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In recent decades, the concept of "recovery" from Severe Mental Illness (SMI) has gained increased prominence among organizations providing behavioral health services. Many states and organizations are currently developing plans to transform their mental health systems in accordance with recovery-oriented care. Even though efforts to bring the principles of recovery to mental health agencies have been well documented in the United States and abroad, there is little empirical evidence to suggest that recovery-oriented services are advantageous. The purpose of this longitudinal study was to evaluate the effectiveness of a recovery-oriented transformation carried out by a large, private, not-for-profit psychiatric rehabilitation organization serving individuals with SMI. This transformation targeted the philosophy and specific procedures involved in the provision of care to residents within the organization. The outcome variables selected to evaluate the impact of the transformation were grouped into the following categories: (a) objective indicators of recovery, (b) self-report indicators of recovery, (c) indicators of staff competency, and (d) processes that promote recovery. Six-hundred and 27 residents and 490 staff participated in the evaluation. The findings suggest that recovery-oriented services had a positive impact on rates of overnight hospitalization, residents' ability to function in the community, some professional skills of employees, and working alliance between direct care providers and residents. This indicates that comprehensive and well-structured recovery-oriented care may offer a cost-efficient and effective alternative to the deficit approach to mental health care.

Keywords: residential services, severe mental illness, schizophrenia, treatment effectiveness, hospitalization

The emergence of the concept of "recovery" in mental health is traced to consumer advocacy initiatives as early as the first half of the 20th century; although, these had little impact on mainstream treatment approaches (Frese, 1998). Since the mid-1980s, however, this concept has been gaining increased prominence and consideration among organizations providing psychiatric rehabilitation services for individuals with SMI, and among policymakers (Silverstein & Bellack, 2008). This has been taking place in light of evidence suggesting that recovery from schizophrenia can occur (Russinova, 1999; Liberman, Kopelowicz, Ventura, & Gutkind, 2002). Since the 1970s, long-term (e.g., 15–25 years) follow-up studies of schizophrenia have consistently indicated that approximately 25% of people with this diagnosis can be considered fully recovered during the follow-up period, with another 25%–45% achieving significant improvement, including relatively independent role functioning (e.g., Ciompi, 1980; DeSisto, Harding, McCormick, Ashikaga, & Brooks, 1995a, 1995b; Huber, Gross, Schuttler, & Linz, 1980; Ogawa et al., 1987). These data are consistent with findings that people diagnosed with schizophrenia, who have spent years in state hospitals and are considered treatment refractory, can nevertheless be discharged to the community after receiving appropriate inpatient services (Corrigan & Liberman, 1994; Paul & Lentz, 1977; Silverstein, Spaulding, & Menditto, 2006; Silverstein et al., 2006).

Despite the presence of a compelling conceptual framework, developments in the definition and measurement of recovery, emergence of evidence-based practices that promote recovery from SMI, identification of individuals in recovery, and the growth of consumer and advocacy movements supporting recovery philosophy, little is known about the advantages of comprehensive recovery-oriented behavioral health care over more traditional

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approaches (Liberman & Kopelowicz, 2002). To fill the gap in empirical literature on this topic, scholars in psychosocial rehabilitation in SMI have called for increased inquiry into the phenomenon (Liberman, 2002; Silverstein & Bellack, 2008).

Definitions of Recovery

The notion of "recovery" emerged as a response to the deficit approach predominant in mental health systems during much of the 20th century. The term is generally used to convey the idea that individuals are able to live productive and meaningful lives despite having a serious psychiatric illness. In recent years, various groups of stakeholders (e.g., consumers, mental health professionals, and researchers) have made attempts to define "recovery" from mental illness, resulting in a plethora of divergent definitions. Many popular conceptualizations of recovery, however, have been characterized as vague and inconsistent, making it difficult to evaluate research findings and to compare outcomes. For this reason, it has been argued that deconstruction of the concept into meaningful and measurable components could have important implications on the direction of consumer care and education of service providers (Liberman et al., 2002; Noordsy et al., 2002).

Onken, Craig, Ridgway, Ralph, and Cook (2007) reviewed recent literature on recovery and argued that recovery consists of both reestablishment of mental health, and social integration. In their framework, individuals attain the key elements of hope, self-determination, meaning/purpose, and awareness/potentiality in the context of recovery-promoting social relationships with friends, family, and mental health professionals.

Although process-oriented definitions of recovery have been popular among consumers and providers of mental health services, outcome-oriented definitions have been dominant in research (Silverstein & Bellack, 2008). In recent years, various research groups attempted to refine the operational definition of "recovery" in order to inform disciplined empirical inquiry into the phenomenon. Liberman, Kopelowicz, Ventura, and Gutkind (2002), for example, suggested that in order to be considered "in recovery" the person must: (a) exhibit remission of psychiatric symptoms as measured by an objective symptom rating scale; (b) engage in an instrumental role appropriate for his or her culture and age (e.g., full- or part-time volunteer work, schooling, or gainful employment); (c) live independently without supervision by family or other caregivers, with complete responsibility for his or her own activities of daily living; and (d) demonstrate active involvement in friendships and/or social relations, or recreational activities that are age appropriate and independent of professional supervision. In this framework the duration of remission of symptoms and functional improvement must be present for a period of 2 years.

Organizational Indicators of Recovery

Efforts have also been made to identify and to promote organizational characteristics and practices that facilitate recovery among consumers. Effective recovery-oriented care at the organizational level has been characterized by greater peer support, choice, access to services, and a more helpful system culture and orientation (Clasen, Meyer, Brun, Mase, & Cauley, 2003; Dumont, Ridgway, Onken, Dornan, & Ralph, 2006). Similarly, a 2006 Substance Abuse and Mental Health Services Administration (SAMHSA, 2006) consensus statement noted that services should foster a sense of respect and hope, be strength-based, holistic, and collaborative, while enabling consumers to be responsible for defining own goals and paths to recovery (see SAMHSA, 2006 for the complete list of principles).

It has been suggested that these recovery principles should be reflected in the knowledge, skills and attitudes of direct care staff employed by behavioral health organizations (BHOs; Coursey et al., 2000a, 2000b; Green et al., 2008; O'Hagan, 2001; Onken, Dumont, Ridgway, Dornan, & Ralph, 2002; Styron, Shaw, McDuffie, & Hoge, 2005). A major contribution in this area comes from Young, Forquer, Tran, Starzynski, and Shatkin (2000) who outlined a set of core competencies for direct care employees working in recovery-oriented BHOs. This framework groups provider competencies into such categories as clinician–client relationship, initial and ongoing assessment, rehabilitation and empowerment, treatment, family and support system, social and cultural factors, and resources and coordination of care. Despite these conceptual advances, no empirical studies examining the effects of organization-wide transformation in philosophy of care on provider competencies have been conducted to date.

The effects of therapeutic relationships on treatment outcomes have been studied and examined in traditional psychotherapy for decades (Martin, Garske, & Davis, 2000; Messer & Wampold, 2002). The importance of relationships between direct care providers and consumers has been widely endorsed in the recovery literature as well. Some have viewed the establishment of positive interpersonal relationships in the context of recovery as an outcome, and others as a process that facilitates recovery (Breier & Strauss, 1984; Davidson et al., 2001; Mezzina et al., 2006; Topor et al., 2006). In treatment of individuals with SMI, a strong working alliance has been linked to positive outcomes such as greater treatment adherence (both pharmacological and psychosocial), lower treatment drop-out rate, increased duration of participation in treatment, decrease in symptom severity, improved global functioning, greater quality of life, and an improvement in the perceived problem (Blackwell, 1997; Corriss, Hull, Lim, Pratt, & Romanelli, 1999; Fenton, Blyler, & Heinssen, 1997; Frank & Gunderson, 1990; Gehrs & Goering, 1994; Kikkert et al., 2006; Lacro, Dunn, Dolder, Leckband, & Jeste, 2002; Neale & Rosenheck, 1995; Svensson & Hansson, 1999). However, the role of working alliance in the broader context of recovery-oriented care remains largely unexamined. The poverty of data on working alliance in the context of recovery, along with findings suggesting that perceptions of the relationship between clients with SMI and a mental health workers often correlate poorly, highlight the importance of further examining the role of therapeutic relationships in recovery-oriented treatment settings (Bale, Catty, Watt, Greenwood, & Burns, 2006; Couture et al., 2006; Goldberg, Rollins, & McNary, 2004).

Reduction in hospitalization has been among the most consistent outcome measures in studies of effectiveness of psychiatric services for individuals with schizophrenia and other SMI (Burns, 2007). However, effects of comprehensive recovery-oriented behavioral health care on community stability and hospitalization rates have not been studied. Prior controlled research indicates that various models of community care (e.g., assertive community treatment and intensive case management) result in a reduction of time in a hospital and improved housing stability (Mueser, Bond,

Drake, & Resnick, 1998). Therefore, an examination of objective indicators of recovery, such as hospitalization rates could provide important insights into the effectiveness of recovery-oriented behavioral health care.

Rationale

Although there is some agreement on what recovery-oriented outcomes should be, there have been no studies evaluating the effectiveness of comprehensive recovery-oriented care in fostering recovery (and well-being) among consumers and in increasing competencies among direct care employees. Much of the current evidence in support of the Recovery Model (RM) stems from theoretical papers, anecdotal accounts, and case studies (e.g., Hoffman & Kupper, 2002; Jacobson & Greenley, 2001; Noordsy et al., 2000; Schauer, Everett, del Vecchio, & Anderson, 2000; Scheyett, Kim, Swanson, & Swartz, 2007; Sells et al., 2006). To date, only a few empirical studies have investigated the effects of recovery-oriented practices on operationally defined and empirically measured outcomes. These studies have looked at such interventions as Shared Decision Making, Wellness and Recovery Action Plan, and a group-based treatment to reduce self-stigmatization among individuals experiencing first psychotic episode (Fukui et al., 2011; Hamann et al., 2006; McCay et al., 2007).

The goal of this study was to contribute to the growing body of research into recovery oriented behavioral health care, by empirically evaluating an introduction of the RM into a large private, not-for-profit BHO that serves adults with SMI, using a longitudinal naturalistic multiple baseline experimental design. As far as we know, this was the first large-scale study to conceptualize recovery using dimensional continuum-based, operational criteria (Liberman & Kopelowicz, 2005; Liberman et al., 2002). This is also the first study to evaluate the effects of comprehensive recovery-oriented care in a real-world residential BHO on consumer recovery indicators and staff competencies, as well as to measure the intrinsic and interpersonal processes that have been theorized to promote recovery (i.e., hope, working alliance).

We hypothesized that the introduction of the RM into the organization would result in improvements on indicators of consumer recovery as reported by both consumers and direct care staff, and an increase in recovery-oriented staff competencies as reported by employees. We also hypothesized that upon completion of the transformation consumers and their corresponding clinicians would report an increase in working alliance, and consumers would report an improvement in the level of hope. As an exploratory hypothesis, we proposed that residents would experience a reduction in hospitalization following the introduction of recovery-oriented care into the organization.

Method

Participants

The study was carried out at a large, private, non-for-profit BHO, which spans five counties of New Jersey. This BHO offers a continuum of residential programs for individuals diagnosed with SMI, including psychotic spectrum disorders, major mood disorders, and such comorbid conditions as substance abuse and dependence. These programs serve residents, 18 years of age and older, and range from group homes with round-the-clock supervision to supported independent living residences with minimal staff oversight. Residents are typically referred to this BHO from state hospitals and community agencies, and receive outpatient psychiatric treatment within the organization or in community-based outpatient clinics. The stated goals of residential programs are to assist residents in developing independent living skills, to improve quality of life, and to empower residents to use community resources. The specific services offered by direct care staff differ according to resident's needs and could include transportation, meals, guidance in activities of daily living, as well as social and employment skills training.

At the time of this study, the organization served 627 residents with SMI, and had 490 staff. Demographic characteristics of staff and residents are shown in Table 1. The five counties did not differ on the distribution of gender, diagnoses, or marital status, although one program had slightly younger (~2 years) residents than the other counties. The ethnic distribution varied across the regional programs, which is consistent with the different demographics of residents of these counties. The staff in the five regional programs did not differ on any of the demographic variables.

Intervention

Beginning in the spring of 2005, the organization went through a system-wide transformation of residential services to the RM. The implementation of the transformation and data-collection was conducted by organizational staff in consultation with study investigators regarding the evaluation procedures and methods. Prior to this, the organization had approached residential care in a more

Table 1
Demographic Characteristics of Residents and Staff

Residents	
Gender	44.3% female
Age (Mean, *SD*, normally distributed)	46.42 (10.9)
Age (Range)	18–79 y.o.
Ethnicity	
Caucasian	62.7%
African American/Black	22.3%
Hispanic	9.6%
Other	5.4%
Marital status	
Never married	74.3%
Married	2.6%
Previously married	18.5%
Unknown	4.6%
Primary Axis I diagnosis	
Schizophrenia	48.3%
Other psychotic disorder	29.3%
Mood disorder (unipolar/bipolar)	21.4%
Other	1.0%
Staff	
Gender	72.5% female
Ethnicity	
Caucasian	29.3%
African American/Black	56.2%
Hispanic	5.4%
Other	9.1%
% working at least 40 hrs/week	87.9%
% with at least a master's degree	21.5%
Median # of years since graduation	6.0

directive and prescriptive manner, with a strong emphasis on residents' safety, which, as a primary focus of care, is inconsistent with the recovery philosophy.

The transformation included several broad areas of change, such as introduction of the recovery philosophy into daily practices and communication between direct care staff and residents, education of residents and staff concerning principles, values and interventions associated with recovery, increase in residents' role in the organization and responsibility in self-care, as well as change of formal services and interventions to be consistent with the RM (see Table 2 for detailed description of areas of organizational change). The specific tasks, procedures, and timelines associated with each area of change were outlined in the transformation plan, which, after being piloted in County 1 served as a guideline for the implementation of the transformation in the remaining four counties. A summary of the training procedures involved in the transformation is presented in Table 3.

The County 1 pilot project concluded in May of 2006. Starting in August, 2006, the remaining four counties implemented the transformation on a rolling-basis, with each county phasing-in the intervention several months apart during a period of more than a year. The RM and the evaluation portion of the study was presented to staff as a "quality improvement initiative" to "see whether it had any effects how well the organization provides services and consumer functioning." There was no mention of specific hypotheses (including the hypothesized effects of the intervention on hospitalization).

Measures

The selected outcome measures were intended to broadly assess the effects of the transformation of residential services on consumer recovery as conceptualized by Liberman et al. (2002) and Liberman and Kopelowicz (2005) using both objective and self-report indicators. We also evaluated the effects of the transformation to the RM on variables theorized to promote recovery among residents, including staff competences as well as intrinsic and interpersonal processes associated with improved functioning and well-being. These outcome measures were hence grouped into the following categories: (a) objective indicators of recovery, (b) self-report indicators of recovery, (c) indicators of staff competency, and (d) processes that promote recovery.

Objective indicators of recovery: Hospitalization data. The BHO maintains electronic census records for all individuals receiving residential services. This allowed us to distinguish which days were spent by the resident at one of the organization's programs and which days were spent at a hospital. Though these electronic records do not distinguish between hospitalization for psychiatric and other reasons they can be used to examine rates and durations of hospitalization over the course of the study.

Self-report indicators of recovery: Multnomah Community Ability Scale–Revised Clinician Rated (MCAS-R) and Self Report (MCAS-SR). The MCAS-R is a clinician-rated measure of consumer's ability to function in everyday life, used with SMI populations in treatment planning and outcome evaluation (Barker, McFarland, & O'Malia, 2004). The MCAS-R has previously been used to examine empowerment and coercion at inpatient and

Table 2
Areas of Organizational Change

Area of change	Goals
Adopting a recovery philosophy	Goal 1: To articulate a definition of "recovery," and the related values and principles. Goal 2: To create a "recovery atmosphere" by weaving recovery principles into daily communication and practices. Goal 3: To make recovery a priority at this year's Client Conference. Goal 4: To establish a permanent program Recovery Steering Committee.
Educating staff about recovery and generating buy-in	Goal 1: To include an introduction to recovery in new-hire training. Goal 2: To train existing staff on recovery principles and values, and how to adhere to these in working with residents. Goal 3: To acquaint staff with specific recovery-oriented interventions. Goal 4: To ensure and to monitor staff adherence to recovery values.
Educating residents and generating buy-in	Goal 1: To provide all new admissions with education about recovery, and program's commitment to the RM. Goal 2: To educate existing residents about recovery, and program's commitment to the RM. Goal 3: To educate residents about community self-help and peer-support programs, and to encourage participation in these programs. Goal 4: To teach residents about new recovery-oriented interventions, and to encourage participation in these interventions.
Increasing residents' responsibility at program	Goal 1: To involve residents in program's safety practices. Goal 2: To involve residents in program's policy and procedure development. Goal 3: To involve residents in training/education of staff and other residents. Goal 4: To involve residents in facilitation of self-help and peer-support activities within program. Goal 5: To involve residents in paid and volunteer work at program.
Changing treatment/service interventions	Goal 1: To incorporate evidence-based practices into current services. Goal 2: To incorporate other recovery-oriented interventions into current services. Goal 3: To revise medication supervision procedures to better adhere to recovery principles. Goal 4: To revise "therapeutic agreement" procedures to better adhere to recovery principles. Goal 5: To revise program clinical documents to reflect a recovery orientation. Goal 6: To revise the requirement of 5 days per week of gainful activity to include new options. Goal 7: To enable residents to have more input into where and with whom they will live.

Table 3
Description of Recovery Training for Staff and Residents

Description
The training on recovery values included discussions on hope, respect, stigma, the partnership between residents and professionals, the dignity of risk, decreasing paternalism and caretaking, and increasing the resident's level of responsibility in his/her own services, the organization as a whole, and in the surrounding community. There were also several discussions focused on the differences between traditional behavioral health services (problem-focused, patients passively receiving services, protectiveness, compliance) and recovery-based services (strengths-focused, residents as partners in services, healthy risk taking, and resident-driven goals). The training sessions were supplemented by ongoing team discussions, posters hung at every site, brochures and handouts.
Other training introduced staff and residents to recovery-oriented interventions such as Wellness Recovery Action Planning (WRAP), Illness Management & Recovery (IMR) specific modules as well as general principles, and incorporating Motivational Interviewing skills into day-to-day interventions. Some of the staff had already received IMR training, and IMR was being implemented in a few of our programs as part of a pilot project, but now we worked to spread the use of IMR across the organization. Education and discussion about resident self-help organizations, and the importance of peer support were also provided. Residents then volunteered to act as resident leaders who would provide motivation and guidance to peers, and help set up peer support groups.
Education was also provided on the changes to be made in policies and procedures as part of the roll-out process. The admission process along with the related documentation was revised to be more resident-centered. Intake clinicians were taught the new procedure, which was designed with resident input. Group home and apartment rules were cut down to only what was required by licensing regulations. Where necessary, additional rules were voted on and approved by residents. The "therapeutic agreement" policy was eliminated; this had been a process for warning residents who were breaking rules that they were putting their placement in jeopardy. The treatment planning process, which had been based on a "master problem list," was completely redesigned. The new Recovery Planning process was strengths-based, with goals identified by the resident, and most of the plan written by the resident.
Clinical staff received training and coaching on how to help residents who had never been given the opportunity, to set their own goals and objectives, and the steps to be taken toward them. The existing requirement for residents to be involved in "constructive" activity 5 days per week (which often meant attending a partial care program if the resident was not employed) was expanded to include anything constructive, educational, or positive, as identified by the resident. Attendance at day programs was made voluntary, and residents could substitute employment, volunteer work, or hobbies. Residents were allowed to reduce the amount of their monthly residential service fees if they could document that they used money for positive wellness and recovery-oriented activities (e.g., gym memberships, club dues, saving money for a vehicle).
Training sessions took place in local and regional staff meetings, resident meetings, as well as specially scheduled training sessions, some including staff and residents together. Trainings were conducted by members of the Recovery Steering Committee, local management, combinations of staff and residents, and some outside "experts." Materials and resources used to inform these training sessions included published works and rehabilitation conference materials.

outpatient community treatment centers, as well as in longitudinal evaluations of a cognitive rehabilitation program for individuals with schizophrenia, and factors affecting community placement of consumers with SMI (Hampton & Chafetz, 2002; Prouteau et al., 2005; Strack, Deal, & Schulenberg, 2007). The MCAS-R consists of 17 items, rated on a 5-point Likert scale with higher scores representing a higher level of functioning. The instrument yields a total ability score, as well as subscale scores reflecting fur domains of community functioning, including health (e.g., experiencing limitations due to physical problems), adaptation (e.g., independently performing activities of daily living), social skills (e.g., effectively interacting with others), and adaptive behavior (e.g., participating in the treatment process). The clinician is instructed to rate the abilities and behaviors of a consumer over "the last 30 days," using the information about his or her functioning gained through regular interaction or with the help a semistructured interview.

The MCAS-R has demonstrated good reliability and validity in several studies (Barker et al., 2004; Dickerson, Origoni, Pater, Friedman, & Kordonski, 2003; Hendryx, Dyck, McBride, & Whitebeck, 2001; O'Malia, McFarland, Barker, & Barron, 2002; Zani, McFarland, Wachal, Barker, & Barron, 1999). For example, total scale score predicted subsequent need for psychiatric hospitalization in a large (N = 2,487) sample of patients at community mental health centers throughout the State of Oregon (Zani et al., 1999), replicating an earlier study (Barker, Barron, McFarland, & Bigelow, 1994). Dickerson, Origoni, Pater, Friedman, and Kordonski, 2003 demonstrated that intraclass test–retest correlation coefficients were .96 for total score and .87–.99 for the subscale scores, findings that replicated an earlier reliability study (Barker et al., 1994).

The MCAS-SR is a self-report version the MCAS-R. The MCAS-SR is a reliable and valid instrument that is used in treatment planning and outcome evaluation (O'Malia et al., 2002). For example, O'Malia, McFarland, Barker, and Barron (2002) reported high test–retest reliability for the measure (ICC = .91), and internal consistencies of greater than .80 (Cronbach's alphas) for all subscales. Additionally, the total score correlated significantly with scores on symptom measures and mental health more broadly. The items on the MCAS-SR are worded from the perspective of the consumer and the structure of the instrument mimics that of MCAS-R.

Indicators of staff competency: Competency Assessment Instrument (CAI). The CAI was designed to assess competency to provide services to people with SMI, with a particular emphasis on staff's adherence to a recovery philosophy (Chinman et al., 2003). This instrument consists of 55 self-report items that assess 16 direct care staff competencies and attitudes toward recovery. Each competency is measured with two to five items rated on Likert scales with a varying number of points. Demographic questions about respondent's race/ethnicity, gender, education level, job title, job duties, and the duration of employment in mental health, and in a particular organization are also included in this survey. Chinman et al. (2003) reported that most CAI scales have good internal consistency (Cronbach's alphas = .52–93) and test–retest reliability (scales range from .42 to .78). Validity has been dem-

onstrated in two studies (Chinman et al., 2003; Young et al., 2005). Several recovery-promoting competences and attitudes included in the CAI were deemed to be consistent with the goals of the transformation and prospectively selected for analysis (see Table 4 for description of competencies evaluated by the CAI).

Processes that promote recovery: The State Hope Scale (SHS). Hopeful thinking has been hypothesized to enhance strengths and coping abilities and, therefore, help to prevent and solve various life problems (Snyder, Feldman, Taylor, Schroeder, & Adams, 2000). The SHS is a 6-item self-report measure of hope that provides total and subscale scores (Snyder, 2002). Respondents are asked to rate how they think of themselves "right now," using an 8-point Likert scale with responses ranging from *definitely false* to *definitely true*. The SHS has demonstrated a high level of internal consistency (Cronbach's alphas = .91; Feldman & Snyder, 2000). Concurrent, discriminant, and convergent validity was demonstrated by a pattern of significant correlations with several measures of hope, positive and negative affect, and self-esteem (Snyder et al., 1996). Additionally, this scale has been linked with therapeutic change in inpatient studies of post-traumatic stress disorder and major depression (Coppock, 2007; Irving, Tefler, & Blake, 1997; Snyder, 2002; Steen, 2004).

The Working Alliance Inventory–Client Version (WAI-C) and Therapist Version (WAI-T). The WAI-C/WAI-T are 36-item self-report questionnaires that use Likert scales ranging from 1 (*never*) to 7 (*always*), and provide total working alliance scores, as well as scores on 3 subscales (Horvath & Greenberg, 1989). The subscales (12 items each) measure client and therapist perceptions of agreement on treatment objectives (goal), the ways of achieving these objectives (task), as well as the development of mutual positive personal attachment (bond). The two versions of the instrument are completed by counselor/client dyads engaged in a therapeutic relationship and enable the evaluation of concordant perceptions across factors (Goldberg et al., 2004). The WAI-C/WAI-T has been used in adult inpatient and outpatient treatment settings for clients with SMI (e.g., Buck & Alexander, 2006; Hietanen & Punamäki, 2006); however, correlations between clients' and therapists' ratings have generally been weak (Bale et al., 2006; Couture et al., 2006; Goldberg et al., 2004), as is often the case in research with people with psychotic disorders. The WAI has demonstrated robust reliability across all examined versions with mean reliability estimates ranging from .79 to .97, with a modal estimate of .92 (Hanson, Curry, & Bandalos, 2002).

Reliability estimates for the current sample were calculated for all measures at all timepoints. The SHS, WAI (all subscales), and most of the subscales of the CAI and MCAS (both staff and resident report) had good to excellent reliability (Cronbach's alphas $> .81$). However, several of the subscales of the MCAS and CAI had less than adequate reliability (Cronbach's alphas $< .70$), likely due to the few items that make up these subscales (e.g., the 3-item MCAS Adaptation Subscale).

Research Design

This study analyzed data collected by the organization to assess quality of care. Use of these data for research was approved by the Institutional Review Board of Rutgers University. Data were collected in all participating counties at five discrete data-collection periods during the recovery transformation. Each data-collection period (T1–T5) lasted between 14 and 21 days, and was spaced 1–2 months apart. The phased implementation of the transformation in five counties, each at a different timepoint, gave us an opportunity to examine effects of the transformation to the RM, in-part, independent of time, using a multiple baseline design, where measures were taken in all counties simultaneously.

Prior to the first round of data-collection, all senior staff (Master's-level clinicians and equivalent) participated in an orientation session during which the evaluation portion of the study, described as a "quality-improvement initiative," was introduced. This included the general goal of the study to evaluate the effects of the transformation on staff practices and functioning of residents, the method and the instruments, as well as appropriate methods for distributing, safeguarding, and returning resident and employee surveys. A comprehensive training on completing the

Table 4
CAI Staff Competencies

Competency	Description
Goal functioning*	Assists clients in acquiring the skills needed to get and keep chosen goals.
Stress*	Helps clients understand and cope with stressors that trigger deterioration.
Client preferences*	Learns and respects their clients' preferences regarding their treatment.
Intensive case management	Leaves the office to help clients obtain services and housing
Holistic approach*	Views the client as a whole person and sees beyond the illness.
Family education	Educates family members and other caregivers about mental illness.
Rehabilitation	Practices professionally accepted psychiatric rehabilitation.
Skills advocacy*	Creates opportunities for clients to practice skills.
Integration/Natural supports	Encourages clients to choose, find, and use their own natural supports.
Stigma	Works with clients to cope with being stigmatized.
Community resources*	Refers clients to local employment, self-help, and other rehabilitation programs.
Medication management	Teaches clients symptom and side-effect self-monitoring skills.
Family involvement	Involves family members and helps them cope effectively.
Team value	Provides services as part of a strongly coordinated team.
Evidence-based practice	Focuses on services that have been demonstrated to improve outcomes.
Optimism (Grusky, Tierney, & Spanish, 1989)*	Believes in potential for growth and improvement and has the skills to help the client restore or sustain hope and a sense of the future.

* Denotes competencies identified as consistent with the transformation and prospectively selected for analysis.

MCAS-R, which followed the training protocol outlined by Barker, McFarland, and O'Malia (2004) was also integrated into the orientation. Additional orientation sessions were arranged for staff hired or promoted during the subsequent stages of the evaluation.

During this orientation session, staff were explicitly told that participation by residents was voluntary and received specific instructions regarding the acceptable level of encouragement or help rendered to residents in completing the measures. Employees, in turn, were asked to complete staff-questionnaires as part of an internal "quality improvement initiative," under conditions of anonymity without negative consequences for failing to return completed questionnaires.

Senior staff were responsible for distributing and collecting questionnaires from residents and junior-level employees. During each data-collection interval every resident and staff member involved in direct care received an individualized envelope with surveys and a letter describing the initiative and inviting their participation. Residents and staff were instructed to return completed questionnaires in the provided sealed self-adhesive envelope.

All residents were asked to complete the MCAS-SR and SHS. All direct care employees were asked to complete the CAI. Only senior staff were asked to complete MCAS-R for residents on their caseload. In order to reduce the research burden on staff, we only distributed the WAI-C's to a randomly selected 33% of residents, and asked them to complete the instrument with regard to their working alliance with senior staff member overseeing the residence where they lived. We instructed the corresponding senior staff to complete the WAI-T on these same residents. On an ongoing basis, we replaced residents, whose affiliation with the program ended during the evaluation stage, using the same randomization algorithm, in order to keep the percentage of WAI completers constant.

All questionnaires were completed anonymously, each identified by a code number that was linked to individuals only for purposes of statistical data analysis of repeated observations. The responses of participants were not made available to other staff, residents, or administration. Hospitalization and housing data were taken anonymously from corporate records for all individuals affiliated with the organization during the evaluation period. Some residents were illiterate and some were only marginally fluent in English. In such cases, patients completed questionnaires with the assistance of a staff member. Staff members were instructed to only assist in reading and understanding of items and were explicitly asked not to provide any suggestions or answers. No data on how many residents were assisted was collected.

N's on particular measures varied because of missing values for particular items. A survey was defined as "completed" if it contained one or more responses, and the classification of "unknown" was used if a survey was not returned. The categories used to classify surveys which were returned incomplete included hospitalization, refusal, unavailability, or termination of a resident or an employee. Survey fatigue may have also contributed to some loss of data; however, all reasons for the loss of data could not be reliably tallied. Staff response rate could not be captured due to the organization's reliance on per diem workers, whose census varied from one assessment period to another, and resident response rate was established at 85.2% (see Table 5).

Table 5
Response Rate on MCAS-SR by Residents

	Avg. census (T1–T5)	Avg. # of completers (T1–T5)	% Responders
County 1	104.6	87.4	83.56
County 2	146.6	118.8	81.04
County 3	91	80.4	88.35
County 4	86.2	77.4	89.79
County 5	89	76.8	86.29

Data Analysis

Data analytical strategies used in this evaluation attempted to capitalize on the natural multiple baseline design of the transformation, which allowed for an inference about the relationship between the implementation of the intervention and timing of improvement. We compared counties on all baseline dependent variables using Tukey's correction for multiple comparisons for each variable. Though the comparison revealed some differences (e.g., on Global and Health ratings on MCAS-R and on Client Preferences, Optimism, and Community Resources ratings on CAI), the overall pattern of results suggested that the counties were similar at baseline. Therefore, to increase power, we used a "before versus after" comparison, in which we collapsed pretransformation and post-transformation observations for all counties across time periods.

To examine the effects of the recovery transformation on hospitalization, the total number of days spent in the hospital by all residents enrolled in the year before and in the year after the transformation was calculated. Hospitalization data were also analyzed using Wilcoxon signed-ranks test to compare the number of residents' days spent in the hospital from before with after the transformation.

Analyses of the effects of the transformation on residents' recovery indicators, staff competencies, and processes that promote recovery (questionnaire data provided by staff and residents), were conducted using individual growth curve modeling (IGC; Raudenbush & Bryk, 2002) with software package HLM6.06. This approach hypothesizes a growth trajectory for each patient. IGC has several advantages over other repeated measures data analytic strategies as it can: (a) take into account the hierarchical structure of the data (e.g., observations nested within person); (b) examine the within person change over multiple assessments rather than being limited to comparisons between pairs of assessments; and (c) model each person's trajectory regardless of how many assessment points were contained in the pre- or post-transformation periods (Singer & Willett, 2003).

IGC examines multiple observations that are "nested" within individual, modeling them at two levels. At Level 1, a least-squares regression equation is fit to each individual's data across all time points (this equation is the growth curve), and each individual's scores on a criterion are regressed on time (Brekke, Hoe, Long, & Green, 2007). In order to examine the effect of the transformation, in the Level-1 equation, the variable (random effect) of whether or not the observation was taken during the evaluation period (e.g., 0 = *before the transformation*; 1 = *after the transformation*) was included. Thus, if the beta (i.e., slope coefficient) for this variable was significant, then the questionnaire

ratings were different from before the transformation to after the transformation. Because of the staggered nature of the transformation, it is likely that this variable reflects the implementation of the RM more than merely the passage of time.

Results

Objective Indicators of Recovery (Hospitalization)

Figure 1 shows the change in the number of overnight hospitalizations from the year before the recovery transformation to the year after the recovery transformation. According to computerized census records, the total number of days spent in the hospital by residents in all programs taken together was reduced from 4,994 days in the year before the transformation to 2,970 days in the year after the transformation. This is a decrease of 40%. Hospitalization days decreased in all counties. The average number of days spent hospitalized overnight by residents across all counties also decreased significantly from $M = 9.79$ ($SD = 26.68$) for the month before the transformation to $M = 5.52$ ($SD = 19.74$) for the month afterward: Wilcoxon signed-ranks test $Z = 3.554$, $p < .001$, Cohen's $d = .32$. Similarly, days of hospitalization decreased significantly among those patients who were hospitalized in the year prior to the transformation from an average of 34.7 ($SD = 40.8$) days to an average of 9.7 ($SD = 25.4$) days, $t(143) = 6.57$, $p < .001$, Cohen's $D = .55$.

We calculated chi-squared goodness of fit tests to examine whether the programs differed on their respective change in number of hospital days. County 2 had a significantly ($p < .05$) smaller drop than Counties 3 and 5, which did not differ from each other; and County 4 had a significantly larger drop than all other programs. Although this ranking would appear to indicate a greater effect as counties progressively introduced the transformation, the data are not entirely consistent with this interpretation, because the RM was introduced simultaneously in Programs 3 and 4, in December, 2006, and it was rolled out a month later in Program 5.

Self-Report Indicators of Recovery (MCAS)

As seen in Table 6, senior staff reported that residents improved in domains of health, adaptation, and behavior. The global assessment of residents' functioning also improved at a significant level. Nevertheless, the changes were relatively small, and their clinical significance is unclear. Residents did not report any statistically significant improvements on any domain of the MCAS or the global rating; however, their self-ratings approached significance on the adaptation and social skills domains, and the global rating.

Table 6
Self-Report Indicators of Recovery

	Mean (*SD*) before transformation	Mean (*SD*) after transformation	Comparisons from HLM Coef *(SE),* *p*-value
MCAS-R (Staff)			
Adaptation	3.49 (0.93)	3.68 (0.90)	0.13 (0.03), $p < .001$
Behavior	4.23 (0.59)	4.38 (0.55)	0.10 (0.02), $p < .001$
Health	3.98 (0.74)	4.20 (0.64)	0.17 (0.03), $p < .001$
Social skills	3.45 (0.79)	3.44 (0.79)	0.01 (0.03), *ns*
Total	3.80 (0.62)	3.93 (0.57)	0.10 (0.02), $p < .001$
MCAS-SR (Resident)			
Adaptation	3.84 (0.84)	3.88 (0.85)	0.06 (.03), $p = .10$
Behavior	4.54 (0.57)	4.51 (0.59)	−0.03 (0.02), *ns*
Health	3.86 (0.86)	3.90 (0.86)	0.03 (0.03), *ns*
Social skills	3.63 (0.74)	3.63 (0.78)	0.05 (.03), $p = .07$
Total	3.94 (0.57)	3.96 (0.59)	0.03 (.02), $p = .10$

Indicators of Staff Competency (CAI)

Table 7 summarizes results of direct care employees' self-ratings on recovery-oriented competencies targeted by the transformation. Staff reported statistically significant improvements on three of the seven subscales prospectively selected for analysis: client preferences, holistic approach, and optimism. No statistically significant improvements were found on the remaining subscales.

Processes That Promote Recovery (WAI & SHS)

Results of senior staff and residents' ratings of working alliance measured by the WAI are summarized in Table 8. Senior staff who completed this measure reported statistically significant improvements on all aspects of the working alliance with their randomly selected resident counterparts during the postrecovery transformation period. There was also a significant improvement in the overall rating of working alliance by senior staff. Residents' perceptions of the working alliance of the dyad did not improve significantly, however. There was also no change in the level of hope among residents, measured by the SHS (also see Table 8).

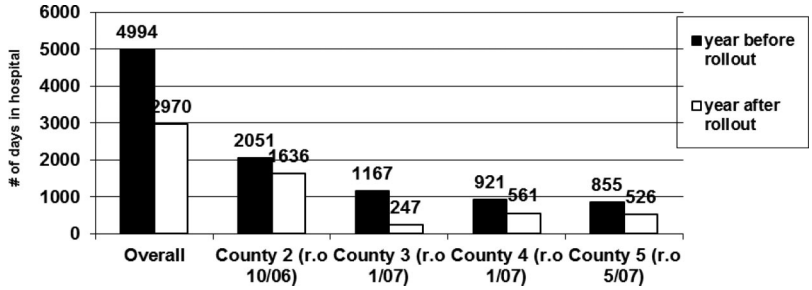

Figure 1. Total number of overnight hospitalizations.

Table 7
Indicators of Staff Competency

	Mean (*SD*) before transformation	Mean (*SD*) after transformation	Comparisons from HLM Coef *(SE), p*-value
CAI (All staff)			
Client preferences	0.65 (0.14)	0.70 (0.14)	0.03 (.01), $p < .01$
Community Resources	0.45 (0.17)	0.46 (0.18)	0.01 (0.01), *ns*
Goal functioning	0.53 (0.28)	0.57 (0.27)	0.01 (0.02), *ns*
Holistic	0.41 (0.18)	0.57 (0.20)	0.03 (.01), $p < .001$
Optimism	0.46 (0.15)	0.52 (0.15)	0.05 (.01), $p < .001$
Skills advocacy	0.49 (0.24)	0.48 (0.24)	−0.01 (0.01), *ns*
Stress	0.51 (0.28)	0.52 (0.29)	−0.01 (0.01), *ns*

Changes Before the Transformation

The pre- versus post-transformation changes can be compared with changes occurring over equivalent time periods before transformation. For the three counties with at least two pretransformation assessments, there was high rank order stability (all *p*s $< .001$) for all subscales on the MCAS-R (*r*s range from .38 to .70), MCAS-SR (*r*s range from .42 to .57), WAI-T report (*r*s range from .77 to .81), WAI-C report (*r*s range from .57 to .61), CAI (*r*s range from .46 to .74), and the SHS ($r = .59$). Generally there were no significant mean differences across the first two (baseline) assessments (*p*s $> .05$). For the few scales for which the mean levels did statistically change across the baseline, the changes during baseline were small.

Discussion

This study represents, to our knowledge, the first empirical evaluation of a system-wide transformation to recovery-oriented care. Although not all findings were consistent with hypotheses about the effect of the RM, the introduction of the recovery program was associated with several clinically significant effects. The most important of these was on hospitalization. After initiation of the recovery transformation, the number of days spent in the hospital decreased by about 40%. Such a large reduction suggests that introducing the RM in psychiatric rehabilitation programs for individuals with SMI could have important public health implications. Hospitalization for SMI represents a significant societal cost. The average length of hospital stay for individuals with principal diagnoses of schizophrenia and major depressive disorder is 11.7 and 6.7 days, respectively (DeFrances, Lucas, Buie, & Golosinskiy, 2008; Healthcare Cost and Utilization Project [HCUP], 2009). In 2002, U.S. inpatient costs for schizophrenia have been estimated to be $2.8 billion (Wu et al., 2005), so a large decrease in hospitalizations could represent a proportionately large cost savings. Although it is possible that the decrease in hospitalizations resulted from the effects of the recovery transformation on patients' health and ability to cope, it also is possible that it reflected an improvement in staff members' abilities to manage patients' exacerbations without resorting to hospitalization. Our data could not determine which of these alternatives was the case.

Hospitalization records examined in this study cannot distinguish between hospitalizations for psychiatric and other reasons. However, because hospitalizations for nonpsychiatric reasons are expected to increase with age (DeFrances et al., 2008; HCUP, 2009), and because the program did not introduce any initiatives that were likely to reduce nonpsychiatric hospitalizations, it is fair to speculate that a significant source of variance in the observed drop in hospitalizations for this aged sample ($M = 46.42$) is attributable to a reduction in psychiatric hospitalizations. Among the recovery-specific factors that may have led to a decrease in psychiatric hospitalizations is the presence of a less controlling atmosphere with an associated decrease in frustration and crisis among residents. Similarly, an increase in resident's responsibility for one's own recovery may have resulted in staff's improved confidence in resident's ability to make decisions concerning their

Table 8
Processes That Promote Recovery

	Mean (*SD*) before transformation	Mean (*SD*) after transformation	Comparisons from HLM Coef *(SE), p*-value
WAI (Senior staff)			
Bond	5.72 (0.70)	5.85 (0.66)	0.15 (.04), $p < .001$
Goal	4.99 (0.83)	5.35 (0.90)	0.35 (.06), $p < .001$
Task	5.25 (0.83)	5.56 (0.82)	0.33 (.06), $p < .001$
Total	5.32 (0.72)	5.59 (0.74)	0.28 (.05), $p < .001$
WAI (Resident)			
Bond	5.52 (1.05)	5.61 (1.05)	0.07 (.07), *ns*
Goal	5.14 (0.99)	5.27 (1.00)	0.10 (0.07), *ns*
Task	5.35 (1.02)	5.43 (1.01)	0.09 (0.07), *ns*
Total	5.34 (0.96)	5.44 (0.95)	0.09 (0.07), *ns*
Hope scale (Resident)	5.83 (1.48)	5.92 (1.41)	0.06 (0.06), *ns*

care, and to manage exacerbations in symptoms without necessarily referring for acute psychiatric services.

Senior staff's ratings of residents' ability to function in the community suggest that recovery-oriented mental health care may be associated with improved functioning in various aspects of everyday life. The emphasis on increasing self-reliance of residents and development of personalized treatment goals in the context of supportive relationships may account for this finding. Residents' reports that there were no improvements on any aspect of every-day functioning were inconsistent with ratings by senior staff. Although it is possible that the transformation had no impact on functioning from a residents' perspective, there are other compelling ways to account for this inconsistency in report. Discrepancy between self-report and informant's ratings of functioning, and its implications on selection of outcome measures, is a topic that has generated discussion among researchers interested in treatment of functional disability in SMI (e.g., Bell, Fiszdon, Richardson, Lysaker, & Bryson, 2007; Bellack et al., 2007; Harvey, Velligan, & Bellack, 2007). This discrepancy is common and often is attributed to the "lack of insight" among people with schizophrenia (Amador & David, 1998; Harvey et al., 2007; Homayoun, Nadeau-Marcotte, Luck, & Stip, 2011; Johnson, Tabbane, Dellagi & Kebir, 2011; Williams, Alagaratnam, & Hemsley, 1984). Several recent studies, however, have challenged this explanation (Bell et al., 2007; Liraud, Droulout, Parrot, & Verdoux, 2004; Ready & Clark, 2002). According to Leifker, Patterson, Heaton, and Harvey (2009), though this inconsistency is also often tied to differences in perspective between informants and consumers, and in properties of instruments used to assess functioning, there is no consensus among researchers concerning its causes. Reasons for this disparity thus require further research.

Self-report by direct care providers suggests that some core competencies for providing care to individuals with SMI improved after the recovery transformation, particularly the manner with which residents are conceptualized (i.e., viewing client as a whole person, understanding and respecting choices about treatment, and believing in potential growth and improvement). Self-reported competencies that did not improve had to do with specific interventions and activities (i.e., helping clients to access resources, acquire skills, create opportunities to practice skills, and promote coping with stressors). These findings are consistent with the primary emphasis of the transformation on changing the guiding philosophy and the culture of the organization, rather than on changing particular treatments offered to residents.

The findings on working alliance are consistent with outcomes on measures of daily functioning: Senior staff perceived improvements on all aspects of the working alliance, yet residents did not. This discrepancy could be similarly attributed to a variety of factors, including problems with insight self-report in SMI, and differences in perspective. A recent meta-analysis of 53 studies that collected working alliance data from clinicians' and clients' perspectives found that working alliance ratings correlated only moderately across studies, with clients generally providing higher ratings than clinicians (Tryon, Blackwell, & Hammel, 2007). The current findings are in line with the results of this meta-analysis.

Although there is no normative data on ratings of hope among patients with SMI on instruments measuring this construct, it appears that the mean level of hope was already quite high prior to the introduction of the transformation. Thus, lack of improvement in hope could reflect a ceiling effect. There are, however, indications from prior studies that hope can improve with an introduction of a psychosocial intervention (Dickerson, 2002; McCay et al., 2007). This suggests that specific hope-promoting strategies or interventions, absent in the organization's transformation (e.g., Cheavens, Feldman, Gum, Michael, & Snyder, 2006; Kirkpatrick et al., 1995; McCann, 2002), may be necessary to achieve an improvement in hope. Alternatively, it is possible that recovery-oriented care does not impact clients' hope, that improvement in hope is not necessary for improved general outcome, or that an increase in hope is a consequence of other aspects of treatment response or life changes that did not occur as a result of this project (see Silverstein & Bellack, 2008).

Overall, this study provides preliminary support for the notion that recovery-oriented services offer a viable alternative to more traditional approaches to mental health care. Evidence suggests that the organization's transformation had a positive impact on several staff competencies that promote recovery and community functioning, as indicated by senior staff ratings. There was also an associated improvement in senior staff's perceptions of the working alliance, which is consistent with the conceptualization of a supportive relationship as a recovery promoting interpersonal process. Reduction in hospitalizations in the year following the transformation is the most significant finding of this study. It indicates that recovery-oriented services could help residents to remain in the community longer, thus improving housing stability and reducing costs of psychiatric care. These findings are relevant in establishing an empirical basis for mental health care services aimed at promoting recovery from SMI. By providing a framework for development and evaluation of recovery-oriented mental health care, these findings also have relevance to administrators and policymakers responsible for service planning on institutional and government levels.

Limitations

This study has several limitations. First, the study relied on "before versus after" data analytical strategies, rendering the findings susceptible to criticism that the observed differences are due to the passage of time and not due to the recovery transformation. Changes may have occurred in insurance coverage of hospitalizations or availability of other nonhospital services, although we know of no such changes occurring within this time period. Additionally, it would be unlikely that such changes, if they had occurred, would have taken place precisely during the transformation month, separately for each county.

Second, it is possible that the findings are subject to expectancy effects. That is, the staff may have wanted to demonstrate that the transformation was successful, or perceived adverse consequences of their failure to improve on variables under investigation. This phenomenon is difficult to control in "real-world" studies where mental health employees also act as raters of their own performance. However, the lack of statistically significant improvement on some variables (i.e., four of the seven prospectively identified staff competencies, the social skills subscale of the MCAS) suggests that the expectancy effect was minimal or restricted to some variables but not to others. Most importantly, the expectancy effect would also not explain the reduction in the hospitalization rate. Of

note is that hospitalization was not discussed in staff training procedures.

Third, it is impossible to distinguish the extent to which the improvement in staff's ratings of residents' functioning and working alliance post-transformation represents "recovery" among residents, or improvement in the general clinical skills of direct care employees, and these of course are not independent of each other. For instance, the findings may indicate that as a result of additional training, staff became more familiar with residents, better at assessing their functioning, more sensitive to resident's unique circumstances, or better able to foster therapeutic relationships. Incidentally, residents receiving services from the program did know that the RM was being implemented and that we were evaluating it; however, they knew nothing about the methods and goals of the evaluation. So we believe it is unlikely that they responded to demand characteristics of the intervention (i.e., "Hawthorne" effect, where positive behavior changes result from the process of being studied), because such changes did not occur during control periods, where the same research measures were taken.

A fourth limitation has to do with generalizability of findings. Even though the transformation was implemented by closely adhering to standards of recovery-oriented mental health care, it is unclear whether the organization represented a cross section of community mental health agencies in the United States or abroad. Additional data, on hospitalization rates, functioning of residents, staff competencies, and working alliance and staff competencies in other agencies providing comparable services similar are necessary to effectively respond to this concern.

Nevertheless, despite the pitfalls of conducting a study in a real-world setting with patient dropout and staff turnover, our results robustly show that moving toward recovery oriented care is helpful, as has been predicted in past professional discussions and consumer accounts of recovery. Particularly striking is the sharp decrease in hospitalizations, which could potentially represent a major savings in public health care costs, as well as a major improvement in quality of life for individuals with SMI. Future research is necessary to verify our results in other settings, and to more clearly isolate components of the RM that lead to these beneficial effects.

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