In this systematic review, we investigated research literature evaluating the effectiveness of occupational therapy interventions focusing on participation and performance in occupations related to paid and unpaid employment and education for people with serious mental illness. The review included occupation- and activity-based interventions and interventions addressing performance skills, aspects of the environment, activity demands, and client factors. The results indicate that strong evidence exists for the effectiveness of supported employment using individual placement and support to result in competitive employment. These outcomes are stronger when combined with cognitive or social skills training. Supported education programs emphasizing goal setting, skill development, and cognitive training result in increased participation in educational pursuits. The evidence for instrumental activities of daily living interventions that targeted specific homemaking occupations and supported parenting was limited but positive. Environmental cognitive supports, such as signs, and other compensatory strategies are useful in managing maladaptive behavior.


Focused Clinical Question

What occupational therapy interventions are effective for improving and maintaining participation and performance in paid and unpaid employment (volunteer opportunities, home management, child care) and education for adults with severe mental illness?

Objective of the Evidence-Based Literature Review

The objective was to systematically investigate research literature evaluating the effectiveness of interventions within occupational therapy’s scope of practice that focus on participation and performance in occupations related to paid and unpaid employment and education for people with serious mental illness. The systematic review included occupation- and activity-based interventions and interventions addressing performance skills, aspects of the environment, activity demands, and client factors.

Statement of Problem and Background

The World Health Organization (WHO) reports that 1 in 4 people in the world will be affected by a mental or neurological disorder at some point in their lives. Approximately 450 million people have such conditions, placing mental disorders among the leading causes of ill health and disability worldwide (WHO, 2001). Data from the United States have indicated that over a 12-mo period,
the prevalence of any Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association [APA], 2000) disorder in the population is estimated to be 26.2% (Kessler, Chui, Demler, & Walters, 2005). Of the DSM–IV–TR disorders, 22% were categorized as serious on the basis of criteria that included diagnostic categories and limitations in roles and work performance.

As reported by Dewa, McDaid, and Ettner (2007), one of the major burdens for people with a psychiatric disorder is unemployment. According to the National Health Interview Survey (NHIS–D; Bilder & Mechanic, 2003), people with a psychiatric disorder have the lowest employment rate among people with a disability living in the United States. The survey’s results indicated that people with a psychiatric disorder have an employment rate of 48%, compared with a rate of 75% for all other disability categories. People with serious mental illness have an even lower employment rate of 37%. This low unemployment rate affects workers and their families, the workplace, and the public sector. The burden of depression, for example, is estimated to be $83.1 billion, including $51.5 billion in workplace costs and $26.1 billion in direct medical costs (Greenberg et al., 2003). According to Krupa (2007), these costs may be compounded because serious mental illness can affect education and work careers relatively early in life, resulting in a long period of burden for the individual and society.

Occupational therapy practitioners, through a process of evaluation and intervention that considers the person, the environment, and their complex interaction, assist people with serious mental illness and their families with meeting role responsibilities (American Occupational Therapy Association [AOTA] President’s Ad Hoc Committee on Mental Health Practice in Occupational Therapy, 2006). For people with serious mental illness (e.g., schizophrenia, schizoaffective disorder, major depression, or bipolar disorder), developing the skills and obtaining the supports necessary for productive living are of particular importance to participating in the occupations of paid and unpaid employment, which includes work, education, parenting, home management, and volunteerism. In this systematic review, we evaluated and synthesized evidence for occupational therapy interventions for restoring, modifying, and maintaining performance in these areas.

**Background Literature**

Occupational therapy has a long history of recognizing the value of work and other productive activities to maintain and enhance health. Auerbach and Jeong (2005) indicated that productive activity has been at the core of the philosophical basis of occupational therapy from its beginning in treatment of people with mental illness. According to Creek (2008),

> Work is any productive activity, whether paid or unpaid, that contributes to the maintenance or advancement of society as well as to the individual’s own survival or development. Work may help to maintain society (e.g., housework) or contribute to its advance (e.g., theoretical physics). (p. 40)

Iannelli and Wilding (2007) explored the effect of productive activities on young adults (ages 18–25) with mental illness. The results of the phenomenological study indicated that the obligatory nature of employment encourages engagement in occupation. Participants reported that engaging in productive occupation strengthened a sense of responsibility, identity, and self-worth. In addition, involvement in these occupations resulted in a sense of building a positive future for the participants. Leufstadius, Erlandsson, and Eklund (2006) indicated that people with persistent mental illness who spent more time in work or education and less time in sleep reported better health and functioning than people less involved in work and education.

Research has pointed to the complex interaction of productive occupations with other components of daily life. Qualitative research by Honey (2004) in Australia reported that people with mental illness weighed the benefits and drawbacks of employment on the basis of contextual factors such as the perceived status of employment in society, type of job available, support and expectation of the social network, individual factors of mental illness, level of comfort with disclosing one’s mental health status to a potential employer, and perceived alternatives to employment. This complexity was also reflected in a qualitative study by Nagle, Cook, and Polatajko (2002) that found that people with severe mental illness make occupational choices based on concern about relapse and socioeconomic realities and engage in occupations that maintain or enhance their health and social connections. Eklund, Hansson, and Bejerholm (2001) indicated that although satisfaction with employment is significantly correlated with health for people with schizophrenia, total occupational satisfaction was more predictive of health-related quality of life.

Although several models exist for helping adults with mental illness enter the workforce (Auerbach & Jeong, 2005), one of the earliest is traditional vocational rehabilitation, a gradual process of training and assessment
followed by placement. The vocational rehabilitation model changed approximately 20 yr ago to one of supported employment (SE; Bond, Drake, & Becker, 2008). The process begins with placement in competitive employment that is in line with the client’s preferences. Assessment of work performance is conducted on an ongoing basis and is also consistent with the client’s preferences. An employment consultant working with the client provides support to the employer as well. In addition, mental health treatment is closely coordinated with vocational services (Waghorn, Lloyd, & Tsang, 2008–2010). In some programs, SE has been combined with other interventions, such as social skills training or cognitive skills training (Waghorn et al., 2008–2010).

This model of providing supports during employment has also been used for other occupations of people with mental illness. Supported education provides support and services to people with serious mental illness to help them begin or continue postsecondary education (Unger, Pardee, & Shafer, 2000). Supported education not only provides a conduit to employment (Mowbray, 2004) but also yields access to the highly valued student role and gives the opportunity to engage in activities that are meaningful to people with serious mental illness (Cutman, Kerner, Zombek, Dulek, & Ramsey, 2009). Similar supported programs for volunteering (Young & Passmore, 2007) and parenting (Nicholson & Henry, 2003) have been designed.

Method for Conducting the Evidence-Based Review

For many years, AOTA has had an ongoing effort to bring focus to the issue of mental health and occupational therapy. This effort has included the appointment of several ad hoc groups to address the issues in mental health facing the profession that were integral to fulfilling the Centennial Vision. The recommendations that resulted in a Representative Assembly motion in 2006 (AOTA President’s Ad Hoc Committee on Mental Health Practice in Occupational Therapy, 2006) were to create and disseminate evidence that supports occupational therapy in mental health and to expand the evidence-based reviews to explore focused questions related to recovery-oriented outcomes in schizophrenia and mood disorder. The study described here presents the results of one of two systematic reviews developed through AOTA’s Evidence-Based Literature Review Project. This study was supported by AOTA as part of an academic partnership with Eastern Kentucky University (EKU) as a major investigation project fulfilling the master’s degree requirement for a nonthesis contribution.

Three EKU graduate students, one faculty advisor, and AOTA staff and consultant took part in the review. The EKU faculty advisor and AOTA staff developed the focused question. An advisory group consisting of occupational therapy practitioners, educators, and researchers with expertise in mental health provided input into the question’s development. The EKU students, with support from AOTA staff and the advisory group, developed a search strategy to include population; inclusion and exclusion criteria; and key search terms based on population, interventions, and outcomes. The key word search terms for interventions were based on areas of occupation (i.e., work, instrumental activities of daily living, and education) from the first edition of the Occupational Therapy Practice Framework: Domain and Process (AOTA, 2008). To operationalize serious mental illness, the group used the Center for Mental Health Services definition (U.S. Department of Health and Human Services, 1999), which requires a person to have at least one 12-mo disorder other than a substance use disorder, to meet DSM–IV–TR criteria (APA, 2000), and to have serious impairment (Substance Abuse and Mental Health Services Administration, 1993). Table 1 provides a comprehensive list of the search terms used in the review.

Articles included in the review met the following criteria: published in a peer-reviewed journal, limited to English-language articles, participants with a diagnosis of severe mental illness and ages 18–65, and interventions within the scope of occupational therapy practice.

AOTA uses a grading system for levels of evidence based on standards from evidence-based medicine. This system standardizes and ranks the value of scientific evidence for biomedical practice using the grading criteria in Table 2. Only studies determined to provide Level I (i.e., randomized controlled trials [RCTs], systematic reviews, and meta-analyses), Level II (i.e., non-RCTs such as cohort studies), and Level III (i.e., pretest–posttest, one-group designs) evidence were included. Studies were excluded if they were published before 1990, provided Level IV or V evidence, used purely qualitative methods, were not peer reviewed, used geriatric or pediatric interventions, or used interventions outside the scope of occupational therapy practice. Databases searched included CINAHL, Medline, PsycInfo, HealthStar, Alternative Medicine, Social Work Abstracts, Cochrane Central Register of Controlled Trials and Database of Systemic Reviews, Database of Abstracts of Effects, ACP Journal Club, and OTseeker.
Table 1. Search Terms for Systematic Review on Occupational Therapy Interventions for Paid and Unpaid Employment and Education for Adults With Serious Mental Illness

<table>
<thead>
<tr>
<th>Category</th>
<th>Key Search Terms</th>
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<tr>
<td>Patient–client population</td>
<td>Serious mental illness, chronic mental illness, serious and persistent mental illness, severe mental illness, personality disorder, anxiety disorder, psychosis, psychotic disorder, schizophrenia, mood disorder</td>
</tr>
<tr>
<td>Intervention</td>
<td>Child care (parenting, parents, childrearing, parent child relations), meal preparation (menu planning, cooking, food related skills, meal planning), home management (housekeeping, household management, laundry skills, ironing, repair, cleaning, gardening/yard work), shopping (grocery shopping, clothes shopping), time management (activity diary, individual time use, time, time factor, routines), safety (home safety, prevention, safety risks), education exploration (learning, career counseling, nonprofessional education), volunteer exploration (volunteerism, social participation, voluntary workers), retirement exploration (retiree), work exploration (occupation, vocation, job, employment, work), identifying an area of interest in work/education employment seeking (interest inventories, interests, personality traits, vocational interests, self evaluation, career planning, vocational aptitude), employment seeking (interviewing, vocational rehabilitation, resume writing, employability, job search, assistance, sheltered workshops, employment, unemployment); job performance (work performance, employee attitude, work ethic, schedules, work tolerance, occupational stress, work environment, work habits, routines, relationships, compliance with rules/policies)</td>
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An initial search was completed in conjunction with a research librarian at EKU. In addition, a medical librarian with experience in conducting evidence-based literature reviews completed a second search using a filter based on one developed by McMaster University (www.henryfordconnect.com/sladen.cfm?id=286). The list of 950 citations and abstracts from both searches was reviewed, and 145 potential articles were evaluated according to inclusion and exclusion criteria. The articles selected for inclusion were analyzed and critically appraised, and individual articles were summarized in an evidence table. A Critically Appraised Topic (CAT) further summarized and synthesized the information, and both the evidence table and CAT were submitted to AOTA staff and the project consultant for review. The students conducted presentations on the Evidence-Based Literature Review process and the AOTA collaboration as a component of requirements for their master’s project.

Forty-six articles were selected for final analysis in the review. Of those, 37 were Level I studies, 5 were Level II studies, and 4 were Level III studies. Selected studies identified by the review are summarized in Supplemental Table 1 (available online at www.ajot.aotapress.net [navigate to this article, and click on “supplemental materials”]).

Results

Work Programs: SE and Vocational Rehabilitation

Evidence for the efficacy of SE is strong, specifically for the Individual Placement and Support (IPS) model leading to employment of people with severe mental illness. A Level I meta-analysis (Twamley, Jeste, & Lehman, 2003) examined work rehabilitation from three perspectives: (1) SE–IPS, (2) job-related social skills training, and (3) incentive therapy.

The study reported positive results for SE–IPS programs compared with conventional vocational rehabilitation.

Another systematic review of studies comparing SE with prevocational training found that those in SE programs earned significantly more and worked more hours per month than clients in prevocational training.

Table 2. Levels of Evidence for Occupational Therapy Outcomes Research

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<th>Levels of Evidence</th>
<th>Definitions</th>
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<tr>
<td>Level I</td>
<td>Systematic reviews, meta-analyses, randomized controlled trials</td>
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<tr>
<td>Level II</td>
<td>Two groups, nonrandomized studies (e.g., cohort, case-control)</td>
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<tr>
<td>Level III</td>
<td>One group, nonrandomized (e.g., before and after, pretest and posttest)</td>
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<tr>
<td>Level IV</td>
<td>Descriptive studies that include analysis of outcomes (e.g., single-subject design, case series)</td>
</tr>
<tr>
<td>Level V</td>
<td>Case reports and expert opinion that include narrative literature reviews and consensus statements</td>
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(Crowther, Marshall, Bond, & Huxley, 2001). A more recent Level I systematic review (Bond et al., 2008) included updated studies and limited the review to programs with high fidelity to the IPS model. The results indicate higher rates of employment, shorter length of time to find a job, and longer job duration: Two-thirds of the study participants in the IPS condition worked ≥20 hr/week compared with 23% for those in the control conditions. Bond et al. (2008) indicated that fidelity to the model improves treatment outcomes.

**Supported Education Programs**

Four studies examined the effectiveness of supported education programs at the postsecondary level (Collins, Bybee, & Mowbray, 1998; Gutman et al., 2007, 2009; Hutchinson, Anthony, Massaro, & Rogers, 2007), and the evidence that they are effective is good. A Level I RCT (Collins et al., 1998) compared group and classroom experimental conditions with individual assistance as needed (control conditions). Both experimental conditions incorporated goal setting, skill development, and the management of resources available in the postsecondary environment. All groups reported increases in enrollment in school or vocational education at follow-up. Participation was highest for the group condition, followed by the classroom condition, and then the individual condition. Level of participation was related to motivation, satisfaction, enjoyment, and learning. Empowerment and school efficacy were highest for the classroom condition, followed by the group condition and then the individual condition. In a Level I RCT, the Bridge program—a biweekly, 12-session supported education program that included individual mentoring, lecture, and lab activities on topics related to basic educational knowledge and skills to succeed in a postsecondary or employment setting—was compared with usual treatment (Gutman, Kerner, Zombek, Dulek, & Ramsey, 2009). At 6-mo follow-up, 10 of 16 participants in the Bridge program had enrolled in either an educational program or job training, were used, or were in the process of applying to a program, compared with 1 of 17 control group participants.

**SE Plus Cognitive or Social Skills Training**

Evidence from two Level I studies was good (Bell, Bryson, Greig, Corcoran, & Wexler, 2001; Bell, Fiszdon, Greig, & Bryson, 2005) and linked neurocognitive enhancement therapy (NET) in combination with work therapy (WT) to improvements in neuropsychological functioning. In addition, Bell and colleagues (2005) found that older adults achieved benefits similar to those of younger adults after participation in a NET–WT intervention. A Level I study (McGurk, Mueser, Feldman, Wolfe, & Pascaris, 2007) compared people in an SE program with a cognitive training component, “Thinking Skills for Work,” with participants in an SE program alone. At 2- to 3-yr follow-up, the results indicate that participants in SE and cognitive training were more likely to work, to be employed for more hours, to be working over a longer period of time, and to earn more than those in the SE-alone program. The evidence that social skills training programs tailored to the work environment, when paired with follow-up contact or SE, are effective for improving work outcomes is good (Mueser et al., 2005; Tsang, Chan, Wong, & Liberman, 2009; Tsang & Pearson, 2001).

**Programs Related to Homemaking, Parenting, and Environmental Supports**

A Level I study (Duncombe, 2004) comparing cooking skills training in the home to cooking skills training in the clinic showed significant improvement in skills for both groups. However, the level of learning between training in the home or clinic showed no difference. A Level III study (Brown, Rempfer, & Hamera, 2002) examining strategies that support the acquisition of independent living skills through teaching grocery shopping skills found the strategies to be effective in improving accuracy and redundancy.

Phelan, Lee, Howe, and Walter (2006) conducted a Level III pretest–posttest study for parents in Australia with mental illness. This study provided 6 clinic-based group sessions once per week that focused on positive parenting skills, understanding child behavior, building relationships, and managing behavior. The group sessions were followed by 4 home visits once per wk to facilitate implementation strategies. Results indicated that parenting practices and children’s behavior improved. Parents also reported high satisfaction with the program.

Two Level I studies (Velligan et al., 2000, 2006) showed good evidence of the efficacy of using environmental supports provided through cognitive adaptation training, a manual-driven series of compensatory strategies based on neuropsychological, occupational therapy, and behavioral principles. The provided environmental supports, such as signs, checklists, and supplies, were individually tailored on the basis of an onsite assessment of triggers for maladaptive behaviors, presence of safety hazards, and the client’s behavior and executive functioning. A Level I RCT compared employment outcomes for an interpersonal and social rhythms therapy (IPSRT) with those for an intensive clinical management condition (ICM; Frank et al., 2008) for people experiencing...
acute episodes of bipolar I disorder. Although no advantage was found at 2 yr for IPSRT, which stresses the importance of maintaining daily routines and identifying potential rhythm disruptors, clients initially assigned to IPSRT showed more rapid improvement in occupational functioning than those in ICM.

**Social and Daily Living Skills Intervention**

The evidence regarding the effectiveness of life skills training presented independently of social skills is limited (Tungpunkom & Nicol, 2008). The results were inconclusive for a Level I systematic review of life skills training programs (which involved independent functioning in daily living) compared with traditional rehabilitation (described as recreation, art, and occupational therapy). The evidence on the efficacy of interventions focusing on social skills training presented independently of life skills training is mixed. Two meta-analyses (Corrigan, 1991; Dilk & Bond, 1996) indicated that social skills training programs result in enhanced skill acquisition. Additionally, a Level I study by Torres, Mendez, Merino, and Moran (2002) found improvements in social withdrawal, interpersonal functioning, recreational activities, and work over time when using a board game in conjunction with social skills training, psychomotor skills, and occupational therapy. However, a more recent meta-analysis of RCTs by Pilling and colleagues (2002) did not find a difference between social skills and comparison treatments.

Evidence of the effectiveness of highly structured, manual-driven treatment programs that combine social skills and daily living skills training is strong. Three Level I studies found skills training based on the Social and Independent Living Skills Program developed by the University of California, Los Angeles, to be effective in improving independent living skills (Anzai et al., 2002; Kopelowicz, Wallace, & Zarate, 1998; Liberman et al., 1998). Positive results were also noted in three Level I studies of Functional Adaptation Skills Training, a manual-driven cognitive–behavioral intervention for patients with schizophrenia or schizoaffective disorder. Significant improvement in everyday living skills was found compared with a treatment-as-usual condition (Patterson et al., 2003, 2005, 2006). A Level II study (Schindler, 2005) demonstrated greater improvement in social roles, task skills, and interpersonal skills for participants in the Role Development Program (RDP) than for participants in a multiprofessional activity program. The RDP uses individualized theory-based interventions to help a person develop task and interpersonal skills within meaningful social roles.

Limitations in several of the studies incorporated into the review included lack of randomization, lack of a control group, small sample size, lack of blinding of researcher to treatment allocation, and sampling bias. In addition, several studies did not describe the experimental and control conditions. Some studies did not report the validity of the outcome measure, and in several, the outcome measures were similar to the intervention. The definition or description of occupational therapy programs also varied from study to study. Generalization of results of several studies was limited when a study was gender specific or the study did not take place in the United States.

**Discussion and Implications for Practice, Education, and Research**

The goal of occupational therapy in mental health is to help people develop the skills and obtain the supports necessary for independent, interdependent, productive living (AOTA, 2000). Using client-centered and occupation-based assessments, occupational therapists develop intervention plans based on the client’s goals and choices. These interventions result in improved participation in daily life and better quality of life. The evidence indicates that many programs that fit within occupational therapy’s scope of practice are effective for people with serious mental illness in the area of paid and unpaid employment. Strong evidence, for example, indicates that SE is more effective than vocational rehabilitation in producing positive work outcomes such as competitive employment. Good evidence also supports that education programs emphasizing goal setting, skill development, and cognitive training result in increased participation in educational and vocational pursuits. The evidence that a supported parenting program improves parenting practices and children’s behavior is limited. No articles that met the inclusion criteria for interventions related to supported volunteering were located.

Increasing evidence has shown that the results for the IPS model are stronger when paired with social skills training or cognitive skills training. These combinations provide the scaffolding for increased participation in productive occupations. In addition, the evidence has indicated that structured, manual-based, skill-development programs that combine social and daily living skills training have better independent living skills outcomes than traditional interventions, such as feeling-based or recreational modalities. The efficacy of social skills training alone is mixed, although it is more effective when tailored to the work environment and coupled with follow-up support. Limited but positive evidence has shown that instrumental activities of daily living interventions targeting specific homemaking occupations, such as grocery shopping and...
cooking, are successful. Environmental cognitive supports such as signs, checklists, and other compensatory strategies have been demonstrated to be useful in managing onsite maladaptive behavior and safety.

The interventions described here serve as the core of client-centered rehabilitation in mental health and are within occupational therapy’s scope of practice. Although much evidence for practice within this area exists, it is strengthened by the basic skills underlying occupational therapy practice. According to Gutman et al. (2009), occupational therapy practitioners have expertise in designing compensatory strategies and accommodation based on individual needs, use activity analysis to break down skills so that they can be gradually mastered, and help people resume past roles or assume new ones. The combination of evidence and basic skill provides a path for occupational therapy practitioners looking to expand existing mental health practice or develop new ones.

The implications for research are clear: More research is needed. Refining the processes described here from an occupational therapy perspective and incorporating aspects of occupational therapy practice that may not have been included in previous studies provide a wealth of questions that can be answered through research. This research can be carried out by occupational therapy practitioners and researchers working either independently or in collaboration with other disciplines.

Although it is crucial that occupational therapy professional education programs incorporate evidence related to all areas of practice, it is especially important to incorporate the literature discussed here. The evidence is not only of good quality but also client centered and occupation based. As the number of occupational therapy practitioners working in the area of mental health has dwindled over the years, some professional programs have limited the time spent on mental health practice. In some cases, an expansion of the mental health curriculum will be needed to adequately cover evidence-based practice. It is warranted, however, because students must have adequate training in this area of practice. Up-to-date training can encourage students to consider employment in mental health settings.

The Centennial Vision provides a road map for future occupational therapy practice. Evidence-based practice is a key aspect of the Centennial Vision, and mental health is a core area of practice. Although this systematic review does not cover all areas of mental health practice, it outlines the evidence for occupational therapy practice for people with serious mental illness in the areas of paid and unpaid employment and education. ▲

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