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ORIGINAL ARTICLE

Psychosocial and functional contributors to personal recovery in serious mental illness

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ABSTRACT

Background: Although recovery-oriented services have been conceptualized to improve personal recovery, related research often focuses on measures of clinical recovery. Identifying the relationships between personal recovery, clinical recovery, and psychosocial variables will inform service components and outcome measurement in recovery-oriented services.

Aims: This study sought to determine the connection between personal recovery and two sets of potential contributors: psychosocial variables (i.e., empowerment, resilience, and consumer involvement) and functional indicators of clinical recovery.

Method: These relationships were examined by analyzing survey data collected from 266 consumers who are receiving public mental health services in the United States.

Results: Empowerment, resilience and psychological involvement were associated with personal recovery. Clinical recovery did not uniquely contribute to personal recovery once psychosocial factors were accounted for. Interactions revealed that the relationship between psychological involvement and personal recovery was stronger for those who had been recently hospitalized, and for those with relatively greater resilience.

Conclusions: Results indicate that personal recovery is an essential outcome measure for recovery-oriented services that cannot be replaced by clinical recovery outcome measurement. Additionally, empowerment, resilience, and consumer involvement are key components of recovery, which suggests that services and outcome measures should prioritize incorporation of these constructs.

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Serious mental illness; personal recovery; functioning; empowerment; resilience; outcome measurement

Introduction

The idea of personal recovery in serious mental illness (SMI) took on its modern form in the 1980s, as part of a consumer movement reacting to reductionistic medical models that had come to dominate mental health services (Deegan, 1988; Spaulding, Montague, Avila, & Sullivan, 2016). The personal recovery movement argues that SMI is more like a disability to be managed than a disease to be cured. Therefore, recovery from SMI means recovery of personal and social functioning and the pursuit of personal meaning, beyond suppression or remission of psychotic symptoms with psychiatric drugs (Davidson & Roe, 2007; Stuart, Tansey & Quayle, 2017).

Although diverse concepts of rehabilitation and recovery have evolved (Glynn, 2014), the mainstream contemporary view is that recovery is the lived experience of the person, encapsulating hope for a better future, empowerment, social connectedness, personal meaning, and quality of life (Corrigan, Giffort, Rashid, Leary, & Okeke, 1999; Davidson et al., 2001; Frese, Stanley, Kress, & Vogel-Scibilia, 2001; Leamy, Bird, Le Boutillier, Williams, & Slade, 2011; Stuart et al., 2017). Personal recovery is thus distinct from clinical recovery (Bellack, 2005; Davidson & Roe, 2007; Leonhardt et al., 2017; Macpherson et al., 2016; Silverstein & Bellack, 2008), the latter of which includes observably more effective personal and social behavior, engagement in occupational activities, avoiding hospitalization and restrictive clinical settings, a better personal financial situation, more friends, and better access to community resources (Liberman, Kopelowicz, Ventura, & Gutkind, 2002).

A number of studies have investigated the relationship between personal recovery and clinical recovery (Chan, Mak, Chio, & Tong, 2017; Clarke, Oades, Crowe, Caputi, & Deane, 2009; Markowitz, 2001; Van Eck, Burger, Vellinga, Schirmbeck, & de Haan, 2017). This set of work indicates that personal recovery is impacted by clinical recovery components including behavioral activation, employment, functional capacity, goal attainment, and symptom remission. Some of these findings are contradictory; for example, depending on the study, personal recovery and symptoms are found to be positively (Ahmed, Birgenheir, Buckley, & Mabe, 2013), negatively (Markowitz, 2001; Van Eck et al., 2017), variably (Chan et al., 2017), and nonsignificantly (Roe, Mashiach-Eizenberg, & Lysaker, 2011) associated.

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Additional work found significant relationships between personal recovery and psychosocial constructs including consumer involvement, empowerment, and resilience (Ahmed et al., 2013; Chan et al., 2017; Hendryx, Green, & Perrin, 2009; Lloyd, King, & Moore, 2010). A recent review of this literature (Soundy et al., 2015) concluded that psychosocial factors, particularly personal identity, meaning, and social connection, are necessary for personal recovery. Although both clinical recovery components and psychosocial constructs appear to significantly impact personal recovery for people with SMI, it is unclear how the two sets of constructs work together.

Existing literature also indicates that psychosocial constructs and clinical recovery components are correlated (Abdallah, Cohen, Sanchez-Almira, Reyes, & Ramirez, 2009; Brown, Rempfer, & Hamera, 2008; Corrigan, 2006; Flanagan & Davidson, 2009; Kilian et al., 2003; Torgalsb⊘en, 2012). Some of this research suggests that better clinical recovery outcomes lead to better psychosocial outcomes. For example, people who show no obvious signals of mental illness (e.g. talking to themselves, looking dirty or disheveled) have an easier time becoming involved with communities of their choice (Flanagan & Davidson, 2009). Other research indicates the opposite pathway; for example, people with SMI with higher levels of resilience are more likely to experience sustained recovery without medication (Torgalsb⊘en, 2012).

None of the existing literature, to our knowledge, identifies how psychosocial and clinical recovery outcomes operate together to promote personal recovery outcomes. Identifying the pathways to personal recovery is essential, given present priorities to promote personal recovery in mental health care for SMI. Researchers, consumers and other stakeholders have emphasized the importance of applying personal recovery principles to services and service systems, typically referred to as recovery-oriented services (Bullock, Ensing, Alloy, & Weddle, 2000; Farkas, Gagne, Anthony, & Chamberlin, 2005; Salyers & Tsemberis, 2007; Slade et al., 2014). However, most research to date about these services measure clinical recovery outcomes, as opposed to personal recovery. For example, the RAISE Early Treatment Program is a recovery-oriented treatment package for first episode psychosis, including supported education, supported employment, shared decision making, and psychoeducation about recovery (Kane et al., 2015). However, personal recovery was not among RAISE's primary outcome variables (symptom remission, functional recovery and quality of life; Kane et al., 2016). Similar patterns can be seen in other studies of recovery-oriented interventions (Cook et al., 2012; Druss et al., 2010; Goering et al., 2011; van Gestel-Timmermans, Brouwers, van Assen, & van Nieuwenhuizen, 2011).

It's important to note that many of these studies included other psychosocial variables, including empowerment, that are theoretical components of personal recovery (Leamy et al., 2011; Stuart et al., 2017). These studies may conceptualize personal recovery as a secondary outcome, resulting from the process of engaging in recovery-oriented services, or from a cascade effect caused by improvements in primary outcomes. Although the pursuit of clinical recovery is still appropriate within the recovery-oriented service paradigm, it's unclear whether current recovery-oriented services do in fact improve personal recovery, and if so, via what mechanism (Meehan, King, Beavis, & Robinson, 2008). Therefore, it is necessary to clarify whether it is appropriate to use clinical recovery outcome measures when evaluating recovery-oriented services and monitoring individual outcomes.

There have been a small number of intervention studies using personal recovery as an outcome measure (Barbic, Krupa, & Armstrong, 2009; Goldberg et al., 2013; Lloyd-Evans et al., 2014; Lucksted et al., 2011; Palmer et al., 2015). These studies indicate that peer support, psychoeducation and skills training about recovery, stigma, and psychiatric self-management processes improve recovery as well as hope and empowerment (Barbic et al., 2009; Lloyd-Evans et al., 2014; Lucksted et al., 2011). However, a peer-led, physical health-focused self-management psychoeducation group did not have the same effect (Goldberg et al., 2013), so the active ingredient promoting recovery in these interventions remains unclear. More information is needed to understand mechanisms of personal recovery so that services target essential constructs and outcome measures are congruent with those constructs.

Therefore, this study aimed to better understand the interaction between personal recovery, clinical recovery components, and psychosocial variables in order to better inform the service components and outcome measurement of recovery-oriented services. Evidence that clinical recovery components explain most or all of the variance in personal recovery scores would indicate that using solely clinical recovery measures in recovery-oriented services is sufficient to monitor changes in clinical recovery and personal recovery. However, if clinical recovery components do not explain a majority of the variance, a clear clinical implication would be that personal recovery is a necessary primary outcome measurement for recovery-oriented services. Variance explained by psychosocial variables would also lead to implications regarding which aspects of personal recovery are most key in recovery-oriented services and in measurement of outcomes.

We focused on functional indicators of clinical recovery rather than symptom remission because functioning is a primary outcome target of both traditional medical model programming as well as recovery-oriented services. We identified three psychosocial variables to target for this study: empowerment, resilience, and consumer involvement. *Empowerment* includes self-determination as a recipient of mental health services, as well as an overall sense of agency and hope (Fisher, 1994; Schutt & Rogers, 2009; Kaczinski, Resnick, & Rosenheck, 2009). *Resilience* is the ability to adapt and overcome in adverse or traumatic situations (Meyer & Mueser, 2012; Torgalsb⊘en, 2012). *Consumer involvement* includes physical involvement in daily activities, social integration within one's chosen community, acceptance by community members, and meaningful involvement in organizations pertinent to one's consumer-related identity

(Min & Wong, 2015; Treichler, Evans, Johnson, O'Hare, & Spaulding, 2015; Wong & Solomon, 2002).

The purpose of this study is to determine whether personal recovery is associated with these two sets of constructs: psychosocial variables (i.e., empowerment, resilience, and consumer involvement) and functional indicators of clinical recovery (i.e., independent living, being in residential rehabilitation, employment, school enrollment, volunteering, recent use of crisis services, hospitalization in the last year, and being a peer support person). We hypothesize that psychosocial and functional measures are independently associated with personal recovery: complementary and related, but not completely overlapping. If our findings support our hypothesis, this would indicate that recovery-oriented services should integrate interventions which target these two sets of constructs and use a multifaceted assessment package to assess outcomes.

Methods

Participants

The participants were 266 consumers with SMI currently receiving public mental health services. The average age of the participants was 44.8 ($SD = 11.48$), 46.2% were male, and 42.5% lived independently. Table 1 shows additional descriptive statistics.

The participants were recruited from 10 state-funded day programs in urban, small-city and rural regions of a Midwestern state. Day programs, for the purpose of this study, are outpatient-based programs that receive public funding to provide recovery-oriented rehabilitation multiple days per week for at least half of the day, intended specifically for adults with SMI.

Measures

Personal recovery

Personal recovery was measured with the Recovery Assessment Scale (RAS) (Giffort, Schmook, Woody, Vollendorf, & Gervain, 1995), a 41-item self-report instrument with a 5-point Likert scale. The RAS has well-known psychometric properties (Corrigan et al., 2004). The RAS measures five dimensions: *personal confidence and hope, willingness to ask for help, goal and success orientation, reliance on others,* and *no domination by symptoms,* and combines them into a single index of personal recovery. Internal consistency in our sample was favorable, Cronbach's alpha = 0.978.

Table 1. Descriptive statistics.

Variable	*Mean*	*SD*
Age (years)	44.77	11.48
	n	%
Gender (Male)	123	46.2%
Living independently	113	42.5%
Living in a residential rehabilitation program	40	15.0%
Employed full-time or part-time	58	22.3%
Enrolled in school full-time or part-time	47	18.5
Being a volunteer	83	38.6%
Highest level of education		
Less than high school	55	20.7%
High school diploma	97	36.5%
Some college	72	27.1
2-year or 4-year college degree or above	39	14.7%

Psychosocial variables

Empowerment was measured using the Empowerment Scale (ES) (Rogers, Chamberlin, Ellison, & Crean, 1997), a 28-item self-report measure with a four-point Likert scale. The ES has been validated in multiple studies (Rogers et al., 1997; Rogers, Ralph, & Salzer, 2010). Internal consistency in our sample was favorable, Cronbach's alpha = 0.784 (with reverse items).

Resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills & Stein, 2007). The 10-item CD-RISC was adapted from the full length CD-RISC (Connor & Davidson, 2003) to stabilize its factor structure (Campbell-Sills & Stein, 2007). The 10-item CD-RISC uses a five-point Likert scale and has a unitary factor structure with favorable internal consistency, with a Cronbach's alpha ranging from 0.75 to 0.85 (Campbell-Sills & Stein, 2007; Klasen, Oettingen, Daniels, Post, & Hoyer, 2010). Internal consistency in our sample was favorable, Cronbach's alpha = 0.928.

Three subdomains of *consumer involvement,* psychological, physical, and social involvement, were measured with two instruments. The Community Integration Measure (CIM) (McColl, Davies, Carlson, Johnston, & Minnes, 2001) measured consumers' psychological involvement. Researchers have used the measure successfully with populations with SMI (Lloyd, Waghorn, Best, & Gemmell, 2008; Lloyd et al., 2010). Internal consistency of the CIM among day rehabilitation users was favorable; Cronbach's alpha = 0.85 (Lloyd et al., 2008). Our internal consistency was similar, Cronbach's alpha = 0.899.

The Community Integration Questionnaire (CIQ) (Willer, Rosenthal, Kreutzer, Gordon, & Rempel, 1993) was included to evaluate physical and social involvement of participants. The CIQ was constructed to measure community integration following brain injury. The measure has three factors: home integration, social integration, and productivity (Kaplan, 2001; Sander et al., 1999; Willer et al., 1993). The home integration and social integration subscales mirror the physical integration and social integration components of consumer involvement. The CIM and CIQ are positively correlated, $r = 0.343$, suggesting associated but not identical constructs (Reistetter, Spencer, Trujillo, & Abreu, 2005). Internal consistency in our sample was favorable for the home integration subscale, Chronbach's alpha = 0.740, but not for the social integration subscale, Chronbach's alpha = 0.486. Therefore, we used only the home integration subscale.

The Temple University Consumer Inclusion measure (TUCI; Salzer, personal communication, March 21, 2011) was included to evaluate provider support of consumer involvement. The TUCI is a 12-item measure using a four-

Table 2. Intercorrelations of clinical and psychological variables significantly correlated with the RAS (personal recovery).

	1	2	3	4	5	6	7	8
1. RAS								
2. ES	0.593***							
3. CD-RISC	0.649***	0.600***						
4. CIM	0.606***	0.496***	0.615***					
5. TUCI	0.342***	0.374***	0.267***	0.344***				
6. Importance of personal inv.	0.190***	0.177**	0.204***	0.290***	0.342***			
7. Importance of group inv.	0.239***	0.156**	0.153**	0.338***	0.410***	0.666***		
8. Hospitalized past year	0.202***	0.105*	0.149**	0.236***	0.025	0.111	0.064*	
9. Volunteering	−0.131***	−0.179**	−0.187**	−0.154*	−0.154*	−0.143*	−0.090	−0.130*

*$p < .05$, **$p < .01$, ***$p < .001$.

point Likert scale, developed through the Temple University Collaborative on Community Inclusion of Individuals with Psychiatric Disabilities. Internal consistency in our sample was favorable, Cronbach's alpha = 0.900.

Last, two items were used to measure beliefs about consumer involvement. These two questions asked the participants to rate *how important* it was for them individually, and for consumers as a group, respectively, to be engaged in consumer involvement activities. These items were rated on a 5-point Likert scale from "not at all important" to "extremely important." They were included because the other measures of consumer involvement do not directly address beliefs about the importance of consumer involvement, which may influence consumer involvement behavior.

Functional indicators of clinical recovery variables

Clinical recovery was measured using an inventory of clinical recovery indicators that was assembled specifically for this study. These indicators were: independent living, being in residential rehabilitation[1], employment, school enrollment, volunteering, recent use of crisis services, hospitalization in the last year, and being a peer support person. Some items for this inventory correspond to items in the nomothetic CIQ scale (i.e., employment, school enrollment, volunteering). Those items were only included in the measurement of clinical recovery factors and not in the measurement of consumer involvement. Each indicator was included in the analysis as a separate binary (yes/no) variable.

Procedure

This study received ethical approval from the Institutional Review Board at the University of Nebraska-Lincoln. Consumers completed self-report surveys at their day program or at a public library. Consumers were provided a $10 Wal-Mart certificate as compensation for their time.

In pursuit of understanding the recovery paradigm in its fullest context, this study incorporated principles and procedures of *participatory action research* (Baum, MacDougall, & Smith, 2006). Participatory methodology focuses on using research procedures to make a positive impact on the target population, including empowering participant communities. Operationally, this meant that consumers were included on an advisory council providing guidance to the project and functioned as research assistants. Consumer research assistants participated in data collection, analysis and interpretation, and presented the results to study participants and other day program participants after completion.

Data analysis procedure

First, bivariate correlations between the RAS and the other measures were computed. Second, the stepwise regression analysis was conducted using IVs that showed significant bivariate correlations with the target variable (the RAS). The objective IVs were entered first (stepwise) in a single block. The psychological IVs were entered (stepwise) in a second block. Interaction terms, calculated as the product of centered DVs showing significant unique contributions to the model, were entered (stepwise) in a third block.

Results

Bivariate analyses

See Table 2 for all variables significantly correlated with RAS (personal recovery). The RAS was significantly correlated with all the psychological measures except for the CIQ home integration subscale. RAS was correlated with two clinical recovery indicators, recent hospitalization and volunteering. All valences were in the expected direction; participants who reported higher scores on the RAS tended to report more desirable scores on the other measures.

Multivariate analyses

The final parameters of the stepwise regression analysis are shown in Table 3. Given multiple correlations among the independent variables, variance inflation factors were assessed and confirmed as acceptable. The final model accounted for approximately 71.2% of the variance in RAS scores, with simple effects accounting for 55.2% and the interaction terms accounting for 16% of the variance.

The CD-RISC/CIM interaction indicates the slope of the vector for CIM increases as CD-RISC increases (Figure 1);

[1]Although residential psychiatric rehabilitation may seem the inverse of independent living, individuals in residential programs may achieve levels of independence, even while in the program, that exceeds that of individuals in assisted or supported living, at least in some domains. Also, the recovery orientation of a residential rehabilitation program is expected to be more intensive than that of assisted, supported or independent living, due to the explicit expectation that the person will progress to a more independent level. Therefore both items were included, because it is expected that they reflect separable factors.

Table 3. Summary of stepwise regression model.

Variable	Step 1 β (*t*)	Step 2 β (*t*)	Step 3 β (*t*)	Step 4 β (*t*)
Hospitalized in last year	0.202**	0.064	0.064	0.056
	(2.954)	(1.303)	(1.466)	(1.279)
Resilience (CD-RISC)	–	0.329***	0.331***	0.340***
	(4.754)	(5.521)	(5.692)	
Empowerment (ES)	–	0.264***	0.271***	0.269***
	(4.327)	(4.987)	(4.985)	
Psychological involvement (CIM)	–	0.263***	0.273***	0.375***
		(4.178)	(4.864)	(5.038)
Interaction (Resilience X psychological involvement)	–	–	0.094*	0.106*
			(2.136)	(2.403)
Interaction (HospitalizedX psychological involvement)	–	–	–	−0.135*
				(−2.064)

*$p < .05$, **$p < .01$, ***$p < .001$.

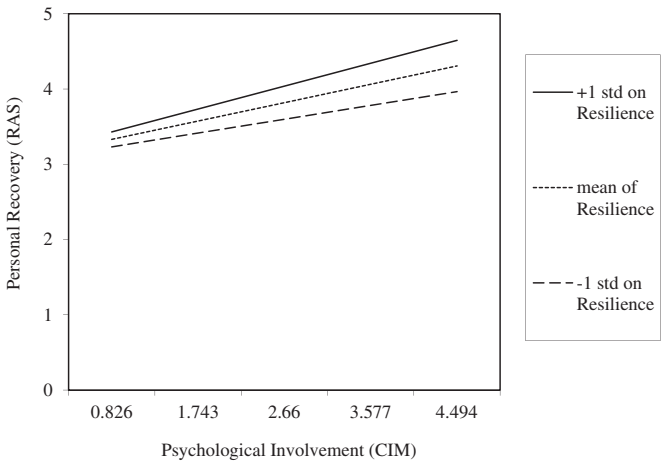

Figure 1. Incremental interaction between resilience and psychological involvement predicting personal recovery.

meaning the relationship between RAS and CIM is stronger when CD-RISC is higher. The hospitalization/CIM interaction indicates the relationship between CIM and RAS is stronger among participants who reported a recent hospitalization compared to those who did not.

Discussion

Our findings support the hypothesis that psychological constructs of empowerment, resilience and consumer involvement are closely associated with personal recovery of individuals with SMI receiving mental health services in publicly funded day programs. The findings do not support the hypothesis that functional indicators of clinical recovery contribute uniquely to personal recovery. This is the first study that has examined relative contributions of clinical recovery components and psychosocial constructs to variance in personal recovery, and therefore, the first to find that clinical recovery components do not contribute significant variance when psychosocial constructs are accounted for. Given the field's interest in developing and identifying effective recovery-oriented services, this is a key finding that will inform development and evaluation of services.

Two interactions revealed ways psychological constructs are moderated in their associations with personal recovery. First, an incremental interaction between psychological involvement and resilience indicates that the positive relationship between psychological involvement and personal recovery is strengthened for people with greater resilience relative to those with less resilience. Second, the interaction between recent psychiatric hospitalizations and psychological involvement indicates that recent hospitalization increases the link between psychological involvement and personal recovery. A possible inference from this finding is that hospitalization confers increased motivation to connect or reconnect to the community after discharge. Together these findings suggest that psychological involvement contributes differentially to recovery depending on level of self-reported resilience and recent hospitalizations, although psychological involvement had a significant link to recovery across all participants, and the relative size of the interaction effects are modest.

Our finding that clinical recovery does not uniquely contribute to personal recovery is a significant finding, given reasonable expectations of many stakeholders that clinical recovery paves the way towards personal recovery and vice versa. Although causality cannot be inferred from the present analysis, the most parsimonious interpretation of this result is that indicators of clinical recovery such as living situation and employment are of relatively minor importance to personal recovery compared to psychosocial constructs like psychological involvement, empowerment, and resilience.

Implications

These findings have implications for both the conceptualization of recovery-oriented services and for measuring targeted outcomes in these services. Although many studies of recovery-oriented services use measures of clinical recovery as primary outcomes, the results of this study indicate that this is insufficient because clinical recovery does not adequately describe changes in personal recovery. Recovery-oriented services, therefore, should include measures of personal recovery as a primary outcome measure, as well as including measures of targeted psychosocial outcomes within their outcome measurement array to achieve a more complete and individualized picture of recovery (Ahmed et al., 2013; Andresen, Oades, & Caputi, 2003; Macpherson et al., 2016). Assessing personal recovery on an individual

and programmatic basis increases the systematic nature of recovery-oriented programs and assists in understanding the contribution of personal recovery specifically.

Personal recovery is typically conceptualized as a process, rather than an outcome (Leonhardt et al., 2017; Silverstein & Bellack, 2008). While we support this conceptualization, we argue that conceptualizing personal recovery as a process should not inhibit programs from assessing personal recovery as an indicator of treatment success. Using several time points throughout engagement in therapeutic programming, as opposed to only assessing at admission and discharge, may help capture the process of personal recovery in a nuanced and dynamic way. Measuring psychosocial outcomes should also be included, with particular measures chosen based on the focus of the specific intervention.

These findings also suggest that psychosocial factors in recovery are important targets for treatment and rehabilitation and must be addressed directly rather than using clinical recovery approaches and measurement with a secondary goal of personal recovery. Resilience, empowerment and psychological involvement can all be addressed and enhanced in current psychotherapy approaches for SMI (Spaulding & Sullivan, 2017). Service-level changes may also be effective mechanisms to promote these psychosocial factors. For instance, creating naturally empowering service environments by encouraging self-determination and structuring services towards consumer choice may improve empowerment (Treichler & Spaulding, 2017). Prioritizing building social connection and meaningful community roles may also be a key service-level contributor to personal recovery outcomes (Min & Wong, 2015; Thomas & Rickwood, 2016; Treichler et al., 2015).

However, personal recovery may also be enhanced by clinical factors not fully assessed in this study. We did not assess symptom severity, which as discussed, has been inconsistently associated with personal recovery. Effective recovery-oriented programming will likely balance focus between clinical and personal recovery, individualizing treatment priorities based on consumer goals and needs. A recent review (Leonhardt et al., 2017) suggests that prioritizing commonalities between personal and clinical recovery, chiefly cultivating meaning and overcoming challenges to pursuing recovery, will allow for programming to effectively balance these models of recovery. The Connectedness, Hope and optimism, Identity, Meaning and purpose, and Empowerment model (CHIME; Leamy et al., 2011; Bird et al., 2014) includes many of the constructs we have identified as fundamental for the pursuit of personal recovery as well as constructs emphasized by other research in this area (Abdallah et al., 2009; Brown et al., 2008; Leonhardt et al., 2017; Soundy et al., 2015). Using the CHIME model to structure programming priorities may facilitate effective integration of essential psychosocial factors while also facilitating clinical recovery.

Given the personalized and dynamic nature of personal recovery, it may be that for some consumers, elements of clinical recovery are essential to personal recovery, while others may not prioritize those features. Using collaborative decision-making (Treichler & Spaulding, 2017) helps facilitate effective treatment personalization so that individual consumers' voices are prioritized during planning processes. Treatment planning that intentionally integrates collaborative processes with assessment of personal recovery and its correlates may support the effectiveness of recovery-oriented services. For example, a program may ask consumers to complete measures like the RAS and CIM or discuss those areas during the initial interview to identify areas of importance to the consumer that could benefit from intervention. The subjective and dynamic nature of psychosocial measures is a more intuitive fit for understanding personal recovery outcomes because they broadly apply across consumer needs and values, allowing for personalization within the context of an evidence-based intervention. As knowledge about the interplay between clinical and personal recovery measures increases, interventions targeting specific personal recovery correlates can be integrated into individual treatment and rehabilitation service planning.

Limitations

This study has a number of strengths, including a highly powered, representative sample. However, this is a cross-sectional study, and therefore, the findings cannot be interpreted causally. Whether clinical factors contribute to personal recovery may depend on when those factors obtain, relative to psychological factors and the course of illness. For example, longitudinal analysis could conceivably reveal more and larger effects comparable to the effect of recent hospitalization observed in the present study. Additional measures of clinical recovery, including symptom severity and cognitive impairment, may be important moderators of the effects detected in the present study (Resnick, Rosenheck, & Lehman, 2004; Lloyd et al., 2010). Finally, our sample was spread across 10 programs. While in some regards, this is a strength that increases generalizability of results, it may also have introduced sources of variance that impacted the results. Given the strong internal consistency of our measures, it appears that potential sources of variance did not lead to inconsistent responding between sites.

Conclusions

This study expanded on existing work describing correlates of personal recovery and their application to recovery-oriented service models for SMI. Three psychosocial factors, psychological involvement, resilience, and empowerment accounted for variance in personal recovery, but contrary to expectations, indicators of clinical recovery did not. Psychological involvement appears to be particularly important to personal recovery. Future recovery-oriented interventions should include these measures as outcome variables and actively integrate interventions targeting these constructs.

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Disclosure statement

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