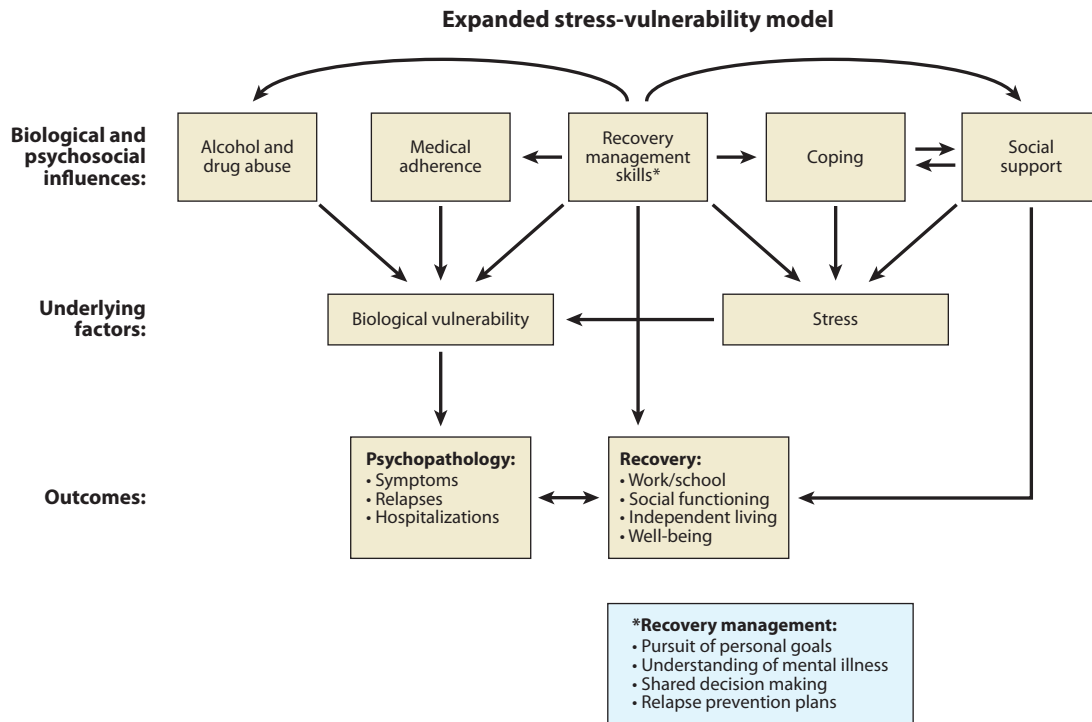


Figure 1

Components of the expanded stress vulnerability model, including recovery management.

of schizophrenia is psychobiological vulnerability, determined early in life by genetics and environmental insults (e.g., obstetric complications), which is potentially precipitated by stress. Once schizophrenia has developed, stress (e.g., life events, interpersonal conflict, impoverished living conditions) can impinge on biological vulnerability, precipitating relapses. On the other hand, coping skills and social support can reduce the effects of stress on symptom relapses.

The stress-vulnerability model suggests that relapses and hospitalizations can be prevented by lowering biological vulnerability (e.g., prescribing antipsychotic medications, avoiding substance abuse) or reducing stress. Building social support and resiliency to stress can also prevent relapses. The targeting of these factors has played an important role in guiding the development of psychosocial interventions for schizophrenia over the past three decades (Lieberman et al. 1986).

The stress-vulnerability model has been expanded based on the recovery model (Mueser & Gingerich 2011). As illustrated in **Figure 1**, the expanded stress-vulnerability model includes recovery (e.g., role functioning, well-being) in addition to symptoms as an outcome. Furthermore, recovery management skills are included (e.g., pursuit of personal goals, understanding of mental illness). The expanded model highlights the importance of supporting the personal agency of the client in the treatment process, including identifying desired outcomes, choosing treatment methods, and helping individuals develop illness self-management skills in order to pursue their personal goals.

Our review focuses on studies of people with schizophrenia, schizoaffective disorder, or schizophreniform disorder, but it also includes heterogeneous samples of people with other serious mental illnesses and similar functional impairments. We use the terms “psychiatric rehabilitation”

and “psychosocial treatment” interchangeably to refer to nonpharmacological-based approaches to improving psychosocial functioning. These methods primarily include teaching skills and developing environmental supports for improving functioning, either directly or indirectly through reducing symptoms or cognitive impairments (Anthony et al. 2002, Corrigan et al. 2008).

EVIDENCE-BASED PRACTICES

The term “evidence-based practice” refers to interventions shown to be effective at improving the course or outcome of a specific illness based on rigorously conducted research studies (Sackett et al. 1997). For serious mental illnesses, there is a consensus that evidence-based practices require the intervention is standardized, targets outcomes relevant to symptoms or impaired functioning, and is supported by multiple randomized controlled trials (RCTs), at least two of which have been conducted by different research teams (Drake et al. 2003). We review seven evidence-based practices below, focusing, where possible, on meta-analytic reviews of the literature to support each practice.

The RCTs supporting these evidence-based practices used intent-to-treat analyses, employed standardized instruments with established psychometric properties in the schizophrenia literature, included sample sizes of at least 50 clients, and generally had relatively low dropout rates (e.g., <30%) in both experimental conditions and overall research. The meta-analyses of RCTs in this review generally required as an inclusion criterion 70% or more of each study sample to have a schizophrenia spectrum disorder. Most of the meta-analyses evaluated the effects of rigorous study design features on outcomes, such as the blinding of raters and use of an active control group.

Although the meta-analyses generally reported sound inclusion and exclusion criteria, future meta-analyses in this area should clearly and fully report on the validity assessments used, characteristics of the RCTs included, and considerations of bias (e.g., publication bias) to enable readers to determine the methodological rigor of the studies included. The Quality of Reporting of Meta-analyses statement provides guidelines for reporting practices of meta-analytic reviews of RCTs (Moher et al. 1999). For a more detailed discussion of the effect of methodological rigor of RCTs on meta-analytic results, see Wykes et al. (2008, 2011).

Assertive Community Treatment

As deinstitutionalization shifted the primary locus of treatment for schizophrenia from hospitals to the community (Johnson 1990), local mental health centers were established throughout the United States. However, many people did not access these services and were prone to frequent crises, relapses, and rehospitalizations (Pepper et al. 1981). The assertive community treatment (ACT) model was developed to address this problem (Stein & Santos 1998).

ACT was based on the rationale that if clients did not access community-based treatment on their own, these services would be brought to them in their natural living environments (Stein & Santos 1998). The ACT model differs from usual case management and other psychiatric services in the greater intensity of staffing (1:10 ratio of clinicians to clients compared to 1:30 or more in standard case management), the provision of most services in the community, the sharing of caseloads across clinicians to reduce burnout, and full-time coverage by the ACT team, including emergencies. ACT teams are interdisciplinary (i.e., including a psychiatrist, nurse, and specialists in areas such as vocational rehabilitation and co-occurring substance abuse) and typically serve 50 to 150 clients. A wide range of services is provided, including medication management, practical supports (e.g., securing housing, paying bills), and rehabilitation. ACT is an alternative method for delivering services to clients who otherwise do not receive them rather than a rehabilitation model per se (Mueser et al. 1998).

Research. More than 30 RCTs have been conducted evaluating ACT. Almost all studies were conducted in the United States and focused on individuals living in the community with a pattern of frequent hospitalizations, extended periods of inpatient treatment, or homelessness. Research has shown that ACT is effective at stabilizing housing in the community and reducing hospitalizations and homelessness, and it produces modest reductions in symptoms (Bond et al. 2001). Economic analyses suggest that ACT is cost-effective because of its primary effects on reducing costly hospitalizations (Latimer 1999). The beneficial effects of ACT have been more consistently demonstrated in research in the United States than abroad (Williams et al. 2011), suggesting that it may provide a solution to gaps in the U.S. mental health and social service systems.

Despite the evidence that ACT improves stable living in the community, research also indicates that it has a limited impact on other outcomes (e.g., social functioning, employment). One reason is that historically ACT programs have not targeted these areas of functioning by providing the relevant rehabilitation methods (e.g., supported employment for work). More recently, the standards of ACT have been upgraded to ensure that evidence-based practices are incorporated (Monroe-DeVita et al. 2011).

Cognitive Behavior Therapy for Psychosis

Many people with schizophrenia have persistent psychotic symptoms despite taking medication (Lindenmayer 2000). Chronic hallucinations and delusions contribute to high levels of distress and are a frequent impediment to functioning (Racenstein et al. 2002). An important focus of treatment has been developing interventions to reduce the severity of psychotic symptoms or the interference they cause in functioning.

Cognitive behavior therapy for psychosis (CBTp) was first reported in a case study more than 60 years ago (Beck 1952), but it was not until the 1990s that controlled studies were conducted in the United Kingdom. CBTp differs from the traditional CBT used to treat mood and anxiety disorders primarily in its explicit focus on psychotic symptoms and the strategies used to reduce either delusional conviction or associated distress and interference (Fowler et al. 1995, Morrison et al. 2004). However, CBTp is also used to reduce negative symptoms, depression, and anxiety.

Multiple treatment manuals have been developed for CBTp, which can be provided in either an individual or group format, with most approaches sharing a common set of components (Wright et al. 2005). The clinician begins by developing a therapeutic alliance aimed at understanding the individual's subjective experience and identifying goals for treatment, without challenging beliefs or colluding with delusions. The clinician may then provide information about the psychotic symptoms, such as how they may emerge in response to stress, and the fact that they are common in the general population. This normalization can reduce the sense of isolation and embarrassment many people have about psychotic symptoms and facilitate their ability to talk about them. The client is then engaged in learning the ABC model applied to psychotic symptoms: antecedents or triggers precede psychotic symptoms, which are then accompanied by the individual's beliefs about them, which lead to the subsequent emotional, cognitive, or behavioral consequences. This facilitates awareness and modification of triggers and teaches people how to challenge inaccurate or self-defeating beliefs (i.e., cognitive restructuring), leading to more effective coping strategies. Attention then turns to exploring coping strategies that clients naturally use to deal with their psychotic symptoms, increasing underutilized strategies, and then teaching more effective ones. The goal is not to get the individual to admit to having symptoms but rather to reduce symptom severity and associated distress.

Research. More than 40 RCTs of CBTp have been published, and the literature has been frequently reviewed. Most of the reviews have reached the same conclusions: CBTp is more effective

than either usual treatment or attention-control therapy in reducing symptoms and improving functioning. The most comprehensive meta-analysis of 33 RCTs showed that CBTp produced significant effect sizes in the moderate range for reducing psychotic symptoms ($d = 0.37$), negative symptoms ($d = 0.44$), and mood disturbance ($d = 0.36$), and for improving psychosocial functioning ($d = 0.38$) (Wykes et al. 2008). Granholm et al. (2009) extended these findings by examining 18 RCTs that included measures of functional outcomes and found significant improvements in approximately two-thirds of the studies. Despite the strong evidence supporting the efficacy of CBTp, two meta-analyses with dissenting conclusions have recently been published (Jones et al. 2012, Lynch et al. 2010). The Lynch et al. meta-analysis has been criticized on a number of grounds, such as the inappropriate inclusion of certain studies and the failure to evaluate treatment effects at follow-up (Kingdon 2010). Furthermore, the conclusions of both meta-analyses are limited in two other ways. First, both focused only on RCTs that compared CBTp to active comparison interventions intended to control for nonspecific therapeutic factors and ignored research that compares CBTp to usual treatment. This is a higher standard of evaluation considering evidence that supportive therapy produces modest benefits for schizophrenia (Penn et al. 2004), and the Wykes et al. (2011) meta-analysis found that the use of an active control group moderated the impact of CBTp on outcome. Thus, including only trials with active control groups likely underestimated the impact of CBTp compared to usual care, the standard of treatment in the field. Second, owing to restrictive inclusion criteria, both meta-analyses included only a small number of studies, limiting the power to detect significant effects.

In summary, CBTp is associated with reductions in psychotic symptoms, negative symptoms, and mood problems, and improvements in social functioning, particularly when compared to usual services. There is mixed evidence on whether it confers any advantages in these domains over other psychological treatments, but it appears to be well tolerated in individuals with schizophrenia.

Cognitive Remediation

Impaired cognitive functioning in areas such as attention, memory, psychomotor speed, and executive functions is common in schizophrenia (Heaton et al. 1994) and is a major concern for several reasons. First, cognitive functioning is associated with psychosocial functioning (Green 1996). Second, impaired cognitive functioning is related to an attenuated response to psychiatric rehabilitation programs such as social skills training (Mueser et al. 1991, Smith et al. 1999) and vocational rehabilitation (McGurk & Mueser 2004). Third, cognitive impairment is associated with the overall severity of schizophrenia, especially negative symptoms (Liddle 1987). Thus, improving cognitive functioning has been a major treatment focus for many years.

A variety of methods have been used to improve cognitive functioning in schizophrenia. Most cognitive remediation programs employ cognitive practice exercises (either computer based or paper and pencil), often combined with teaching strategies to improve performance on the exercises (Krabbendam & Aleman 2003). Some programs also teach strategies for coping with (or compensating for) the effects of cognitive impairments on psychosocial functioning (McGurk et al. 2005). Cognitive remediation programs vary in length and intensity, with most providing two training sessions per week and lasting between three and six months. Some programs combine cognitive training with another rehabilitation approach in an integrated or parallel fashion (Hogarty et al. 2004, McGurk et al. 2005), whereas others are designed to stand alone (Wykes & Reeder 2005).

Research. More than 40 RCTs of cognitive remediation for schizophrenia have been completed. Two meta-analyses of the literature have been published (McGurk et al. 2007, Wykes et al. 2011), including 26 and 40 RCTs, respectively, which resulted in similar findings. Both reported

significant effect sizes of cognitive remediation on improving cognitive (d 's = 0.41, 0.45) and psychosocial functioning (d 's = 0.36, 0.42), and smaller but significant effects on reducing symptoms (d 's = 0.28, 0.18).

Both meta-analyses found the effects of cognitive remediation on cognitive functioning were homogeneous, and therefore analyses were not conducted on moderators of treatment effects. However, the impact of cognitive remediation on psychosocial functioning was much more heterogeneous. Exploration of moderators identified one significant variable in both meta-analyses: provision of psychiatric rehabilitation to study participants. Studies in which all participants received psychiatric rehabilitation, and which then evaluated the added benefits of cognitive remediation (compared to psychiatric rehabilitation alone), had significantly stronger effects on psychosocial functioning (d 's = 0.47, 0.59) than stand-alone cognitive remediation programs provided without psychiatric rehabilitation (d 's = 0.05, 0.28). Examples of rehabilitation programs that were integrated with cognitive remediation include supported employment (McGurk et al. 2005), social skills training (Silverstein et al. 2008), and psychosocial intervention for the early period of the disorder (Hogarty et al. 2004). Thus, cognitive remediation may potentiate the effects of psychiatric rehabilitation by facilitating the ability to learn new skills in opportunities provided through involvement in rehabilitation.

Family Psychoeducation

Family work has the potential to improve schizophrenia for several reasons. Many clients either live at home or have close contact with relatives when they first develop the illness. Despite this high level of contact, most relatives know little about schizophrenia (Mueser et al. 1992) and have little contact with mental health professionals. The challenge of coping with impaired social behavior and psychotic symptoms, compounded by poor understanding of the disorder and minimal contact with professionals, leads to high levels of family burden (Karp 2001) and family stress (i.e., expressed emotion) which can increase risk of relapse and rehospitalization (Hooley 2007).

Family psychoeducation is a set of psychotherapeutic strategies for working with the relatives of someone with schizophrenia, aimed at developing a collaborative relationship between the family and the treatment team in order to help clients make progress toward recovery. Several approaches to family psychoeducation have been developed and empirically validated in RCTs (Anderson et al. 1986, Barrowclough & Tarrier 1992, Falloon et al. 1984, Kuipers et al. 2002, McFarlane 2002). Although these models differ in their theoretical orientation (e.g., cognitive behavioral versus broad-based systems theory) and modality (single family versus multiple family versus combined), they are all long term (lasting 9 to 24 months) and share other features, including delivery by mental health professionals, focus on the whole family (including the client), education about schizophrenia and treatment, teaching strategies to reduce stress and improve communication and problem solving, and looking toward the future rather than delving into the past. Shorter-term family interventions have also been developed for schizophrenia (Cohen et al. 2008).

Research. More than 50 RCTs conducted throughout the world have shown that family psychoeducation is effective for schizophrenia (Pharoah et al. 2010). Because early research linking relapse in schizophrenia to high levels of expressed emotion in families (Hooley 2007) served as the impetus for the development of family programs, most studies have focused on clients who have had a recent relapse or hospitalization. Research on longer-term family programs (≥ 5 sessions) has shown significant effects in the moderate-to-small range on reducing relapses and hospitalizations, and small effects in other areas such as improved psychosocial functioning (Pharoah et al. 2010).

Illness Self-Management Training

The mental health recovery model (previously described) emphasizes the importance of people with schizophrenia being actively involved in their own treatment, including learning self-management strategies. Illness self-management programs target several related needs. First, individuals are provided information about schizophrenia and its treatment in order to make informed decisions about their care. Second, because medication nonadherence is a common cause of relapse (Yamada et al. 2006), leading to disruption in independent living, work, or school, strategies are taught to facilitate taking medication as prescribed. Third, since relapses can occur despite medication adherence, relapse prevention strategies are taught (e.g., monitoring early signs of relapse and developing a plan to respond to these signs such as evaluating need for a temporary increase in medication dosage) (Herz 1984). Fourth, to address the problem of persistent symptoms despite medication adherence, coping strategies are taught to reduce the distress and interference they cause (Tarrier et al. 1999).

Numerous programs have been developed to teach illness self-management skills (e.g., Hogarty 2002, Kopelowicz & Liberman 1994). In order to develop a program that incorporated the broad range of empirically supported strategies for illness self-management, Mueser and colleagues (2002a) conducted a systematic review of 40 controlled studies. Four strategies were associated with improved illness self-management across multiple studies, including (a) providing psychoeducation about mental illness and its treatment, (b) behavioral tailoring to facilitate adherence by incorporating taking medication into one's daily routine, (c) developing a relapse prevention plan, and (d) teaching coping strategies for persistent symptoms.

The Illness Management and Recovery (IMR) program (Gingerich & Mueser 2011) was developed to integrate the four empirically supported illness self-management strategies identified by Mueser et al. (2002a) into a single package. In order to motivate people to learn self-management skills, clients first set personal goals based their own vision of recovery and then learn how to manage their illness more effectively in the context of pursuing their goals. Information and skills are taught using a combination of educational, motivational, and cognitive-behavioral techniques, with a curriculum based on a core set of "modules" addressing topics such as information about schizophrenia, medication, relapse prevention, and coping with symptoms; 40 to 50 individual or group sessions are required to complete the program over 5 to 10 months.

Research. Several avenues of research support the efficacy of training clients with schizophrenia illness self-management. In addition to the Mueser et al. (2002a) review of RCTs of illness self-management components, a later review conducted by Lincoln et al. (2007) reported similar findings. RCTs of several multicomponent programs providing psychoeducation and targeting symptoms and relapse prevention have been shown to be effective, including personal therapy (Hogarty et al. 1997), skills training for community re-entry following hospitalization (Kopelowicz et al. 1998), and Wellness Recovery Action Planning (Cook et al. 2012).

Since the development of the IMR program, three RCTs have been completed, each conducted in a different country, including the United States (Levitt et al. 2009), Israel (Hasson-Ohayon et al. 2007), and Sweden (Färdig et al. 2011). Across all three studies, clients in IMR improved significantly more in illness self-management and related outcomes, such as community functioning, than those who received usual care. Although the data in support of IMR as an evidence-based practice are less abundant than other interventions in this section, the presence of three RCTs by different research teams led us to include IMR as an evidence-based practice rather than as a promising practice.

Social Skills Training

Problems in psychosocial functioning in schizophrenia are related to impairments in social skill that often predate the illness, and they persist over the long term in the absence of rehabilitation (Mueser & Bellack 1998). According to the expanded stress-vulnerability model, coping skills and social support, both of which are related to social skills, can reduce the effects of stress on relapses and help people achieve their goals (Addington et al. 2010). Thus, improving social skills is a common treatment target.

The social skills model (Lieberman et al. 1986) posits that there are three components necessary for social competence: receiving skills (i.e., social perception), processing skills (i.e., social cognition), and sending skills (i.e., behavioral responses). Social skills training (SST) programs have been designed to address deficiencies in these elements of social competence. Though SST programs differ in implementation setting, duration, and content, they all use a similar approach to teaching skills, including goal setting, role modeling, behavioral rehearsal, positive reinforcement, corrective feedback, and home assignments to practice skills and promote generalization (Bellack et al. 2004). The generalization of social skills to clients' natural environments can be further supplemented by community-based in vivo skills training (Glynn et al. 2002) and enlisting "indigenous supporters" to prompt the use of skills in real-life situations (Tauber et al. 2000).

Research. More than 23 RCTs of SST have been conducted, and multiple reviews of the literature have been published, with most concluding there are positive outcomes associated with SST. Two recent meta-analyses provide strong evidence for the effectiveness of SST. Pfammatter et al. (2006) examined 19 RCTs and found positive effects of SST on skills acquisition ($d = 0.77$), assertiveness ($d = 0.43$), social functioning ($d = 0.39$), and general psychopathology ($d = 0.23$). Kurtz & Mueser's (2008) review of 23 RCTs found SST had a large impact on content mastery ($d = 1.20$), a moderate impact on social and daily living skills ($d = 0.52$), community functioning ($d = 0.52$), and negative symptoms ($d = 0.40$), and a small but significant impact on relapse ($d = 0.23$) and other symptoms ($d = 0.15$).

Overall, evidence from meta-analyses supports the efficacy of SST in improving certain aspects of social competence. There is room for improvement, however, and it has been suggested that deficits in attention that are associated with schizophrenia may hinder the effectiveness of SST programs (Kurtz & Mueser 2008). To address this issue, Silverstein et al. (2008) evaluated the effects of combining attention shaping and SST in 82 individuals with schizophrenia with impaired attention. Participants were randomized to receive SST with or without attention shaping. Individuals who received attention shaping were significantly more attentive and acquired more skills. Furthermore, skill acquisition was significantly related to attentiveness. This study shows the potential benefits of attention shaping and suggests that future research should evaluate other methods for improving skill acquisition in SST.

Supported Employment

A major effect of schizophrenia is on reduced capacity to work (Wu et al. 2005), with competitive employment rates usually in the 10% to 20% range (Marwaha & Johnson 2004). However, most people with schizophrenia want to work (Mueser et al. 2001). Furthermore, work is associated with a range of benefits for people with schizophrenia aside from improved economic standing, including modest improvements in self-esteem, sense of purpose, and reductions in symptoms (Mueser et al. 1997a).

Traditional approaches to vocational rehabilitation have involved extended periods of skills or vocational training in sheltered workshops, with the aim of teaching the requisite skills for succeeding in the competitive workplace. These approaches, often described as train-place models (Corrigan et al. 2008), have been generally found to be unsuccessful in helping clients join the competitive workforce (Bond 1992). Supported employment was developed as an alternative, place-train model, aimed at helping people find competitive jobs and then providing them with the support and training needed to maintain those jobs or move on to other jobs.

The most well-standardized and empirically validated model of supported employment is the Individual Placement and Support (IPS) model (Becker & Drake 2003). IPS employment endorses a zero-exclusion criterion for clients to receive services, with the only requirement for participation being that clients want competitive work. IPS focuses on rapid search for competitive jobs in integrated community settings and the provision of follow-along supports to facilitate optimal work performance. Respect for client preferences in terms of desired job type and whether to disclose one's psychiatric disability to an employer is another defining element of IPS, as well as the integration of vocational and clinical services, including weekly meetings between service providers. Benefits counseling is provided to inform clients about the impact of working on their disability income and health insurance.

Research. Extensive research supports the effectiveness of supported employment for improving competitive work outcomes for people with schizophrenia. More than 17 RCTs have been conducted in the United States, Canada, Europe, and Australia, comparing supported employment to a variety of other vocational rehabilitation models, including group skills training, transitional employment, and diversified work service models, with most studies employing the IPS model (Bond et al. 2008, 2012). Across all studies, supported employment has led to significantly higher rates of overall competitive work, more hours of competitive work, and more wages earned than comparison programs. A recent meta-analysis of 15 RCTs of IPS-supported employment indicated that an effect size of 0.77 on competitive work compared to alternative vocational rehabilitation approaches (Bond et al. 2012).

PROMISING PRACTICES

Substantial research has been conducted on other practices that suggest promise but do not currently meet criteria for an evidence-based practice. Some address problem areas that have not been targeted, are insufficiently improved, or are costly to improve with existing evidence-based practices (e.g., housing, education), whereas others focus on special populations (e.g., first-episode psychosis). The promising practices discussed below are not a comprehensive list and are limited to interventions for which there is at least some rigorous empirical support.

Cognitive Adaptive Therapy

Some individuals with severe symptoms have pervasive functional impairments that persist following lengthy inpatient treatment and discharge into the community. Cognitive adaptive therapy (CAT) was developed to address these impairments by providing adaptive environmental strategies to prompt or organize appropriate self-care behavior (Velligan et al. 2002). CAT is implemented by mental health practitioners who go into the homes of recently discharged clients on a weekly basis and help them organize and arrange their living quarters in order to promote independent living skills such as grooming and hygiene, meal preparation, and medication adherence.

Three RCTs have been conducted of CAT (Velligan et al. 2002, 2006, 2008). Across the three studies, the results have shown that CAT leads to significant gains in clinical outcomes and functioning during the active period of the intervention. When the intensity of CAT is reduced, or the program is stopped altogether, its effects on improved medication adherence and associated clinical outcomes tend to be maintained at follow-up, consistent with studies of behavioral tailoring reviewed in the previous section on Illness Self-Management Training. However, reduction in intensity or cessation of CAT results in a loss of functional gains, suggesting that continued provision of environmental supports is critical to sustain improvements in daily functioning.

Cognitive Behavior Therapy for Posttraumatic Stress Disorder

Exposure to traumatic events such as physical and sexual abuse or assault is ubiquitous in the lives of people with schizophrenia, both before and after the onset of their disorder (O'Hare & Sherrer 2011, Read et al. 2005). Trauma exposure has been linked to a variety of negative outcomes, including more severe symptoms and functional impairment, substance abuse, and relapses (Lysaker & Larocco 2008, Picken & Tarrier 2011). Furthermore, trauma is related to high rates of posttraumatic stress disorder (PTSD) in schizophrenia and other serious mental illnesses, with estimates of current PTSD ranging between 25% and 50% (Grubaugh et al. 2011) compared to 8% to 12% lifetime PTSD in the general population (Kessler et al. 1995b).

One approach to addressing this problem has been to adapt evidence-based treatments for PTSD in the general population for people with serious mental illness (Bisson & Andrew 2007), based on the rationale that PTSD mediates the effects of trauma on mental health outcomes (Mueser et al. 2002b). Frueh et al. (2004) developed an exposure-based treatment program for PTSD in people with schizophrenia that also includes skills training. An open clinical trial demonstrated the feasibility of the program and found positive effects on improved PTSD symptoms. Mueser and colleagues (2009) developed a cognitive restructuring program that also includes breathing retraining and education about PTSD. The individual version of the program has been shown to be feasible and associated with improvements in PTSD and other symptoms in two open pilot studies (Lu et al. 2009, Rosenberg et al. 2004) and one RCT (Mueser et al. 2008). A group version of the program has also been found to be feasible and associated with similar improvements (Mueser et al. 2007).

Comorbid Medical Disorders

The high comorbidity of schizophrenia with medical disorders such as diabetes and cardiovascular disease (Chwastiak et al. 2006) has led to efforts to improve medical disease management. Interventions have been informed by evidence that people with schizophrenia receive poorer care for their medical disorders (Druss et al. 2001) and have in part sought to bolster the ability of clients to communicate their symptoms and needs more effectively. In addition, medical illness self-management programs for chronic diseases such as diabetes, arthritis, and asthma that have been validated in the general population have been adapted for people with schizophrenia (Newman et al. 2004).

For example, a brief (six-session) peer-led program for teaching chronic disease self-management in the general population (Lorig et al. 2005) was adapted for the Health and Recovery Peer (HARP) program by training mental health consumers to lead groups. An RCT of the HARP program found that it was both feasible to implement and associated with improvement in physical health-related quality of life and other related outcomes (Druss et al. 2010b). Another approach was the adaptation of the IMR program (see previous section on Illness Self-Management Training) to incorporate information and skills about the management of medical diseases into psychiatric

illness self-management. An open pilot study of this program indicated high levels of retention and improvement in several areas of physical illness management (Mueser et al. 2012).

First-Episode Psychosis Intervention

Early detection and intervention for psychosis are critical since the greatest psychosocial and clinical declines occur in the first five years after the onset of schizophrenia (Lieberman et al. 2001). In addition to low-dose antipsychotic medication, there are two common psychosocial approaches to treating the first episode of psychosis: single-element interventions, such as cognitive behavior therapy, and multi-element interventions, including components such as community outreach, case management, individual therapy, and family therapy.

Reviews of RCTs of single-element intervention indicate that family psychoeducation is superior to standard care in reducing relapse rates and hospital readmissions (Alvarez-Jimenez et al. 2008, Bird et al. 2010). CBT for psychosis has been shown to be effective at reducing positive and negative symptoms, auditory hallucinations, hopelessness, and improving quality of life, but not at reducing relapses or readmissions (Bird et al. 2010, Morrison 2009).

Multi-element programs for first-episode psychosis are more effective than standard care at improving the broad range of outcomes at one- to two-year follow-up (Alvarez-Jimenez et al. 2008, Bird et al. 2010, Gråwe et al. 2006, Petersen et al. 2005). However, the gains made in these programs may not be sustainable in the long term for most clients (Bosanac et al. 2010), suggesting the need for more extended or more potent interventions (McGorry et al. 2010). Despite the promise of multi-element treatment for early psychosis, there has been no controlled research of such programs in the United States. A recent open clinical trial found that a multi-element program in North Carolina, Outreach and Support Intervention Services, was associated with reductions in psychotic and negative symptoms and improvement in global and role functioning at one year (Uzenoff et al. 2012).

Evidence for the efficacy of multi-element treatment will be forthcoming following the completion of the Early Treatment Program (see <http://raiseetp.org/>), funded by the National Institute of Mental Health Recovery After an Initial Schizophrenia Episode initiative. The Early Treatment Program is comparing the NAVIGATE program for first-episode psychosis with community care in a multisite RCT conducted at 35 sites in 21 states, with randomization at the level of site. The NAVIGATE program includes guideline-based pharmacological treatment, individual and family therapy, and supported employment/education delivered by five-person team.

Healthy Lifestyle Interventions

People with schizophrenia have an average life expectancy that is 20 to 30 years less than that of the general population (Brown et al. 2010). This premature mortality is not due mainly to suicide but rather to high medical comorbidity in individuals with schizophrenia for reasons such as sedentary lifestyle, high rates of smoking and substance abuse, and the metabolic side effects of antipsychotic medication (Scott & Happell 2011). Cardiovascular disease is the single largest medical disorder contributing to the premature mortality in people with schizophrenia (Colton & Manderscheid 2006).

Increased attention has been paid to reducing the cardiovascular risk of individuals with schizophrenia through healthy lifestyle interventions including exercise and improved nutrition. A recent review of 11 RCTs of healthy lifestyle programs provided support for the feasibility of these programs and found modest, though generally not clinically significant, improvements in cardiovascular fitness or weight reduction (Verhaeghe et al. 2011). Limitations of these studies

included the small sample sizes, the short treatment periods, and the lack of follow-up assessments. More work is needed to develop more potent programs for improving healthy lifestyles in people with schizophrenia (Beebe et al. 2011, Van Citters et al. 2010), which may also have modest clinical benefits in mental health functioning (Gorczyński & Faulkner 2010).

Integrated Treatment for Co-occurring Substance Use Disorder

Substance abuse and dependence are common in schizophrenia, with about 50% having a lifetime substance use disorder, compared to only about 15% of the general population (Kessler et al. 1997, Regier et al. 1990). Substance abuse is associated with a wide range of negative outcomes, including relapses and hospitalizations, impaired social functioning, legal problems, family burden, housing instability and homelessness, medical problems, and premature death (Drake & Brunette 1998, Schmidt et al. 2011). Therefore, reducing substance abuse in this population is a high priority.

Historically, mental health clinicians referred their clients with schizophrenia and substance use problems elsewhere for treatment of their substance abuse. Numerous problems were associated with this approach (Polcin 1992), including lack of follow-through on referrals, poor communication between treatment providers working for different agencies, and high rates of dropout from substance abuse treatment (Ridgely et al. 1990). To address these problems, integrated treatment models were developed (Drake et al. 1991, Minkoff 1989), defined as treatment of both disorders at the same time, by the same clinician or team of clinicians (Barrowclough et al. 2010, Bellack et al. 2007, Mueser et al. 2003, Ziedonis et al. 2005). Although integrated programs differ along a variety of parameters, including modality, length and intensity, and location of service, most share several common elements, including minimization of treatment-related stress, motivational enhancement to address substance abuse, cognitive-behavioral strategies to facilitate substance use reduction and abstinence, and the use of harm-reduction methods.

Extensive research has been conducted on integrated treatment. However, the literature has proved challenging to review because of the broad range of programs evaluated, including individual, group, family, and comprehensive interventions, the diagnostic heterogeneity of client samples, differences in treatment setting, and the use of both experimental and quasi-experimental designs. As a consequence, the results of major reviews of research differ, with broader reviews concluding that evidence supports integrated treatment (Drake et al. 2008, Kavanagh & Mueser 2007), but not more restrictive reviews (Cleary et al. 2008).

Group-based programs have been most empirically supported (Mueser et al. 2005). Residential treatment programs have demonstrated beneficial effects, but research designs are primarily limited to quasi-experimental ones (Brunette et al. 2004). RCTs comparing more intensive and outreach-based models for delivering integrated treatment, based on the ACT model, have found minimal benefit over less-intensive, standard case-management delivery approaches (Drake et al. 1998, Essock et al. 2006, Morse et al. 2006). However, the secondary analysis of one RCT suggested that integrated treatment delivered by an ACT team may be more effective than when delivered through standard case management for clients with co-occurring disorders who also have antisocial personality disorder (Frisman et al. 2009).

Interventions Targeting Older Individuals

The population of older individuals with schizophrenia is rapidly growing, with numbers expected to double by 2050 (U.S. Census Bur. 2008). Although symptom severity and functioning tend to improve over the lifespan (Häfner & an der Heiden 2008), many people continue to have poor functioning as they age. Furthermore, impaired psychosocial functioning is associated with

premature nursing home placement in older individuals with serious mental illness (Bartels et al. 2003b). Psychiatric rehabilitation approaches need to be adapted to address the needs of these older individuals, both to improve their functioning and well-being and to facilitate community living over the long term (Pratt et al. 2008).

Several recent efforts to adapt psychosocial interventions for older people with schizophrenia have been conducted. The Helping Older People Experience Success (HOPES) program was developed to improve community and health functioning of clients with serious mental illness (Mueser et al. 2010). HOPES includes one year of weekly social skills training sessions combined with biweekly community trips to practice skills, followed by a maintenance year with declining frequency of sessions and community trips. In addition, a nurse meets with clients regularly to evaluate their health needs, coordinate referrals, and monitor receipt of health services. An RCT comparing the HOPES program to usual services found at two years that the clients who received HOPES had better social skills, improved community functioning and self-care skills, and lower levels of negative symptoms than clients who received usual services (Mueser et al. 2010). A three-year assessment, conducted one year after the treatment program had ended, indicated that these improvements had been sustained (Bartels et al. 2012).

Two RCTs of other programs targeting functional outcomes in older individuals with schizophrenia have reported similar improvements, including cognitive behavioral social skills training (Granholtm et al. 2005) and functional adaptation skills training (Patterson et al. 2006). This research indicates that specially tailored programs can improve the functioning of older people with schizophrenia and have the potential to extend community tenure and even life. More research is needed on interventions for this population, including their longer-term impact on health and community living.

Peer Support Services

Peer support services have become increasingly common in the treatment of serious mental illness (Davidson et al. 2006). These programs differ in the interventions used and in the nature of the relationship between the people participating in the services. However, all peer support programs are based on the rationale that people who have the “lived experience of mental illness” (Deegan 1988) are uniquely qualified to provide support and hope to others grappling with similar challenges. The concept of recovery is central to peer support and shapes both the interventions and goals of peer-based services. Peers focus on helping others become active participants in their own recovery process, breaking out of the passive “mental patient” role, and identifying their personal goals (Mead & Copeland 2000). By becoming involved in the recovery process of others, peers who provide support services model community integration as well as personal autonomy and self-worth.

There is no general consensus about what the goals of peer support should be, although some suggestions include building mutually empowering relationships, strengthening self-advocacy, breaking down social isolation, and improving quality of life (Mead & Copeland 2000). There are also many modes of delivering peer support, including mutual support groups, consumer-run services, and peer support services administered in clinical settings (Davidson et al. 2006). When peer support is provided in the context of other clinical services, peers collaborate with other members of the treatment team and are viewed as members of the professional staff (Daniels et al. 2010).

Several RCTs have been conducted suggesting beneficial effects of peer support and consumer-operated services. One RCT compared a 16-session guided peer support program delivered over eight months to a waitlist control and reported that peer support was associated with greater

improvements in social networks and social support than the waitlist, with greater gains associated with more participation in the program (Castelein et al. 2008). Another RCT compared a peer-led recovery education program, Building Recovery of Individual Dreams and Goals through Education and Support (BRIDGES), delivered over an eight-week period to a waitlist control and found at posttreatment and six-month follow-up that clients in the BRIDGES program reported more improvement in self-perceived recovery and hopefulness (Cook et al. 2012). Yet another RCT found that clients with multiple recent hospitalizations who were assigned a peer mentor were less likely to have a hospitalization over the next nine months than were clients who received usual care (Sledge et al. 2011). Finally, one RCT showed that the two-year outcomes of clients who received consumer-delivered case management were comparable to those delivered by mental health professionals (Solomon & Draine 1995). These findings suggest there may be unique and beneficial effects of peer support services and that peers may be able to deliver some services as effectively as professionals. More research is needed to better understand the impact of peer support on client outcomes as well as its effects on other members of interdisciplinary treatment teams in areas such as attitudes toward mental illness, hope, and optimism.

Prodromal Stage Intervention

Research on the course of schizophrenia indicates the onset of florid psychotic symptoms is usually preceded by a prodromal period lasting between several months and years (Häfner et al. 2003). This has led to an interest in early identification and treatment of at-risk individuals who are in the prodromal stage. Several RCTs have been conducted to evaluate such interventions. A recent meta-analysis examined five RCTs that evaluated (*a*) omega-3 supplementation versus placebo; (*b*) intensive community care (home visits, regular assessments, psychoeducation, social skills training, and substance abuse aid) versus standard care; (*c*) cognitive therapy versus monitoring; (*d*) CBT plus risperidone versus needs-based intervention; and (*e*) olanzapine versus placebo (Preti & Cella 2010). When all the studies were combined, individuals who were randomized to one of the experimental interventions had significantly lower rates of conversion to psychosis at one-year follow-up (11%) than those who received the control condition (31.6%). However, evaluation of the individual studies indicated that this difference was statistically significant for only two of the interventions: omega-3 supplementation and intensive community care.

Two other RCTs, not included in the above meta-analysis, provide some encouragement for the potential benefits of CBT for at-risk individuals. Häfner et al. (2004) studied 123 people in early prodromal stages and found significantly fewer conversions at 16-month follow-up for those receiving CBT (5.3%) than those receiving clinical management (14.8%). In 51 individuals assessed over 18 months, Addington et al. (2011) reported three conversions in the supportive therapy group compared to no conversions in the CBT group, although this difference was not statistically significant. Although time-limited interventions may delay rather than prevent conversion to psychosis, reductions in psychotic and other symptoms may be sustained for longer periods (Addington et al. 2011, Preti & Cella 2010).

Social Cognition Training

Abundant research shows that individuals with schizophrenia have significant impairments compared to the general population in the social cognitive areas of emotion perception, theory of mind (ToM), social perception, and attributional style (Penn et al. 1997). Furthermore, poor social cognition is associated with worse functioning in areas such as quality of social relationships and community living (Couture et al. 2006, Fett et al. 2011).

Social cognitive training programs can be conceptualized as comprising three models: proof of concept, targeted treatments, and broad-based treatments (Horan et al. 2008). Proof-of-concept studies are single-session, laboratory-based treatment probes aimed at improving a specific social cognitive skill, such as emotion perception (e.g., via imitating facial expressions) (Penn & Combs 2000). Targeted treatments focus on a specific domain of social cognition (e.g., emotion perception) and comprise multiple sessions (Fiszdon 2012). Broad-based programs focus on multiple social cognitive processes either alone (e.g., the Social Cognition Training Program; Penn et al. 2007) or in conjunction with cognitive remediation and/or skills training [e.g., integrated psychological treatment (IPT); Roder et al. 2011a,b].

A small but growing body of research supports the efficacy of social cognition training. Two narrative reviews concluded that proof-of-concept studies are associated with improved performance in emotion perception and ToM (Fiszdon 2012, Horan et al. 2008), although many of the studies had methodological limitations (e.g., small sample sizes, outcomes that resembled tasks used in training). A recent meta-analysis of 19 controlled studies comprising 692 participants with schizophrenia found that social cognitive training programs had a medium-large effect on emotion identification ($d = 0.71$) and discrimination ($d = 1.01$), ToM ($d = 0.46$), and community and institutional functioning ($d = 0.78$) (Kurtz & Richardson 2012). There was no impact on attributional style, social perception, or symptoms. Kurtz and Richardson tempered their conclusions by noting that many of the studies had small sample sizes and utilized social cognitive measures that did not have established psychometric properties.

Finally, a meta-analysis summarized the findings for IPT based on 36 studies (21 RCTs) and 1,601 individuals with schizophrenia (Roder et al. 2011a). The results showed that IPT had a moderate impact (d 's = 0.42–0.70) on cognition, social cognition, functioning, and symptoms, which was consistently larger than that for controls. However, IPT provides a combination of social cognition training, cognitive remediation, and social skills training and thus is not a stand-alone social cognitive intervention. In addition, only two studies were published in the United States, so replication within the context of U.S. health care is needed. Thus, the research suggests that social cognitive training programs have promise for improving social cognition and psychosocial functioning.

Supported Education

Increased attention has begun to be paid to improving the educational standing of people with schizophrenia in order to increase their competitiveness in the job market (Rudnick & Gover 2009). Helping clients establish and pursue careers in areas of interest is one approach to giving them something meaningful to do and a sense of purpose. However, one factor related to the low level of jobs most people with schizophrenia obtain is curtailed educational level due to the early age of onset (Kessler et al. 1995a).

Supported education is a broad set of approaches to help clients complete degree or certification requirements for specific professions (Carlson et al. 2003, Unger 1998). Supported education programs are typically situated at a university, serving individuals with a disability who have been admitted there, or at a community mental health center, serving the broader population of people with serious psychiatric disorders. Most research set in mental health centers has been on programs in which supported education was integrated with IPS-supported employment. Two RCTs of such integrated programs for people with a first episode of psychosis have shown significantly greater improvements in both work and school compared to usual services (Killackey et al. 2008, Nuechterlein et al. 2008). Less rigorous research has focused on improving the education level of clients across the broader age range (Gutman 2009).

Supported Housing

Homelessness is a common problem in schizophrenia (Leshner et al. 1992) that is often related to co-occurring substance abuse (Morse et al. 2006). Although the ACT model is effective at reducing homelessness (Bond et al. 2001), the staffing intensity of ACT can make it expensive to deliver, and there is a need for more efficient approaches to the problem. Supported housing is a general approach to helping people with a mental illness establish and maintain stable residences with the ongoing support of mental health professionals (Chilvers et al. 2010). Similar to supported employment and education, supported housing approaches emphasize the importance of helping people who are homeless get housing as soon as possible, and then providing ongoing support as needed.

Several approaches to supported housing have been developed. Critical time intervention (CTI) involves a team of practitioners who work intensively with the homeless person for a six-month period in order to help him/her obtain stable housing. CTI is similar to ACT, except after six months the service reverts to the usual supports to maintain stable housing (Herman et al. 2011). Some controlled research has supported the effectiveness of CTI on improving housing outcomes of homeless individuals, including those with schizophrenia (Herman et al. 2011, Kaspro & Rosenheck 2007).

The housing-first approach prioritizes helping homeless individuals find housing regardless of the nature of any problematic behaviors, such as ongoing substance abuse, and then attending to treatment and other needs (Newman & Goldman 2008). Critical to this approach is the ability to secure subsidized housing for these individuals. Similar to CTI, some controlled research supports the effectiveness of housing-first programs for improving the housing outcomes of homeless individuals, including those with serious mental illness. More research is needed to examine the possible cost offsets and benefits of providing supported housing to homeless individuals (Rosenheck et al. 2003).

SYNTHESIS AND FUTURE DIRECTIONS

What has been learned about the treatment of schizophrenia, and what are the clinical implications of these findings? As can be gleaned from the foregoing, the range of empirically supported psychosocial interventions (and promising practices) differs with respect to their focus and intended clinical population. These interventions can therefore be conceptualized as three broad types that focus on domains of functioning related to schizophrenia (**Table 1**) and those that focus on specific age groups/stage of illness and human service system gaps (**Table 2**). We conclude this review with a discussion of future directions framed by these broad intervention areas.

Treatments Targeting Domains of Functioning

A general trend in psychiatric rehabilitation is that the effects of interventions tend to be specific to the domain they target, with limited impact on other, nontargeted domains (Mueser et al. 1997b). In line with this, most of the psychosocial treatments for schizophrenia are distinguished by their focus on one or more specific domains of functioning related to the disorder. These domains include the core psychopathology (e.g., symptoms, cognitive impairment), psychosocial functioning (e.g., role functioning, social relationships, self-care), and comorbid conditions (e.g., substance abuse, PTSD, physical health conditions). As summarized in **Table 1**, four of the six evidence-based treatments target core psychopathology as well as two of the seven promising practices. In addition, four of the promising practices focus on the treatment of comorbid conditions. Of note, only two established interventions have their primary focus on improving specific areas of

Table 1 Primary domains targeted by psychosocial interventions for schizophrenia

	Core psychopathology		Psychosocial functioning				Comorbid conditions		
	Symptoms/ relapses	Cognitive impair- ment	Overall	Work/ school	Social/ leisure	Self-care	Substance abuse	Trauma/ PTSD	Physical disease
Evidence-based treatments									
CBT for psychosis	X		X						
Cognitive remediation		X							
Family psychoeducation	X		X						
Illness self-management training	X		X						
Social skills training			X		X	X			
Supported employment				X					
Promising practices									
Cognitive adaptive therapy	X					X			
CBT for PTSD								X	
Healthy lifestyle interventions									X
Integrated treatments for co-occurring disorders							X		
Physical disease management									X
Social cognition training		X			X				
Supported education				X					

Abbreviations: CBT, cognitive-behavior therapy; PTSD, posttraumatic stress disorder.

psychosocial functioning (social skills training, supported employment) as well as two promising practices (supported education, CAT), whereas four other approaches target functioning as a secondary focus (CBTp, family psychoeducation, illness self-management training, social cognition training).

Although only a minority of interventions focus primarily on psychosocial functioning, our review suggests that their impact is as strong as or stronger than the effects of other interventions targeting either psychopathology or cognitive functioning. For example, the recent meta-analysis of the effects of supported employment on competitive work found an effect size of $d = 0.77$

Table 2 Primary targets of psychosocial interventions for schizophrenia

	Human service system gap	Stage of illness	Specific age group
Evidence-based treatments			
Assertive community treatment	X		
Promising treatments			
First-episode psychosis intervention		X	
Interventions targeting older individuals			X
Peer support services	X		
Prodromal stage intervention		X	
Supported housing	X		

(Bond et al. 2012), whereas the two meta-analyses of social skills training (Kurtz & Mueser 2008, Pfammatter et al. 2006) reported effect sizes of $d = 0.52$ and 0.39 , respectively. In contrast, the meta-analyses of CBTp and cognitive remediation found effect sizes on psychotic symptoms of $d = 0.37$ (Wykes et al. 2008) and on cognitive functioning of $d = 0.45$ (Wykes et al. 2011), with effect sizes of $d = 0.38$ and 0.42 on psychosocial functioning, respectively.

The clinical implications of these findings are that psychosocial treatments do not need to target either the core psychopathology of schizophrenia or associated comorbidities in order to improve psychosocial functioning in areas such as work, social relationships, or independent living skills. Considering that impaired psychosocial functioning is the primary reason people with schizophrenia require financial and other supports for their disability, and that individuals with the disorder are often more motivated to improve their functioning in these areas than to simply manage their symptoms or avoid relapses and hospitalizations (Bellack 2006, Mead & Copeland 2000, Mueser et al. 2002a), priority should be given to targeting psychosocial outcomes even in symptomatic or cognitive-impaired clients. There is also a need for work developing additional interventions that target psychosocial functioning in the aforementioned areas and addressing specific topics such as parenting, intimate relationships, and healthy lifestyles (e.g., diet, exercise).

Interestingly, there is some evidence that interventions that target core cognitive impairments in schizophrenia may improve the impact of treatments focusing on psychosocial functioning. Meta-analyses of cognitive remediation have found that it only improves psychosocial functioning when it is added to another program that specifically targets such functioning (e.g., supported employment, social skills training; McGurk et al. 2007, Wykes et al. 2011), raising the question of whether interventions that target psychopathology may operate synergistically with those targeting functional outcomes. This hypothesis needs to be investigated for other interventions that focus on other aspects of psychopathology (e.g., symptoms) or comorbid conditions (e.g., co-occurring substance abuse).

Although the primary focus of psychosocial treatment has been on the three broad domains of core psychopathology, comorbid conditions, and functioning, it may be important to broaden the focus to address other areas of life functioning and satisfaction. For example, perceptions of personal agency and self-determination are critical to personal growth (Adler 2012, Ryan & Deci 2000) and could foster improved coping and progress toward personal goals. Similarly, attention

to the cultivation of positive emotions, hope, sense of purpose, and mindfulness, using or adapting methods developed in applications of positive psychology (Linley et al. 2006), could lead to a better quality of life and contribute to better psychosocial functioning and improved management of the disorder.

Interventions for Different Stages of Disorder or Age Groups

The notion that interventions for schizophrenia need to be specifically tailored to the unique needs and circumstances of people at different ages or stages of the disorder has intuitive appeal. Three of the interventions reviewed were aimed at addressing needs based on stage or age. Intervention during the prodrome of schizophrenia is in its infancy, and it is unclear at this time whether it has the potential to reduce the likelihood of a transition into psychosis. Research on the longitudinal course of schizophrenia indicates that decrements in cognitive performance (e.g., school grades) precede the onset of psychotic symptoms by many years (Reichenberg et al. 2010, van Oel et al. 2002), raising the question of whether interventions targeting prodromal symptoms are already too late in the course of the illness to prevent onset.

Research on the treatment of individuals experiencing their first episode of psychosis has suggested beneficial effects of a variety of different interventions, although most studies have examined multicomponent, bundled programs. Many programs targeting the first episode of psychosis have incorporated assertive outreach into the community to engage and retain clients in treatment, have emphasized client goals appropriate to the developmental stage when their illness developed (e.g., school, independent living, close relationships), and have striven to engender a strong sense of hope for the future with both clients and family members (Edwards & McGorry 2002, McGorry et al. 2006). However, the core ingredients of these programs are similar to those provided in more multi-episode populations. Early intervention following the onset of psychosis may be most important in terms of reducing the significant disability following the illness, although it does not appear that time-limited intensive intervention produces lasting benefits if the service intensity is significantly reduced (Bertelsen et al. 2008), in contrast to the “critical period hypothesis” (Birchwood et al. 1998).

Recent work on psychosocial treatment specifically targeting older individuals with schizophrenia also indicates that successful adaptations can be provided in the areas of social skills training and CBTp. Less work has addressed other adaptations that may be needed for this population. However, the recent focus on interventions aimed at improving the management of comorbid physical diseases (Druss et al. 2010a, Mueser et al. 2012) has clear relevance for older individuals, given that medical comorbidity is a major contributing factor to institutionalization and high-cost care in this population (Bartels et al. 2003a).

Human Service System Gaps

Some of the interventions reviewed here are aimed at addressing gaps in human services, including the mental health system (**Table 2**). The ACT model was specifically developed to address the problem in the early years of deinstitutionalization of former state hospital clients who were living in the community but failed to access local mental health services and were prone to frequent hospitalizations (Stein & Santos 1998). Bringing treatment directly to clients in their natural living settings (e.g., homes, parks, restaurants) and providing practical assistance as needed was effective at preventing relapses and stabilizing housing in the community. However, ACT was developed to address a subgroup of clients in the U.S. mental health system, and ACT has not been found to produce similar benefits in the British mental health system (Molodynski & Burns 2011).

Similarly, approaches to reducing homelessness and stabilizing housing in people with schizophrenia involve the provision of practical supports to compensate for limitations in the “safety nets” in many societies that protect disabled and other indigent people from the consequences of poor social supports and inability to sustain independent living. Interventions that address these needs are important to ensuring a basic quality of life for individuals with schizophrenia. However, these programs are driven by problems in human service systems and are not especially informative about the nature and treatment of schizophrenia.

Peer support services for people with a major mental illness have become an increasingly common service, and yet the impact of these services on client outcomes remains largely unknown (Davidson et al. 2012). Interest in peer support and the proliferation of programs is tied to the recovery movement and the vocal rejection by mental health consumers of traditional treatment approaches that failed to attend to their own preferences or to even actively involve them in their own treatment. The demand, “Nothing about us without us!” (Chamberlin 1978) summarizes the insistence of consumers that mental health service planning and implementation be conducted collaboratively, including consumers as both recipients of services and as service providers. Thus, the involvement of consumers as providers of peer support services has emerged as one approach to addressing the pessimistic viewpoints of mental health professionals on the long-term outlook of serious mental illness, their failure to attend clients’ personal needs and desires, and their exclusion of clients from treatment decision making. Peer support services may provide a remedy for the disempowering and marginalizing nature of traditional mental health services and give voice to the consumer’s perspective on mental illness. A fuller understanding of the effects of peer support requires evaluation of its impact on clients as well as its effects on professional service providers in areas such as attitudes about mental illness, collaboration, and hopefulness.

CONCLUSIONS

Substantial progress has been made in establishing empirically supported psychosocial interventions for schizophrenia. These interventions have been shown to improve a broad range of outcomes related to different dimensions of psychosocial functioning (e.g., work, social relationships, independent living skills), psychopathology (e.g., psychotic symptoms, relapses, and hospitalizations), and associated impairments (e.g., cognitive functioning). Promising practices may supplement or even enhance these evidence-based treatments, with the ultimate goal of helping individuals with schizophrenia achieve their highest quality of life possible and recover from this illness.

There is also exciting progress in treating individuals at clinical high risk to develop psychosis (i.e., those in the prodromal stage) and early in the course of the illness. This is consistent with the view of serious mental illnesses as being “developmental brain disorders,” such that intervention early may potentially stave off the chronic course of the disorder (Insel 2009). However, the challenge for these types of treatments, as well as evidence-based ones, is accessibility; many promising and established treatments are just not available in typical outpatient mental health settings. Some, such as specialized first-episode treatment programs, may require a reconfiguring of mental health services, both in provision and reimbursement. Others, such as CBTp, have not been readily disseminated in the United States (Mueser & Noordsy 2005), rendering them more of a “boutique” than standard intervention for psychosis. Thus, one can argue that dissemination is perhaps the greatest need in future work on psychosocial treatment for schizophrenia (Drake et al. 2009). This translation of services from research to the field may be the most important factor in improving the outcome of schizophrenia in the future.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

LITERATURE CITED

- Addington J, Epstein I, Liu L, French P, Boydell KM, Zipursky RB. 2011. A randomized controlled trial of cognitive behavioral therapy for individuals at clinical high risk of psychosis. *Schizophr. Res.* 125:54–61
- Addington J, Piskulic D, Marshall C. 2010. Psychosocial treatments for schizophrenia. *Curr. Dir. Psychol. Sci.* 19:260–63
- Adler JM. 2012. Living into the story: agency and coherence in a longitudinal study of narrative identity development and mental health over the course of psychotherapy. *J. Personal. Soc. Psychol.* 102:367–89
- Almeida OP, Howard RJ, Levy R, David AS. 1995. Psychotic states arising in late life (late paraphrenia): psychopathology and nosology. *Br. J. Psychiatry* 166:205–14
- Alvarez-Jimenez M, Hetrick SE, Gonzalez-Blanch C, Gleeson JF, McGorry PD. 2008. Non-pharmacological management of antipsychotic-induced weight gain: systematic review and meta-analysis of randomised controlled trials. *Br. J. Psychiatry* 193:101–7
- Anderson CM, Reiss DJ, Hogarty GE. 1986. *Schizophrenia and the Family*. New York: Guilford
- Anthony W, Cohen M, Farkas M, Gagne C. 2002. *Psychiatric Rehabilitation*. Boston, MA: Boston Univ. Cent. Psychiatr. Rehabil. 2nd ed.
- Anthony WA. 1993. Recovery from mental illness: the guiding vision of the mental health service system in the 1990s. *Psychosoc. Rehabil. J.* 16:11–23
- Applebaum PS. 1994. *Almost a Revolution: Mental Health Law and the Limits of Change*. New York: Oxford Univ. Press
- Ayllon T, Azrin N. 1968. *The Token Economy: A Motivational System for Therapy and Rehabilitation*. New York: Appleton-Century-Crofts
- Barrowclough C, Haddock G, Wykes W, Beardmore R, Conrod P, et al. 2010. Integrated motivational interviewing and cognitive behavioural therapy for people with psychosis and comorbid substance misuse: randomised controlled trial. *Br. Med. J.* 341:c6325
- Barrowclough C, Tarrrier N. 1992. *Families of Schizophrenic Patients: Cognitive Behavioural Intervention*. London: Chapman & Hall
- Bartels SJ, Clark RE, Peacock WJ, Dums AR, Pratt SI. 2003a. Medicare and Medicaid costs for schizophrenia patients by age cohort compared with depression, dementia, and medically ill patients. *Am. J. Geriatr. Psychiatry* 11:648–57
- Bartels SJ, Levine KJ, Miles KM, Gagnon TA. 2003b. Are nursing homes appropriate for older adults with severe mental illness? Conflicting consumer and clinician views and implications for the Olmstead Decision. *J. Am. Geriatr. Soc.* 51:1571–79
- Bartels SJ, Pratt SI, Mueser KT, Forester BP, Cather C, et al. 2012. Three-year outcomes of integrated skills training and health management for older adults with serious mental illness: the HOPES study. *Am. J. Geriatr. Psychiatry*. 38:1092–104
- Beck AT. 1952. Successful outpatient psychotherapy with a schizophrenic with a delusion based on borrowed guilt. *Psychiatry* 15:305–12
- Becker DR, Drake RE. 2003. *A Working Life for People with Severe Mental Illness*. New York: Oxford Univ. Press
- Beebe LH, Smith K, Burk R, McIntyre K, Dessieux O, et al. 2011. Effect of a motivational intervention on exercise behavior in persons with schizophrenia spectrum disorders. *Community Ment. Health J.* 47:628–36
- Bellack AS. 2006. Scientific and consumer models of recovery in schizophrenia: concordance, contrasts, and implications. *Schizophr. Bull.* 32:432–42
- Bellack AS, Bennett ME, Gearon JS. 2007. *Behavioral Treatment for Substance Abuse in People with Serious and Persistent Mental Illness: A Handbook for Mental Health Professionals*. New York: Taylor & Francis
- Bellack AS, Mueser KT, Gingerich S, Agresta J. 2004. *Social Skills Training for Schizophrenia: A Step-by-Step Guide*. New York: Guilford

- Bertelsen M, Jeppesen P, Petersen L, Thorup A, Øhlenschlaeger J, et al. 2008. Five-year follow-up of a randomized multicenter trial of intensive early intervention versus standard treatment for patients with a first episode of psychotic illness: the OPUS trial. *Arch. Gen. Psychiatry* 65:762–71
- Birchwood M, Todd P, Jackson C. 1998. Early intervention in psychosis: the critical period hypothesis. *Br. J. Psychiatry* 172(Suppl. 33):53–59
- Bird V, Premkumar P, Kendall T, Whittington C, Mitchell J, Kuipers E. 2010. Early intervention services, cognitive-behavioural therapy and family intervention in early psychosis: systematic review. *Br. J. Psychiatry* 197:350–56
- Bisson JI, Andrew M. 2007. Psychological treatment of post-traumatic stress disorder (PTSD). *Cochrane Database Syst. Rev.* 18(3):CD003388
- Bond GR. 1992. Vocational rehabilitation. In *Handbook of Psychiatric Rehabilitation*, ed. RP Liberman, pp. 244–75. New York: MacMillan
- Bond GR, Drake RE, Becker DR. 2008. An update on randomized controlled trials of evidence-based supported employment. *Psychiatr. Rehabil. J.* 31:280–90
- Bond GR, Drake RE, Becker DR. 2012. Generalizability of the Individual Placement and Support (IPS) model of supported employment outside the US. *World Psychiatry* 11:32–39
- Bond GR, Drake RE, Mueser KT, Latimer E. 2001. Assertive community treatment for people with severe mental illness: critical ingredients and impact on clients. *Dis. Manag. Health Outcomes* 9:141–59
- Bosanac P, Patton GC, Castle DJ. 2010. Early intervention in psychotic disorders: faith before facts? *Psychol. Med.* 40:353–58
- Brown S, Kim M, Mitchell C, Inskip H. 2010. Twenty-five year mortality of a community cohort with schizophrenia. *Br. J. Psychiatry* 196:116–21
- Brunette MF, Mueser KT, Drake RE. 2004. A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders. *Drug Alcohol Rev.* 23:471–81
- Carling PJ. 1995. *Return to Community: Building Support Systems for People with Psychiatric Disabilities*. New York: Guilford
- Carlson L, Eichler MS, Huff S, Rapp CA. 2003. *A Tale of Two Cities: Best Practices in Supported Education*. Lawrence: Univ. Kans. Sch. Soc. Welf.
- Castelein S, Bruggemans R, van Busschbach JT, van der Gaag M, Stant AD, et al. 2008. The effectiveness of peer support groups in psychosis: a randomized controlled trial. *Acta Psychiatr. Scand.* 118:64–72
- Chamberlin J. 1978. *On Our Own: Patient-Controlled Alternatives to the Mental Health System*. New York: Hawthorne
- Chilvers R, Macdonald GM, Hayes AA. 2010. Supported housing of people with severe mental disorders. *Cochrane Database Syst. Rev.* 12:1–12
- Chwastiak LA, Rosenheck RA, McEvoy JP, Keefe RS, Swartz MS, Lieberman JA. 2006. Interrelationships of psychiatric symptom severity, medical comorbidity, and functioning in schizophrenia. *Psychiatr. Serv.* 57:1102–9
- Cleary M, Hunt G, Matheson S, Siegfried N, Walter G. 2008. Psychosocial interventions for people with both severe mental illness and substance misuse. *Cochrane Database Syst. Rev.* 1:CD001088
- Cohen AN, Glynn SM, Murray-Swank AB, Barrio C, Fischer EP, et al. 2008. The family forum: directions for the implementation of family psychoeducation for severe mental illness. *Psychiatr. Serv.* 59:40–48
- Colton CW, Manderscheid RW. 2006. Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Prev. Chronic Dis.* 3:A42
- Cook JA, Copeland ME, Jonikas JA, Hamilton MM, Razzano LA, et al. 2012. Results of a randomized controlled trial of mental illness self-management using Wellness Recovery Action Planning. *Schizophr. Bull.* 38:881–91
- Cook JA, Steigman P, Pickett S, Diehl S, Fox A, et al. 2012. Randomized controlled trial of peer-led recovery education using Building Recovery of Individual Dreams and Goals Through Education and Support (BRIDGES). *Schizophr. Res.* 136:36–42
- Corrigan PW, Mueser KT, Bond GR, Drake RE, Solomon P. 2008. *The Principles and Practice of Psychiatric Rehabilitation: An Empirical Approach*. New York: Guilford
- Couture SM, Penn DL, Roberts DL. 2006. The functional significance of social cognition in schizophrenia: a review. *Schizophr. Bull.* 32:S44–63

- Daniels A, Grant E, Filson B, Powell I, Fricks L, Goodale L. 2010. *Pillars of Peer Support: Transforming Mental Health Systems of Care Through Peer Support Services*. Atlanta, GA: Carter Cent.
- Davidson L, Bellamy C, Guy K, Miller R. 2012. Peer support among persons with severe mental illnesses: a review of evidence and experience. *World Psychiatry* 11:123–28
- Davidson L, Chinman M, Sells D, Rowe M. 2006. Peer support among adults with serious mental illness: a report from the field. *Schizophr. Bull.* 32:443–50
- Deegan PE. 1988. Recovery: the lived experience of rehabilitation. *Psychosoc. Rehabil. J.* 11:11–19
- Deegan PE. 1996. Recovery as a journey of the heart. *Psychosoc. Rehabil. J.* 19:91–97
- Drake RE, Antosca LM, Noordsy DL, Bartels SJ, Osher FC. 1991. New Hampshire's specialized services for the dually diagnosed. In *Dual Diagnosis of Major Mental Illness and Substance Disorder*, ed. K Minkoff, RE Drake, pp. 57–67. San Francisco, CA: Jossey-Bass
- Drake RE, Brunette MF. 1998. Complications of severe mental illness related to alcohol and other drug use disorders. In *Recent Developments in Alcoholism: Consequences of Alcoholism*, ed. M Galanter, pp. 285–99. New York: Plenum
- Drake RE, Essock SM, Bond GR. 2009. Implementing evidence-based practices for the treatment of schizophrenia patients. *Schizophr. Bull.* 35:704–13
- Drake RE, McHugo GJ, Clark RE, Teague GB, Xie H, et al. 1998. Assertive community treatment for patients with co-occurring severe mental illness and substance use disorder: a clinical trial. *Am. J. Orthopsychiatry* 68:201–15
- Drake RE, O'Neal E, Wallach MA. 2008. A systematic review of psychosocial interventions for people with co-occurring severe mental and substance use disorders. *J. Subst. Abuse Treat.* 34:123–38
- Drake RE, Rosenberg SD, Teague GB, Bartels SJ, Torrey WC. 2003. Fundamental principles of evidence-based medicine applied to mental health care. *Psychiatr. Clin. N. Am.* 26:811–20
- Druss BG, Bradford WD, Rosenheck RA, Radford MJ, Krumholz HM. 2001. Quality of medical care and excess mortality in older patients with mental disorders. *Arch. Gen. Psychiatry* 58:565–72
- Druss BG, von Esenwein SA, Compton MT, Rask KJ, Zhao L, Parker RM. 2010a. A randomized trial of medical care management for community mental health settings: the Primary Care Access, Referral, and Evaluation (PCARE) study. *Am. J. Psychiatry* 167:151–59
- Druss BG, Zhao L, von Esenwein SA, Bona JR, Fricks L, et al. 2010b. The Health and Recovery Peer (HARP) program: a peer-led intervention to improve medical self-management for persons with serious mental illness. *Schizophr. Res.* 118:264–70
- Edwards J, McGorry PD. 2002. *Implementing Early Intervention in Psychosis: A Guide to Establishing Early Psychosis Services*. London: Martin Dunitz
- Essock SM, Mueser KT, Drake RE, Covell NH, McHugo GJ, et al. 2006. Comparison of ACT and standard case management for delivering integrated treatment for co-occurring disorders. *Psychiatr. Serv.* 57:185–96
- Falloon IRH, Boyd JL, McGill CW. 1984. *Family Care of Schizophrenia: A Problem-Solving Approach to the Treatment of Mental Illness*. New York: Guilford
- Färdig R, Lewander T, Fredriksson A, Melin L. 2011. Evaluation of the Illness Management and Recovery Scale in schizophrenia and schizoaffective disorder. *Schizophr. Res.* 132:157–64
- Farkas M. 2007. The vision of recovery today: what it is and what it means for services. *World Psychiatry* 6:4–10
- Fett AK, Viechtbauer W, Dominguez MD, Penn DL, van Os J, Krabbendam L. 2011. The relationship between neurocognition and social cognition with functional outcomes in schizophrenia: a meta-analysis. *Neurosci. Biobehav. Rev.* 35:573–88
- Fisher DB. 1992. Humanizing the recovery process. *Resources* 4:5–6
- Fiszdon JM. 2012. Introduction to social cognitive treatment approaches for schizophrenia. In *Social Cognition in Schizophrenia: From Evidence to Treatment*, ed. DL Roberts, DL Penn, pp. 285–310. New York: Oxford Univ. Press
- Fowler D, Garety P, Kuipers E. 1995. *Cognitive Behaviour Therapy for Psychosis: Theory and Practice*. Chichester, UK: Wiley
- Frisman LK, Mueser KT, Covell NH, Lin H-J, Crocker A, et al. 2009. Use of integrated dual disorder treatment via assertive community treatment versus clinical case management for persons with co-occurring disorders and antisocial personality disorder. *J. Nerv. Ment. Dis.* 197:822–28

- Frueh BC, Buckley TC, Cusack KJ, Kimble MO, Grubaugh AL, et al. 2004. Cognitive-behavioral treatment for PTSD among people with severe mental illness: a proposed treatment model. *J. Psychiatr. Pract.* 10:26–38
- Gingerich S, Mueser KT. 2011. *Illness Management and Recovery: Personalized Skills and Strategies for Those with Mental Illness*. Center City, MN: Hazelden
- Glynn SM, Marder SR, Liberman RP, Blair K, Wirshing WC, et al. 2002. Supplementing clinic-based skills training with manual-based community support sessions: effects on social adjustment of patients with schizophrenia. *Am. J. Psychiatry* 159:829–37
- Gorzynski P, Faulkner G. 2010. Exercise therapy for schizophrenia. *Schizophr. Bull.* 36:665–66
- Granholt E, Ben-Zeev D, Link PC. 2009. Social disinterest attitudes and group cognitive-behavioral social skills training for functional disability in schizophrenia. *Schizophr. Bull.* 35:874–83
- Granholt E, McQuaid JR, McClure FS, Auslander LA, Perivoliotis D, et al. 2005. A randomized, controlled trial of cognitive behavioral social skills training for middle-aged and older outpatients with chronic schizophrenia. *Am. J. Psychiatry* 162:520–29
- Gråwe RW, Falloon IR, Widen JH, Skogvoll E. 2006. Two years of continued early treatment for recent-onset schizophrenia: a randomised controlled study. *Acta Psychiatr. Scand.* 114:328–36
- Green MF. 1996. What are the functional consequences of neurocognitive deficits in schizophrenia? *Am. J. Psychiatry* 153:321–30
- Green MF. 2006. Cognitive impairment and functional outcome in schizophrenia and bipolar disorder. *J. Clin. Psychiatry* 67(Suppl. 9):3–8
- Grubaugh AL, Zinzow HM, Paul L, Egede LE, Frueh BC. 2011. Trauma exposure and posttraumatic stress disorder in adults with severe mental illness: a critical review. *Clin. Psychol. Rev.* 31:883–99
- Gutman SA, Kerner R, Zombek I, Dulek J, Ramsey CA. 2009. Supported education for adults with psychiatric disabilities: effectiveness of an occupational therapy program. *Am. J. Occup. Ther.* 63:245–54
- Häfner H, an der Heiden W. 2008. Course and outcome. In *Clinical Handbook of Schizophrenia*, ed. KT Mueser, DV Jeste, pp. 100–13. New York: Guilford
- Häfner H, Maurer K, Löffler W, an der Heiden W, Hambrecht M, Schultze-Lutter F. 2003. Modeling the early course of schizophrenia. *Schizophr. Bull.* 29:325–40
- Häfner H, Maurer K, Ruhrmann S, Bechdolf A, Klosterkötter J, et al. 2004. Early detection and secondary prevention of psychosis: facts and visions. *Eur. Arch. Psychiatry Clin. Neurosci.* 254:117–28
- Harrison G, Hopper K, Craig T, Laska E, Siegel C, et al. 2001. Recovery from psychotic illness: A 15- and 25-year international follow-up study. *Br. J. Psychiatry* 178:506–17
- Hasson-Ohayon I, Roe D, Kravetz S. 2007. A randomized controlled trial of the effectiveness of the illness management and recovery program. *Psychiatr. Serv.* 58:1461–66
- Heaton R, Paulsen JS, McAdams LA, Kuck J, Zisook S, et al. 1994. Neuropsychological deficits in schizophrenics: relationship to age, chronicity, and dementia. *Arch. Gen. Psychiatry* 51:469–76
- Herman DB, Conover S, Gorroochurn P, Hinterland K, Hoepner L, Susser ES. 2011. Randomized trial of critical time intervention to prevent homelessness after hospital discharge. *Psychiatr. Serv.* 62:713–19
- Herz MI. 1984. Recognizing and preventing relapse in patients with schizophrenia. *Hosp. Community Psychiatry* 35:344–49
- Hogarty GE. 2002. *Personal Therapy for Schizophrenia and Related Disorders: A Guide to Individualized Treatment*. New York: Guilford
- Hogarty GE, Flesher S, Ulrich RF, Carter M, Greenwald D, et al. 2004. Cognitive enhancement therapy for schizophrenia: effects of a 2-year randomized trial on cognition and behavior. *Arch. Gen. Psychiatry* 61:866–76
- Hogarty GE, Greenwald D, Ulrich RF, Kornblith SJ, DiBarry AL, et al. 1997. Three-year trials of personal therapy among schizophrenic patients living with or independent of family, II: effects of adjustment on patients. *Am. J. Psychiatry* 154:1514–24
- Hooley JM. 2007. Expressed emotion and relapse of psychopathology. *Annu. Rev. Clin. Psychol.* 3:329–52
- Horan WP, Kern RS, Green MF, Penn DL. 2008. Social cognition training for individuals with schizophrenia: emerging evidence. *Am. J. Psychiatr. Rehabil.* 11:205–52
- Insel TR. 2009. Translating scientific opportunity into public health impact. *Arch. Gen. Psychiatry* 66:128–33

- Inskip HM, Harris EC, Barraclough C. 1998. Lifetime risk of suicide for alcoholism, affective disorder and schizophrenia. *Br. J. Psychiatry* 172:35–37
- Jablensky A. 1997. The 100-year epidemiology of schizophrenia. *Schizophr. Res.* 28:111–25
- Jennings AF. 1994. On being invisible in the mental health system. *J. Ment. Health Adm.* 21:374–87
- Johnson AB. 1990. *Out of Bedlam: The Truth About Deinstitutionalization*. New York: Basic Books
- Jones C, Hacker D, Cormac I, Meaden A, Irving CB. 2012. Cognitive behaviour therapy versus other psychosocial treatments for schizophrenia. *Cochrane Database Syst. Rev.* 4:CD008712
- Karp DR. 2001. *The Burden of Sympathy: How Families Cope with Mental Illness*. New York: Oxford Univ. Press
- Kaspro WJ, Rosenheck RA. 2007. Outcomes of Critical Time Intervention case management of homeless veterans after psychiatric hospitalization. *Psychiatr. Serv.* 58:929–35
- Kavanagh DJ, Mueser KT. 2007. Current evidence on integrated treatment for serious mental disorder and substance misuse. *J. Nor. Psychol. Assoc.* 5:618–37
- Kessler RC, Crum RM, Warner LA, Nelson CB, Schulenberg J, Anthony JC. 1997. Lifetime co-occurrence of DSM-III-R alcohol abuse and dependence with other psychiatric disorders in the National Comorbidity Survey. *Arch. Gen. Psychiatry* 54:313–21
- Kessler RC, Foster CL, Saunders WB, Stang PE. 1995a. Social consequences of psychiatric disorders, I: educational attainment. *Am. J. Psychiatry* 152:1026–32
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. 1995b. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch. Gen. Psychiatry* 52:1048–60
- Killackey E, Jackson HJ, McGorry PD. 2008. Vocational intervention in first-episode psychosis: a randomised controlled trial of individual placement and support versus treatment as usual. *Br. J. Psychiatry* 193:114–20
- Kingdon D. 2010. Over-simplification and exclusion of non-conforming studies can demonstrate absence of effect: a lynching party? *Psychol. Med.* 40:25–27
- Kopelowicz A, Liberman RP. 1994. Self-management approaches for seriously mentally ill persons. *Dir. Psychiatry* 14:1–7
- Kopelowicz A, Wallace CJ, Zarate R. 1998. Teaching psychiatric inpatients to re-enter the community: a brief method of improving the continuity of care. *Psychiatr. Serv.* 49:1313–16
- Krabbendam L, Aleman A. 2003. Cognitive rehabilitation in schizophrenia: a quantitative analysis of controlled studies. *Psychopharmacology* 169:376–82
- Kraepelin E. 1919/1971. *Dementia Praecox and Paraphrenia*. New York: Krieger
- Kuipers L, Leff J, Lam D. 2002. *Family Work for Schizophrenia: A Practical Guide*. London: Gaskell
- Kurtz MM, Mueser KT. 2008. A meta-analysis of controlled research on social skills training for schizophrenia. *J. Consult. Clin. Psychol.* 76:491–504
- Kurtz MM, Richardson CL. 2012. Social cognitive training for schizophrenia: a meta-analytic investigation of controlled research. *Schizophr. Bull.* 38:1092–104
- Latimer E. 1999. Economic impacts of assertive community treatment: a review of the literature. *Can. J. Psychiatry* 44:443–54
- Leete E. 1989. How I perceive and manage my illness. *Schizophr. Bull.* 15:197–200
- Leshner AI, Archer L, Britten G, Carlile P, Davis R, et al. 1992. *Outcasts on Main Street*. Rep. NIMH Fed. Task Force Homelessness Severe Ment. Illn. Rockville, MD: U.S. Dep. Health Hum. Serv. Subst. Abuse Ment. Health Admin.
- Levitt A, Mueser KT, DeGenova J, Lorenzo J, Bradford-Watt D, et al. 2009. A randomized controlled trial of illness management and recovery in multi-unit supported housing. *Psychiatr. Serv.* 60:1629–36
- Liberman RP, Mueser KT, Wallace CJ, Jacobs HE, Eckman T, Massel HK. 1986. Training skills in the psychiatrically disabled: learning coping and competence. *Schizophr. Bull.* 12:631–47
- Liddle PF. 1987. Schizophrenic syndromes, cognitive performance and neurological dysfunction. *Psychol. Med.* 17:49–57
- Lieberman JA, Perkins D, Belger A, Chakos M, Jarskog F, et al. 2001. The early stages of schizophrenia: speculations on pathogenesis, pathophysiology, and therapeutic approaches. *Biol. Psychiatry* 50:884–97
- Lieberman JA, Stroup TS, McEvoy JP, Swartz MS, Rosenheck RA, et al. 2005. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *N. Engl. J. Med.* 353:1209–23
- Lincoln TM, Wilhelm K, Nestoriuc Y. 2007. Effectiveness of psychoeducation for relapse, symptoms, knowledge, adherence and functioning in psychotic disorders: a meta-analysis. *Schizophr. Res.* 96:232–45

- Lindenmayer J-P. 2000. Treatment refractory schizophrenia. *Psychiatr. Q.* 71:373–84
- Linley PA, Joseph S, Harrington S, Wood AM. 2006. Positive psychology: past, present, and (possible) future. *J. Posit. Psychol.* 1:3–16
- Lorig K, Ritter PL, Plant K. 2005. A disease-specific self-help program compared with a generalized chronic disease self-help program for arthritis patients. *Arthritis Rheum.* 53:950–53
- Lu W, Fite R, Kim E, Hyer L, Yanos PT, et al. 2009. Cognitive-behavioral treatment of PTSD in severe mental illness: pilot study replication in an ethnically diverse population. *Am. J. Psychiatr. Rehabil.* 12:73–91
- Lynch D, Laws KR, McKenna PJ. 2010. Cognitive behavioural therapy for major psychiatric disorder: Does it really work? A meta-analytical review of well-controlled trials. *Psychol. Med.* 40:9–24
- Lysaker PH, Larocco VA. 2008. The prevalence and correlates of trauma-related symptoms in schizophrenia spectrum disorder. *Compr. Psychiatry* 49:330–34
- Marwaha S, Johnson S. 2004. Schizophrenia and employment: a review. *Soc. Psychiatry Psychiatr. Epidemiol.* 39:337–49
- McFarlane WR. 2002. *Multifamily Groups in the Treatment of Severe Psychiatric Disorders*. New York: Guilford
- McGorry PD, Hickie IB, Yung AR, Pantelis C, Jackson HJ. 2006. Clinical staging of psychiatric disorders: a heuristic framework for choosing earlier, safer and more effective interventions. *Aust. N. Z. J. Psychiatry* 40:616–22
- McGorry PD, Nelson B, Goldstone S, Yung AR. 2010. Clinical staging: a heuristic and practical strategy for new research and better health and social outcomes for psychotic and related mood disorders. *Can. J. Psychiatry* 55:486–97
- McGrath JJ, Richards LJ. 2009. Why schizophrenia epidemiology needs neurobiology—and vice versa. *Schizophr. Bull.* 35:577–81
- McGurk SR, Mueser KT. 2004. Cognitive functioning, symptoms, and work in supported employment: a review and heuristic model. *Schizophr. Res.* 70:147–74
- McGurk SR, Mueser KT, Pascaris A. 2005. Cognitive training and supported employment for persons with severe mental illness: one-year results from a randomized controlled trial. *Schizophr. Bull.* 31:898–909
- McGurk SR, Twamley EW, Sitzler DI, McHugo GJ, Mueser KT. 2007. A meta-analysis of cognitive remediation in schizophrenia. *Am. J. Psychiatry* 164:1791–802
- Mead S, Copeland ME. 2000. What recovery means to us: consumers' perspectives. *Community Ment. Health J.* 36:315–28
- Minkoff K. 1989. An integrated treatment model for dual diagnosis of psychosis and addiction. *Hosp. Community Psychiatry* 40:1031–36
- Moher D, Cook CJ, Eastwood S, Olkin I, Rennie D, et al. 1999. Improving the quality of reports of meta-analyses of randomised controlled trials: the QUOROM statement. *Lancet* 354:1896–900
- Molodynski A, Burns T. 2011. What does research tell us about assertive community treatment? In *Assertive Outreach in Mental Healthcare: Current Perspectives*, ed. CA Williams, M Firth, S Wharne, R MacPherson, pp. 1–14. West Sussex, UK: Wiley-Blackwell
- Monroe-DeVita M, Teague GB, Moser LL. 2011. The TMACT: a new tool for measuring fidelity to assertive community treatment. *J. Am. Nurses Assoc.* 17:17–29
- Morrison AP. 2009. Cognitive behaviour therapy for first episode psychosis: good for nothing or fit for purpose? *Psychosis* 1:103–12
- Morrison AP, Renton JC, Dunn H, Williams S, Bentall RP. 2004. *Cognitive Therapy for Psychosis: A Formulation-Based Approach*. New York: Brunner-Routledge
- Morse GA, Calsyn RJ, Klinkenberg DW, Helminiak TW, Wolff N, et al. 2006. Treating homeless clients with severe mental illness and substance use disorders: costs and outcomes. *Community Ment. Health J.* 42:377–404
- Mueser KT, Bartels SJ, Santos M, Pratt SI, Riera EG. 2012. Integrated Illness Management and Recovery: a program for integrating physical and psychiatric illness self-management in older persons with severe mental illness. *Am. J. Psychiatr. Rehabil.* 15:131–56
- Mueser KT, Becker DR, Torrey WC, Xie H, Bond GR, et al. 1997a. Work and nonvocational domains of functioning in persons with severe mental illness: a longitudinal analysis. *J. Nerv. Ment. Dis.* 185:419–26
- Mueser KT, Bellack AS. 1998. Social skills and social functioning. In *Handbook of Social Functioning in Schizophrenia*, ed. KT Mueser, N Tarrrier, pp. 79–96. Needham Heights, MA: Allyn & Bacon

- Mueser KT, Bellack AS, Douglas MS, Wade JH. 1991. Prediction of social skill acquisition in schizophrenic and major affective disorder patients from memory and symptomatology. *Psychiatry Res.* 37:281–96
- Mueser KT, Bellack AS, Wade JH, Sayers SL, Rosenthal CK. 1992. An assessment of the educational needs of chronic psychiatric patients and their relatives. *Br. J. Psychiatry* 160:674–80
- Mueser KT, Bolton EE, Carty PC, Bradley MJ, Ahlgren KF, et al. 2007. The trauma recovery group: a cognitive-behavioral program for PTSD in persons with severe mental illness. *Community Ment. Health J.* 43:281–304
- Mueser KT, Bond GR, Drake RE, Resnick SG. 1998. Models of community care for severe mental illness: a review of research on case management. *Schizophr. Bull.* 24:37–74
- Mueser KT, Corrigan PW, Hilton D, Tanzman B, Schaub A, et al. 2002a. Illness management and recovery for severe mental illness: a review of the research. *Psychiatr. Serv.* 53:1272–84
- Mueser KT, Drake RE, Bond GR. 1997b. Recent advances in psychiatric rehabilitation for patients with severe mental illness. *Harv. Rev. Psychiatry* 5:123–37
- Mueser KT, Drake RE, Sigmon SC, Brunette MF. 2005. Psychosocial interventions for adults with severe mental illnesses and co-occurring substance use disorders: a review of specific interventions. *J. Dual Diagn.* 1:57–82
- Mueser KT, Gingerich S. 2011. Relapse prevention and recovery in patients with psychosis: the role of psychiatric rehabilitation. *Psychiatr. Times* 28:66–71
- Mueser KT, McGurk SR. 2004. Schizophrenia. *Lancet* 363:263–72
- Mueser KT, Noordsy DL. 2005. Cognitive behavior therapy for psychosis: a call to action. *Clin. Psychol. Sci. Pract.* 12:68–71
- Mueser KT, Noordsy DL, Drake RE, Fox L. 2003. *Integrated Treatment for Dual Disorders: A Guide to Effective Practice*. New York: Guilford
- Mueser KT, Pratt SI, Bartels SJ, Swain K, Forester B, et al. 2010. Randomized trial of social rehabilitation and integrated health care for older people with severe mental illness. *J. Consult. Clin. Psychol.* 78:561–74
- Mueser KT, Rosenberg SD, Goodman LA, Trumbetta SL. 2002b. Trauma, PTSD, and the course of schizophrenia: an interactive model. *Schizophr. Res.* 53:123–43
- Mueser KT, Rosenberg SD, Rosenberg HJ. 2009. *Treatment of Posttraumatic Stress Disorder in Special Populations: A Cognitive Restructuring Program*. Washington, DC: Am. Psychol. Assoc.
- Mueser KT, Rosenberg SR, Xie H, Jankowski MK, Bolton EE, et al. 2008. A randomized controlled trial of cognitive-behavioral treatment of posttraumatic stress disorder in severe mental illness. *J. Consult. Clin. Psychol.* 76:259–71
- Mueser KT, Salyers MP, Mueser PR. 2001. A prospective analysis of work in schizophrenia. *Schizophr. Bull.* 27:281–96
- Newman CF, Goldman H. 2008. Putting housing first, making housing last: housing policy for persons with severe mental illness. *Am. J. Psychiatry* 165:1248–42
- Newman S, Steed L, Mulligan K. 2004. Self-management interventions for chronic illness. *Lancet* 364:1523–37
- Nuechterlein KH, Dawson ME. 1984. A heuristic vulnerability/stress model of schizophrenic episodes. *Schizophr. Bull.* 10:300–12
- Nuechterlein KH, Subotnik KL, Turner LR, Ventura J, Becker DR, Drake RE. 2008. Individual placement and support for individuals with recent-onset schizophrenia: integrating supported education and supported employment. *Psychiatr. Rehabil. J.* 31:340–49
- O'Hare T, Sherrer M. 2011. Subjective distress associated with sudden loss in clients with severe mental illness. *Community Ment. Health J.* 47:646–53
- Patterson TL, Mausbach BT, McKibbin C, Goldman S, Bucardo J, Jeste DV. 2006. Functional Adaptation Skills Training (FAST): a randomized trial of a psychosocial intervention for middle-aged and older patients with chronic psychotic disorders. *Schizophr. Res.* 86:291–99
- Paul GL, Lentz RJ. 1977. *Psychosocial Treatment of Chronic Mental Patients: Milieu Versus Social-Learning Programs*. Cambridge, MA: Harvard Univ. Press
- Penn DL, Combs D. 2000. Modification of affect perception deficits in schizophrenia. *Schizophr. Res.* 46:217–29
- Penn DL, Corrigan PW, Bentall RP, Racenstein JM, Newman L. 1997. Social cognition in schizophrenia. *Psychol. Bull.* 121:114–32

- Penn DL, Mueser KT, Tarrier N, Gloege A, Cather C, et al. 2004. Supportive therapy for schizophrenia: possible mechanisms and implications for adjunctive psychosocial treatments. *Schizophr. Bull.* 30:101–12
- Penn DL, Roberts DL, Combs D, Sterne A. 2007. The development of the Social Cognition and Interaction Training program for schizophrenia spectrum disorders. *Psychiatr. Serv.* 58:449–51
- Pepper B, Krishner MC, Ryglewicz H. 1981. The young adult chronic patient: overview of a population. *Hosp. Community Psychiatry* 32:463–69
- Petersen L, Jeppesen P, Thorup A, Abel MB, Ohlenschlager J, et al. 2005. A randomized, multi-center trial of integrated versus standard treatment for patients with a first episode of psychotic illness. *Br. Med. J.* 331:602–9
- Pfammatter M, Junghan UM, Brenner HD. 2006. Efficacy of psychological therapy in schizophrenia: conclusions from meta-analyses. *Schizophr. Bull.* 32(Suppl. 1):S64–68
- Pharoah F, Mari J, Rathbone J, Wong W. 2010. Family intervention for schizophrenia. *Cochrane Database Syst. Rev.* 4:CD000088
- Picken A, Tarrier N. 2011. Trauma and comorbid posttraumatic stress disorder in individuals with schizophrenia and substance abuse. *Compr. Psychiatry* 52:490–97
- Pogue-Geile MF, Harrow M. 1985. Negative symptoms in schizophrenia: their longitudinal course and prognostic importance. *Schizophr. Bull.* 11:427–39
- Polcin DL. 1992. Issues in the treatment of dual diagnosis clients who have chronic mental illness. *Prof. Psychol. Res. Pract.* 23:30–37
- Pratt SI, Van Citters AD, Mueser KT, Bartels SJ. 2008. Psychosocial rehabilitation in older adults with serious mental illness: a review of the research literature and recommendations for development of rehabilitative approaches. *Am. J. Psychiatr. Rehabil.* 11:7–40
- Preti A, Cella M. 2010. Randomized-controlled trials in people at ultra high risk of psychosis: a review of treatment effectiveness. *Schizophr. Res.* 123:30–36
- Racenstein JM, Harrow M, Reed R, Martin E, Herbener E, Penn DL. 2002. The relationship between positive symptoms and instrumental work functioning in schizophrenia: a 10-year follow-up study. *Schizophr. Res.* 56:95–103
- Read J, van Os J, Morrison AP, Ross CA. 2005. Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatr. Scand.* 112:330–50
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, et al. 1990. Comorbidity of mental disorders with alcohol and other drug abuse: results from the Epidemiologic Catchment Area (ECA) study. *J. Am. Med. Assoc.* 264:2511–18
- Reichenberg A, Caspi A, Harrington H, Houts R, Keefe RS, et al. 2010. Static and dynamic cognitive deficits in childhood preceding adult schizophrenia: a 30-year study. *Am. J. Psychiatry* 167:160–69
- Remschmidt HE, Schulz E, Martin M, Warnke A, Trott G. 1994. Childhood onset schizophrenia: history of the concept and recent studies. *Schizophr. Bull.* 20:727–45
- Ridgely MS, Goldman HH, Willenbring M. 1990. Barriers to the care of persons with dual diagnoses: organizational and financing issues. *Schizophr. Bull.* 16:123–32
- Riecher-Rössler A, Häfner H. 2000. Gender aspects in schizophrenia: bridging the border between social and biological psychiatry. *Acta Psychiatr. Scand.* 102(Suppl.):58–62
- Roder V, Mueller DR, Schmidt SJ. 2011a. Effectiveness of Integrated Psychological Therapy (IPT) for schizophrenia patients: a research update. *Schizophr. Bull.* 37:S71–79
- Roder V, Müller DR, Brenner HD, Spaulding WD. 2011b. *Integrated Psychological Therapy (IPT) for the Treatment of Neurocognition, Social Cognition, and Social Competency in Schizophrenia Patients*. Cambridge, MA: Hogrefe
- Roe D, Chopra M. 2003. Beyond coping with mental illness: toward personal growth. *Am. J. Orthopsychiatry* 73:334–44
- Roe D, Rudnick A, Gill KJ. 2007. The concept of “being in recovery.” *Psychiatr. Rehabil. J.* 30: 171–73
- Rosenberg SD, Mueser KT, Jankowski MK, Salyers MP, Acker K. 2004. Cognitive-behavioral treatment of posttraumatic stress disorder in severe mental illness: results of a pilot study. *Am. J. Psychiatr. Rehabil.* 7:171–86
- Rosenheck R, Kasprow W, Frisman L, Liu-Mares W. 2003. Cost-effectiveness of supported housing for homeless persons with mental illness. *Arch. Gen. Psychiatry* 60:940–51

- Rudnick A, Gover M. 2009. Combining supported education with supported employment. *Psychiatr. Serv.* 10:1690–91
- Ryan RM, Deci EL. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *Am. Psychol.* 55:68–78
- Sackett DL, Richardson WS, Rosenberg W, Haynes RB. 1997. *Evidence-Based Medicine*. New York: Churchill Livingstone
- Schmidt LM, Hesse M, Lykke J. 2011. The impact of substance use disorders on the course of schizophrenia—a 15-year follow-up study. *Schizophr. Res.* 130:228–33
- Scott D, Happell B. 2011. The high prevalence of poor physical health and lifestyle behaviours in individuals with severe mental illness. *Issues Ment. Health Nurs.* 32:589–97
- Segal SP, Silverman C, Temkin T. 1993. Empowerment and self-help agency practice for people with mental disabilities. *Soc. Work* 38:705–12
- Silverstein SM, Spaulding WD, Menditto AA, Savitz A, Liberman RP, et al. 2008. Attention shaping: a reward-based learning method to enhance skills training outcomes in schizophrenia. *Schizophr. Bull.* 35:222–32
- Sledge WH, Lawless M, Sells D, Wieland M, O'Connell MJ, Davidson L. 2011. Effectiveness of peer support in reducing readmissions of persons with multiple psychiatric hospitalizations. *Psychiatr. Serv.* 62:541–44
- Smith TE, Hull JW, Goodman M, Hedayat-Harris A, Willson D, et al. 1999. The relative influences of symptoms, insight, and neurocognition on social adjustment in schizophrenia and schizoaffective disorder. *J. Nerv. Ment. Dis.* 187:102–8
- Spencer E, Birchwood M, McGovern D. 2001. Management of first-episode psychosis. *Adv. Psychiatr. Treat.* 7:133–42
- Solomon P, Draine J. 1995. The efficacy of a consumer case management team: two-year outcomes of a randomized trial. *J. Ment. Health Adm.* 22:135–46
- Stein LI, Santos AB. 1998. *Assertive Community Treatment of Persons with Severe Mental Illness*. New York: Norton
- Strauss JS, Carpenter WT. 1977. Prediction of outcome in schizophrenia III. Five-year outcome and its predictors. *Arch. Gen. Psychiatry* 34:159–63
- Tarrier N, Wittkowski A, Kinney C, McCarthy E, Morris J, Humphreys L. 1999. Durability of the effects of cognitive-behavioural therapy in the treatment of chronic schizophrenia: 12-month follow-up. *Br. J. Psychiatry* 174:500–4
- Tauber R, Wallace CJ, Lecomte T. 2000. Enlisting indigenous community supporters in skills training programs for persons with severe mental illness. *Psychiatr. Serv.* 51:1428–32
- U.S. Census Bur. 2008. *2008 National Population Projections*. Washington, DC: U.S. Dep. Commer.
- Unger KV. 1998. *Handbook on Supported Education: Providing Services for Students with Psychiatric Disabilities*. New York: Paul Brooks
- Ursano RJ, Bell C, Eth S, Friedman M, Norwood A, et al. 2004. Practice guideline for the treatment of patients with acute stress disorder and posttraumatic stress disorder. *Am. J. Psychiatry* 161(11 Suppl.):1–31
- Uzenoff SR, Penn DL, Graham KA, Saade S, Smith BB, Perkins DO. 2012. Evaluation of a multi-element treatment center for early psychosis in the United States. *Soc. Psychiatry Psychiatr. Epidemiol.* 47:1607–15
- Van Citters AD, Pratt SI, Jue K, Williams G, Miller PT, et al. 2010. A pilot evaluation of the In SHAPE individualized health promotion intervention for adults with mental illness. *Community Ment. Health J.* 46:540–42
- van Oel CJ, Sitskoorn MM, Cremer MP, Kahn RS. 2002. School performance as a premorbid marker for schizophrenia: a twin study. *Schizophr. Bull.* 28:401–14
- van Os J, Kapur S. 2009. Schizophrenia. *Lancet* 374:635–45
- Velligan DI, Diamond PM, Maples NJ, Mintz J, Li X, et al. 2008. Comparing the efficacy of interventions that use environmental supports to improve outcomes in patients with schizophrenia. *Schizophr. Res.* 102:312–19
- Velligan DI, Diamond PM, Mintz J, Maples N, Li X, et al. 2006. The use of individually tailored environmental supports to improve medication adherence and outcomes in schizophrenia. *Schizophr. Bull.* 32:483–89
- Velligan DI, Prihoda TJ, Ritch JL, Maples N, Bow-Thomas CC, Dassori A. 2002. A randomized single-blind pilot study of compensatory strategies in schizophrenia outpatients. *Schizophr. Bull.* 28:283–92

- Verhaeghe N, De Maeseeneer J, Maes L, Van Heeringen C, Annemans L. 2011. Effectiveness and cost-effectiveness of lifestyle interventions on physical activity and eating habits in persons with severe mental disorders: a systematic review. *Int. J. Behav. Nutr. Phys. Act.* 8:28
- Weiss KA, Smith TE, Hull JW, Piper AC, Hubbert JD. 2002. Predictors of risk of nonadherence in outpatients with schizophrenia and other psychotic disorders. *Schizophr. Bull.* 28:341–49
- Williams C, Firth M, Wharne S, Macpherson R, eds. 2011. *Assertive Outreach in Mental Healthcare: Current Perspectives*. Oxford, UK: Wiley-Blackwell
- Wright JH, Basco MR, Thase ME. 2005. *Learning Cognitive-Behavior Therapy: An Illustrated Guide*. Washington, DC: Am. Psychiatr. Publ.
- Wu EQ, Birnbaum HG, Shi L, Ball DE, Kessler RC, Moulis M. 2005. The economic burden of schizophrenia in the United States in 2002. *J. Clin. Psychiatry* 66:1122–29
- Wykes T, Huddy V, Cellard C, McGurk SR, Czobor P. 2011. A meta-analysis of cognitive remediation for schizophrenia: methodology and effect sizes. *Am. J. Psychiatry* 168:472–85
- Wykes T, Reeder C. 2005. *Cognitive Remediation Therapy for Schizophrenia: Theory and Practice*. London: Routledge
- Wykes T, Steel C, Everitt B, Tarrier N. 2008. Cognitive behavior therapy for schizophrenia: effect sizes, clinical models and methodological rigor. *Schizophr. Bull.* 34:523–37
- Yamada K, Watanabe K, Nemoto N, Fujita H, Chikaraishi C, et al. 2006. Prediction of medication noncompliance in outpatients with schizophrenia: 2-year follow-up study. *Psychiatry Res.* 141:61–69
- Ziedonis DM, Smelson D, Rosenthal RN, Batki SL, Green AI, et al. 2005. Improving the care of individuals with schizophrenia and substance use disorders: consensus recommendations. *J. Psychiatr. Pract.* 11:315–39
- Zubin J, Spring B. 1977. Vulnerability: a new view of schizophrenia. *J. Abnorm. Psychol.* 86:103–26



Contents

Evidence-Based Psychological Treatments: An Update and a Way Forward <i>David H. Barlow, Jacqueline R. Bullis, Jonathan S. Comer, and Amantia A. Ametaj</i>	1
Quitting Drugs: Quantitative and Qualitative Features <i>Gene M. Heyman</i>	29
Integrative Data Analysis in Clinical Psychology Research <i>Andrea M. Hussong, Patrick J. Curran, and Daniel J. Bauer</i>	61
Network Analysis: An Integrative Approach to the Structure of Psychopathology <i>Denny Borsboom and Angélique O.J. Cramer</i>	91
Principles Underlying the Use of Multiple Informants' Reports <i>Andres De Los Reyes, Sarah A. Thomas, Kimberly L. Goodman, and Shannon M.A. Kunder</i>	123
Ambulatory Assessment <i>Timothy J. Trull and Ulrich Ebner-Priemer</i>	151
Endophenotypes in Psychopathology Research: Where Do We Stand? <i>Gregory A. Miller and Brigitte Rockstroh</i>	177
Fear Extinction and Relapse: State of the Art <i>Bram Vervliet, Michelle G. Craske, and Dirk Hermans</i>	215
Social Anxiety and Social Anxiety Disorder <i>Amanda S. Morrison and Richard G. Heimberg</i>	249
Worry and Generalized Anxiety Disorder: A Review and Theoretical Synthesis of Evidence on Nature, Etiology, Mechanisms, and Treatment <i>Michelle G. Newman, Sandra J. Llera, Thane M. Erickson, Amy Przeworski, and Louis G. Castonguay</i>	275
Dissociative Disorders in DSM-5 <i>David Spiegel, Roberto Lewis-Fernández, Ruth Lanius, Eric Vermetten, Daphne Simeon, and Matthew Friedman</i>	299

Depression and Cardiovascular Disorders <i>Mary A. Whooley and Jonathan M. Wong</i>	327
Interpersonal Processes in Depression <i>Jennifer L. Hames, Christopher R. Hagan, and Thomas E. Joiner</i>	355
Postpartum Depression: Current Status and Future Directions <i>Michael W. O'Hara and Jennifer E. McCabe</i>	379
Emotion Deficits in People with Schizophrenia <i>Ann M. Kring and Ori Elis</i>	409
Cognitive Interventions Targeting Brain Plasticity in the Prodromal and Early Phases of Schizophrenia <i>Melissa Fisher, Rachel Loewy, Kate Hardy, Danielle Schlosser, and Sophia Vinogradov</i>	435
Psychosocial Treatments for Schizophrenia <i>Kim T. Mueser, Frances Deavers, David L. Penn, and Jeffrey E. Cassisi</i>	465
Stability and Change in Personality Disorders <i>Leslie C. Morey and Christopher J. Hopwood</i>	499
The Relationship Between Personality Disorders and Axis I Psychopathology: Deconstructing Comorbidity <i>Paul S. Links and Rabel Eynan</i>	529
Revisiting the Relationship Between Autism and Schizophrenia: Toward an Integrated Neurobiology <i>Nina de Lacy and Bryan H. King</i>	555
The Genetics of Eating Disorders <i>Sara E. Trace, Jessica H. Baker, Eva Peñas-Lledó, and Cynthia M. Bulik</i>	589
Neuroimaging and Other Biomarkers for Alzheimer's Disease: The Changing Landscape of Early Detection <i>Shannon L. Risacher and Andrew J. Saykin</i>	621
How Can We Use Our Knowledge of Alcohol-Tobacco Interactions to Reduce Alcohol Use? <i>Sherry A. McKee and Andrea H. Weinberger</i>	649
Interventions for Tobacco Smoking <i>Tanya R. Schlam and Timothy B. Baker</i>	675
Neurotoxic Effects of Alcohol in Adolescence <i>Joanna Jacobus and Susan F. Tapert</i>	703
Socioeconomic Status and Health: Mediating and Moderating Factors <i>Edith Chen and Gregory E. Miller</i>	723

School Bullying: Development and Some Important Challenges <i>Dan Olweus</i>	751
The Manufacture of Recovery <i>Joel Tupper Braslow</i>	781

Indexes

Cumulative Index of Contributing Authors, Volumes 1–9	811
Cumulative Index of Articles Titles, Volumes 1–9	815

Errata

An online log of corrections to *Annual Review of Clinical Psychology* articles may be found at <http://clinpsy.annualreviews.org>