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Flourishing With Psychosis: A Prospective Examination on the Interactions Between Clinical, Functional, and Personal Recovery Processes on Well-being Among Individuals with Schizophrenia Spectrum Disorders

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Well-being is not just the absence of mental disorder but also involves positive feelings and contentment (emotional well-being), meaningful engagement (psychological well-being), and contribution of one's community or society (social well-being). Recovery processes, which encompass mitigation of clinical symptomatology (clinical recovery), improvement in occupational, social, and adaptive functioning (functional recovery), and development of personally valued goals and identity (personal recovery), have demonstrated to be important markers of well-being. This study examined the relative contribution of clinical, functional, and personal recovery processes on well-being among individuals with schizophrenia and explored the effect of personal recovery on people with varying levels of symptom severity and functional ability. A longitudinal quantitative research design was used in which 181 people with schizophrenia spectrum disorders were assessed at baseline and 6 months. At baseline, 28.2% of the participants were considered as flourishing. Around half of the participants (52.5%) were moderately mentally healthy, while 19.3% were identified as languishing. *Results* showed that clinical recovery was predictive of better well-being at 6-month postbaseline. Personal recovery was found to positively predict well-being, above and beyond the effects of clinical and functional recovery. Moderation analysis showed that the effect of personal recovery on well-being did not depend on clinical and functional recovery, which implied that people with schizophrenia can participate in the process of personal recovery and enjoy positive well-being regardless of their clinical stability and functional competence. Given the robust salutogenic effect of personal recovery, greater emphasis should be placed on developing person-centered, strength-based, recovery-oriented services.

Key words: well-being/flourishing/clinical recovery/functional recovery/personal recovery/schizophrenia

Introduction

Mental health can be conceptualized as a continuum consisting of a spectrum of indicators including emotional, psychological, and social well-being. Emotional well-being (a.k.a. hedonic well-being) entails a subjective sense of happiness and satisfaction experienced by the individuals.[1] Complementary to the emotional well-being, Ryff introduced psychological well-being (a.k.a. eudaimonic well-being), which emphasizes individuals having meaning in life and agency to actualize their potential.[2,3] Keyes further expanded on well-being to include a social aspect in which people's relationship quality with other people, neighborhood, and the community is considered.[4] On the basis of these three dimensions of well-being, Keyes proposed the two continua model of mental health, which places mental illness and positive mental health (including emotional, psychological, and social well-being) as two distinct axes.[5,6] Individuals can be on the continuum from the absence of mental illness symptoms to having a diagnosable mental illness, while concurrently living on a continuum from enjoying complete mental health and flourishing in life to lacking any subjective pleasure, life purpose, and meaningful relationships, and languishing in life.[7] In other words, irrespective of the presence or absence of mental illness, human flourishing is possible for any individual who experience high levels of emotional, psychological, and social well-being. For people who do not have any mental illness symptoms, they may also languish in life if they experience low levels of emotional, psychological, and social well-being. This model is consistent with the definition emphasized by the World Health Organization (WHO), which proclaimed that mental health is "not just the absence of mental disorder" but "a state of well-being in which individual realizes his or her own abilities, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community."[8]

The two continua model of mental health has been widely applied and examined in populations across age,[9,10] race/ethnicity,[11] sexual orientation,[12] and culture/nationality.[13] Empirical research supported that regardless of whether a diagnosis of mental illness is present or not, individuals can be flourishing, moderately mentally healthy, or languishing.[6] Flourishing indicates a state of wholeness where individuals live a satisfactory and fulfilling life. It is followed by a moderate state of mental health, which is characterized by an intermediate level of well-being and psychosocial functioning. By contrast, languishing reflects a state of emptiness and stagnation in which individuals are devoid of positive emotionality and meaningful engagement in life.[5] Among individuals with substance use disorders, McGaffin et al[14] found that 21.9% of them were flourishing, with the remaining 54.3% being moderately mentally healthy and 23.8% languishing in life. Although the state of well-being varied across people with different psychiatric diagnoses,[6,14] these findings illustrated that for individuals with mental illness, they can experience happiness and satisfaction and develop a sense of fulfillment in their private and social life.[15]

Recovery and Well-being

The understanding of recovery has evolved in the past decades.[16–18] Traditionally, the conceptualization of recovery has been dominated by the biomedical model of health, which considers recovery as being free from psychiatric symptoms or relapse.[19] Andreasen et al referred to it as clinical recovery, which necessitates an "improvement in core signs and symptoms of mental illness to the extent that they are below a clinically diagnosable threshold and no longer interfere significantly with behavior."[20] The remission of positive and negative symptoms of schizophrenia is the major indicator of clinical recovery that is particularly relevant to people with schizophrenia spectrum disorders. Ample research has shown that positive and negative symptoms were related to poor emotional well-being[21–23] and psychological well-being.[24,25] A meta-analysis conducted by Eack and Newhill found small effect sizes between positive and negative symptoms with emotional well-being,[26] which implied that factors other than clinical recovery might be more predictive of emotional well-being.[27]

Moving beyond clinical symptomatology, community-oriented social psychiatry emphasizes on the restoration of premorbid level of functioning in individuals with mental illness.[28,29] Functional recovery entails a person to be able to engage in employment/education and effectively manage tasks at work/school (ie, occupational or vocational functioning), establish meaningful relationships and interactions with significant others (ie, social functioning), and perform daily activities that are necessary for independent living (ie, daily functioning).[30] Previous studies have found that functioning was positively related to emotional well-being among people with schizophrenia spectrum disorders.[21,31,32]

The consumer movement further re-envisioned recovery as having a personally meaningful and contributory life and identities that are beyond patienthood as defined by people with mental illness themselves.[18,33] Such personal recovery is an ongoing process of reclaiming autonomy, developing a positive sense of the self, and achieving self-determination beyond the limitations imposed by mental illness.[34] In this sense, in spite of clinical symptoms and functional impairments, people with mental illness can live a personally valued life of their own choosing and strive to achieve their full potential.[35] Previous research suggested that components of personal recovery (including hope, optimism, self-worth, and empowerment) were fundamental to emotional and psychological well-being among people with schizophrenia.[36]

In addition to examining simultaneously how different recovery processes contribute to well-being,[37,38] the present study also attempted to investigate the interactive effects of personal recovery with clinical and functional recovery on well-being. It is especially relevant for people with schizophrenia whose subjective life experience may be influenced by their experience of psychiatric symptoms and the functional impairments arising from their disorder.[22,23] Research indicated that many health care providers still considered personal recovery as only applicable for people who are clinically stable and functionally competent,[39,40] with some even holding the belief that personal recovery should be suspended during acute episodes.[41] Nevertheless, first person accounts demonstrated that the benefits of personal recovery are evident for people who are currently experiencing active psychotic symptoms.[42–44] Thus, it is worthwhile to examine empirically and concurrently whether the benefits of personal recovery on well-being may be tempered by the extent of clinical recovery and functional recovery that individuals have achieved or whether their impact on well-being is independent. To test these contrasting claims, this study explored whether the effect of personal recovery on well-being depends on the level of clinical and functional recovery.

The Present Study

Applying Keyes's two continua model of mental health,[6] the present study aimed to (1) estimate the prevalence of well-being in a sample of individuals with schizophrenia spectrum disorders; (2) examine the relative contribution of clinical and functional recovery on well-being, flourishing, and languishing; (3) evaluate the additional contribution of personal recovery on well-being, flourishing, and languishing; and (4) investigate whether the effect of personal recovery on well-being, flourishing, and languishing depends on clinical and functional recovery.

Method

Participants

Participants were 181 individuals with schizophrenia spectrum disorders. Inclusion criteria are as follows: (1) at least 18 years of age; (2) an ICD-10 diagnosis of schizophrenia, persistent delusional disorder, schizoaffective disorder, other nonorganic psychotic disorders, or unspecified nonorganic psychosis; (3) ethnically Chinese; (4) speak Cantonese; and (5) sufficient understanding and expressive capacity as evaluated by their service providers. Participants were excluded for the following reasons: (1) have neurocognitive disorder, (2) have a known history of intellectual disability, and (3) diagnosed with drug-induced psychosis. The sample (58.6% female) had a mean age of 31.67 years (SD = 11.13). More than two-thirds of the participants (69.7%) attained a secondary school education. A majority of the participants were single (71.7%), and more than one-third of them (39.1%) were unemployed. Their mean duration of mental illness was 2.45 years (SD = 2.45). Most of them were on psychiatric medication (96.6%). Table 1 presents the demographic characteristics of the participants.

Procedure

This study utilized a longitudinal quantitative research design and was approved by the clinical research ethics committees of the authors' institution and the hospitals involved in participant recruitment. A convenience sample of people with schizophrenia spectrum disorders was recruited from five public specialty outpatient clinics and six mental health service organizations across various districts in Hong Kong. Eligible participants were referred by service providers and were introduced to the background and procedures of the study. After giving their informed consent, participants were asked to go through a set of assessment and complete a self-report questionnaire. They were contacted at 6-month postbaseline for follow-up assessment. Each participant received HK$150 (~US$19.3) upon the completion of the assessment at each time point.

Table 1. Demographic Characteristics of the Participants (n = 181)

	n (%) / M (*SD*)
Gender	
Male	75 (41.4%)
Female	106 (58.6%)
Age	31.67 (11.13)
Education level	
Primary or below	13 (7.2%)
Secondary	126 (69.7%)
Tertiary	41 (22.7%)
Marital status	
Single	129 (71.7%)
Married	33 (18.3%)
Separated/Divorced	15 (8.3%)
Widowed	3 (1.7%)
Employment status	
Full-time employment	32 (17.9%)
Part-time/Temporary employment	24 (13.5%)
Unemployed	70 (39.1%)
Vocational rehabilitation services	22 (12.3%)
Student	25 (14.0%)
Others	6 (3.4%)
Year of diagnosis	2.45 (2.45)
Taking psychiatric medication	
Yes	170 (96.6%)
No	6 (3.4%)

Measures

Clinical Recovery. The Scale for the Assessment of Positive Symptoms (SAPS)[45] and the Scale for the Assessment of Negative Symptoms (SANS)[46] were used to assess the severity of positive and negative symptoms of schizophrenia. The SAPS consists of 35 items measuring 5 domains of positive symptoms, ie, hallucinations, delusions, disorganization or bizarre behavior, positive formal thought disorder, and inappropriate affect. The SAPS is a 25-item scale covering 5 domains of negative symptoms, ie, affective flattening and blunting, alogia, avolition-apathy, anhedonia-asociality, and attention impairment. Items of the SAPS and SANS were rated by trained research staff on a six-point Likert scale from 0 (*none*) to 5 (*severe*). The ratings were summed to create total scores for the SAPS and SANS, with higher scores indicating more severe levels of positive and negative symptoms, respectively.

Functional Recovery. The Social and Occupational Functioning Assessment Scale (SOFAS)[47] were rated by the trained research staff to assess social and occupational functional domains such as work/study, interpersonal relationships, and self-care. The scale was rated on a continuum of 0 to 100, with higher scores indicating better social and occupational functioning independent of the level of psychopathology. Daily functioning in the domains of financial and communication skills was measured by the brief version of the University of California, San Diego, Performance-Based Skills Assessment (UPSA-B).[48,49] The UPSA-B was administered by the trained research staff to assess participants' functional capacity to perform tasks encountered in everyday life, including counting change, paying bills, and making telephone calls. The scores of the finance and communication domains were converted to a standardized score (range = 0–50). A total score was computed by summing the two domain scores ranging from 0 to 100, with higher scores indicating better daily functioning.

Personal Recovery. The Recovery Assessment Scale (RAS)[50] was used to measure personal recovery. The RAS

contains 24 items rated on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) measuring personal confidence and hope, willingness to ask for help, goal and success orientation, reliance on others, and no domination by symptoms. The reliability and validity of this scale have been established in the Chinese population.[51] Internal consistency (Cronbach's alpha) of the RAS was .93 in the present study.

Well-being. The Mental Health Continuum-Short Form (MHC-SF)[6] was a 14-item scale that is used to measure well-being on a six-point Likert scale from 1 (*never*) to 6 (*everyday*). The scale was scored both continuously and categorically.[9] Continuous scoring was the average of the 14 items, with higher scores indicating better well-being. Internal consistency (Cronbach's alpha) of the MHC-SF in the present study was .93. Categorization of flourishing, moderate mental health, and languishing was derived from two domains of the MHC-SF, ie, emotionality and functioning. To be flourishing, individuals need to show high levels (ie, *everyday* or *almost everyday*) on at least one of the three items on emotionality and 6 of the 11 items on functioning. To be languishing, individuals need to exhibit low levels (ie, *never* or *once or twice*) on at least one of items on emotionality and six items on functioning. Individuals scoring between flourishing and languishing are categorized as having moderate mental health. This categorical scoring of the MHC-SF has been applied in various populations across age,[9,10] race/ethnicity,[11] sexual orientation,[12] culture/nationality,[13] and mental illness condition.[6,14]

Data Analysis

Differences in demographics and baseline variables between participants who completed assessment at both time points and those who dropped out of the follow-up assessment were investigated using independent-samples *t*-tests and chi-square tests. Correlation analysis was conducted to examine relationships among major variables of the study.

Frequency statistics were conducted to show well-being states at baseline and 6-month follow-up. McNemar-Bowker test was used to examine changes in well-being states between two time points. One-way analysis of variance (ANOVA) with Bonferroni adjustment was conducted to examine whether the level of clinical, functional, and personal recovery differed by well-being states.

A hierarchical multiple regression analysis was conducted to understand how various dimensions of recovery at baseline would be related to well-being at 6-month postbaseline. To examine whether personal recovery would predict well-being above and beyond clinical and functional recovery, variables of clinical recovery (ie, positive and negative symptoms of schizophrenia) and functional recovery (ie, social and occupational functioning, and daily functioning) were entered into the first block of the regression model, followed by personal recovery in the second block. In addition, hierarchical logistic regression analyses were used to determine the effect of recovery variables at baseline on flourishing and languishing at 6-month postbaseline. The standardized scores of the independent variables were used in the above regression analyses. A *P*-value of less than .05 was considered indicative of statistical significance. Multicollinearity analyses were conducted for the independent variables, and results showed no evidence of multicollinearity in all regression models.[52]

To examine the moderating effect of clinical and functional recovery, we followed the procedures suggested by Baron and Kenny.[53] The interaction terms of independent variable and moderator variables (ie, RAS × SAPS, RAS × SANS, RAS × SOFAS, and RAS × UPSA) were added into the third block of the regression models. All of the above analyses were performed using SPSS 22.0.

Results

Preliminary Analysis

An attrition rate of 28.2% was observed at 6-month postbaseline due to unsuccessful follow-up. Demographic differences between participants who and those who dropped out of the assessment ($n = 51$) were investigated. People who completed assessment at both time points ($n = 130$) were younger ($t = 2.81$, $P = .01$) and had a longer illness duration ($t = -3.21$, $P < .001$) than those who dropped out of the study ($n = 51$). Table 2 shows baseline descriptive statistics and correlations between recovery and well-being variables of the sample.

Well-being States

At baseline, 28.2% of the participants ($n = 51$) met the criteria for flourishing. Around half of the participants (52.5%, $n = 95$) were moderately mentally healthy, whereas 19.3% of them ($n = 35$) were categorized as languishing. At 6-month follow-up, 26.9% and 13.1% of the participants were classified as being flourishing ($n = 35$) and languishing ($n = 17$) respectively, with the remaining participants having moderate mental health (60.0%, $n = 78$). McNemar-Bowker test found that their well-being states did not show a significant change between baseline and 6-month follow-up ($\chi^2 = 4.67$, $P = .20$). As shown in table 2, results of the ANOVA indicated significant differences in negative symptoms of schizophrenia, social and occupational functioning, as well as personal recovery across people of different well-being states. Post hoc tests found that people with flourishing mental health had a significantly lower level of negative symptoms and higher level of personal recovery than their counterparts. They also showed better social and occupational functioning than people in a languishing state.

Table 2. Baseline Descriptive Statistics and Correlations Between Recovery and Well-being Variables

		1	2	3	4	5	6
1. Positive symptoms of schizophrenia (SAPS)		—					
2. Negative symptoms of schizophrenia (SANS)		.13	—				
3. Social and occupational functioning (SOFAS)		−.17*	−.45***	—			
4. Daily functioning (UPSA-B)		−.08	−.30***	.20**	—		
5. Personal recovery (RAS)		−.09	−.34***	.28***	.05	—	
6. Well-being (MHC-SF)		−.14	−.35***	.28***	.06	.69***	—
Range of scale		0–175	0–120	0–100	0–100	1–5	1–6
Entire sample (n = 181)	M (SD)	12.28 (12.68)	28.50 (18.79)	62.07 (12.07)	69.70 (15.93)	3.59 (.55)	3.66 (1.17)
Flourishing (n = 51)	M (SD)	8.31 (8.94)	20.80 (20.52)	66.18 (11.86)	71.79 (16.44)	3.96 (.47)	4.90 (.61)
Moderately mentally healthy (n = 95)	M (SD)	13.50 (13.43)	28.53 (16.58)	61.37 (12.68)	70.33 (15.51)	3.59 (.41)	3.57 (.64)
Languishing (n = 35)	M (SD)	15.68 (14.10)	40.09 (15.34)	58.14 (9.48)	67.46 (16.67)	3.03 (.54)	1.99 (.56)
ANOVA with Bonferroni adjustment	F	4.28	12.03***	5.11**	.77	43.68***	232.68***

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

Effects of Recovery Processes on Well-being

As shown in table 3, results of hierarchical regression analysis showed that negative symptoms of schizophrenia were negatively related to well-being at 6-month follow-up. No significant effect of social and occupational functioning as well as daily functioning on well-being was found. Clinical and functional recovery significantly explained 11.7% of the variance in well-being.

We further examined additional contribution of personal recovery to well-being in the second block of the regression after controlling for clinical and functional recovery. Results showed that personal recovery was positively associated with well-being. Personal recovery contributed 26.0% incremental variance in predicting well-being. To examine whether the effect of personal recovery on well-being depends on clinical and functional recovery, we included the interaction terms of recovery in the regression models. Results showed that all the interaction effects were not significant.

Effects of Recovery Processes on Flourishing and Languishing

Hierarchical logistic regression was conducted to determine whether different dimensions of recovery could predict flourishing at 6-month follow-up. As shown in table 3, findings indicated that positive symptoms of schizophrenia were negatively related to flourishing. Personal recovery also significantly and positively predicted flourishing. The interaction effects were not significant, which suggested the effect of personal recovery on flourishing was not contingent on clinical and functional recovery.

Negative symptoms of schizophrenia were positively associated with languishing at 6-month follow-up. Personal recovery negatively predicted languishing, above and beyond the effects of clinical and functional recovery. The results also revealed nonsignificant moderating effects of clinical and functional recovery.

Discussion

Applying the two continua model of mental health,[6] the present study highlighted the range of well-being states that individuals with schizophrenia spectrum disorders have experienced. Consistent with previous study on individuals with common mental disorders[6,14] and the conceptualization of Provencher and Keyes,[15] individuals with schizophrenia spectrum disorders can flourish. The findings supported the proposition of the two continua model that the presence of mental illness does not imply the absence of well-being.[5] Despite living with a diagnosis of schizophrenia spectrum disorders, more than one-fourth of people with schizophrenia in our sample could continue to experience emotional vitality and feel positive toward their life.

To identify the protective factors of well-being in individuals with schizophrenia spectrum disorders, the present study simultaneously examined the relative contribution of clinical, functional, and personal recovery processes on their well-being. Consistent with the meta-analysis of Eack and Newhill,[26] our findings showed that negative symptoms of psychosis were one of the contributing factors of well-being. People affected by negative symptoms may demonstrate blunted affect and emotional withdrawal, which lead to reduced likelihood of feeling positive emotionality.[21] Other negative symptoms such as avolition and anhedonia also devoid individuals of the motivation to engage in social interaction and the ability to experience pleasure, thereby dampening their satisfaction and fulfillment in life.

Different dimensions of clinical recovery were related to flourishing and languishing among individuals with schizophrenia. In particular, positive symptoms of schizophrenia were negatively associated with flourishing, while negative symptoms of schizophrenia predicted languishing. Positive symptoms, such as hallucinations and delusions, may hold individuals back from experiencing

Table 3. Main and Interaction Effects of Recovery at Baseline on Well-being, Flourishing, and Languishing at 6-Month Postbaseline

	Well-being		Flourishing			Languishing		
				95% CI for OR			95% CI for OR	
	β	ΔR^2	OR	Lower	Upper	OR	Lower	Upper
Step 1 (Clinical and functional recovery)		.12						
Positive symptoms of schizophrenia (SAPS)	−.15		.56*	.35	.91	.73	.41	1.29
Negative symptoms of schizophrenia (SANS)	−.20*		1.01	.64	1.58	1.90*	1.06	3.40
Social and occupational functioning (SOFAS)	.09		1.20	.76	1.88	.88	.47	1.64
Daily functioning (UPSA-B)	.08		1.11	.73	1.68	.90	.53	1.53
Step 2 (Personal recovery)		.26						
Personal recovery (RAS)	.55***		1.58*	1.02	2.45	.31**	.15	.65
Step 3 (Interaction: personal recovery × clinical recovery, personal recovery × functional recovery)		.01						
RAS × SAPS	−.04		1.16	.77	1.74	1.30	.64	2.63
RAS × SANS	.01		1.10	.63	1.90	.98	.38	2.51
RAS × SOFAS	.01		.86	.50	1.46	1.03	.40	2.66
RAS × UPSA-B	.08		1.34	.77	2.30	.78	.37	1.63

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

a happy and meaningful life.[22] On the other hand, negative symptoms may disrupt emotional experiences and expressiveness, resulting in languishing mental health.[25] Therefore, amelioration of symptoms associated with schizophrenia is one of the keys to promote flourishing and prevent languishing.

Restoring role and adaptive functioning, ie, functional recovery, has been another intervention goal that has been emphasized in the literature.[54] Although improving functioning, such as being able to take care of ones' finances, is regarded as important for individuals to sustain daily routines in real-life settings, we would argue that functional recovery needs not be a terminal outcome in the recovery process as we found no significant effect of functional recovery on well-being, implying that the sustenance of daily routines and functions have little bearing on human flourishing. To maximize people with schizophrenia spectrum disorders' potential to flourish, service providers need to go beyond regaining their users' basic functioning and restoration of routines to inspire a more comprehensive recovery and enable more opportunities to flourish in life.

Moving beyond the pathogenic model of mental illness that focuses on clinical and functional recovery, the salutogenic model of well-being opens up more perspectives to appreciate one's well-being and routes to enable one to achieve human flourishing. It holds the view that recovery is an ongoing process of reclaiming autonomy, developing positive sense of the self, and identifying purpose in life beyond the limitations imposed by one's mental disorder. These are consistent with the core elements in personal recovery. To promote complete mental health, service providers are recommended to combine both pathogenic and salutogenic strategies to facilitate recovery; neither one alone is sufficient.[15]

Across three types of recovery process examined, personal recovery was consistently found to be predictive of well-being above and beyond clinical symptomatology and functioning. The findings suggested that individuals who believe in themselves and possess a positive sense of the self were inclined to report a higher level of well-being at 6-month follow-up. As they are more hopeful and optimistic about their life and the future, they are able to experience psychosocial prosperity and lead a flourishing life.[15] Alternatively, people who fail to make sense of their lived experience may lack the ability to establish a positive identity and be shrouded by despair.

The nonsignificant moderating effect of clinical and functional recovery found in the present study further suggested that personal recovery is pertinent to well-being independent of one's illness condition and functional status. Thus, individuals with schizophrenia spectrum disorders, regardless of their disorder chronicity or the severity of their symptomatology, could embark on the process of personal recovery.[40] In other words, personal recovery is equally relevant to all individuals with schizophrenia, regardless of whether they faced difficulty in performing basic activities of daily living or performed well in their roles. It is evident that individuals with schizophrenia spectrum disorders can live with the symptomatic

and functional limitations imposed by the disorder and develop a self-directed life, which contributes to better well-being. This salutogenic effect of personal recovery is robust across people who are at varying levels of psychotic symptoms and functional ability.

Given its prominent role in promoting well-being, elements of personal recovery (eg, person-centered, strengths-based philosophy) should be integrated into existing therapeutic interventions and psychiatric rehabilitation services for people with schizophrenia spectrum disorders. For instance, service users should be involved in the planning and decision-making process of their recovery (eg, medications, psychological interventions, recovery programs).[41] These practices can empower service users to regain control over their life and facilitate self-determination, which, in turn, revitalize well-being. In addition, it is important that service providers recognize that mental health services are more than helping people to get rid of their psychiatric symptoms and restore functioning; they should also support people in pursuing personal hopes and aspirations and in promoting goal-striving behaviors.[33]

Despite the promising results, the present study has a few limitations. First, personal recovery and well-being were assessed with self-report measures, which might inflate common method variance and produce spurious correlations.[55] Nevertheless, since personal recovery is conceptualized as an individualized and highly subjective process, almost all available measures of personal recovery rely on self-report, with RAS being the most widely published and having strongest evidence base.[56] Using the self-report RAS as a measure of personal recovery was appropriate. Moreover, the relationship between personal recovery and well-being was estimated using data collected at two measurement occasions with a 6-month interval, which may have partially reduced the threat of common method bias.[55] Second, the study sample was recruited from psychiatric outpatient clinics and mental health service organizations, and thus, people with schizophrenia who were inpatients were not included in the study. The sample was rather early in their illness, with more females and more being employed than many other samples of people with schizophrenia in the literature. It may be inappropriate to generalize the findings to all people with schizophrenia spectrum disorders due to our sampling methods and participant demographics. Third, the results of regression analysis should be interpreted cautiously given the lack of adjustment for multiple comparisons in the analysis.

In conclusion, the present study found personal recovery to be a potent predictor of well-being in individuals with schizophrenia spectrum disorders. Its salutogenic effect was found to be independent of clinical and functional recovery. In enabling people with schizophrenia spectrum disorders to achieve human flourishing, all services, including symptom management, functioning rehabilitation, and recovery-oriented services, should be person centered and strengths based in order to empower users to reclaim their lives and pursue a personally meaningful life.

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References

1. Diener E. Subjective well-being. *Psychol Bull*. 1984; 95:542–575.
2. Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Pers Soc Psychol*. 1989;57:1069–1081.
3. Ryan RM, Deci EL. On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. In: Fiske S, ed. *Annual Review of Psychology*, Vol 52. Palo Alto, CA: Annual Reviews, Inc.; 2001:141–166.
4. Keyes CLM. Social well-being. *Soc Psychol Quart*. 1998;61:121–140.
5. Keyes CL. The mental health continuum: from languishing to flourishing in life. *J Health Soc Behav*. 2002;43:207–222.
6. Keyes CL. Mental illness and/or mental health? Investigating axioms of the complete state model of health. *J Consult Clin Psychol*. 2005;73:539–548.
7. Keyes CL. Promoting and protecting mental health as flourishing: a complementary strategy for improving national mental health. *Am Psychol*. 2007;62:95–108.
8. Organization WH. *The World Health Report 2001: Mental Health: New Understanding, New Hope*. Geneva, Switzerland: World Health Organization; 2001.
9. Keyes CL. Mental health in adolescence: is America's youth flourishing? *Am J Orthopsychiatry*. 2006;76:395–402.
10. Westerhof GJ, Keyes CL. Mental illness and mental health: the two continua model across the lifespan. *J Adult Dev*. 2010;17:110–119.
11. Keyes CL. The Black-White paradox in health: flourishing in the face of social inequality and discrimination. *J Pers*. 2009;77:1677–1706.
12. Bariola E, Lyons A, Lucke J. Flourishing among sexual minority individuals: application of the dual continuum model of mental health in a sample of lesbians and gay men. *Psychol Sex Orientat Gend Divers*. 2016.

13. Keyes CL. *Mental Well-being: International Contributions to the study of Positive Mental Health*. New York, NY: Springer Science & Business Media; 2012.
14. McGaffin BJ, Deane FP, Kelly PJ, Ciarrochi J. Flourishing, languishing and moderate mental health: prevalence and change in mental health during recovery from drug and alcohol problems. *Addict Res Theory*. 2015;23:351–360.
15. Provencher HL, Keyes CL. Complete mental health recovery: bridging mental illness with positive mental health. *J Public Ment Health*. 2011;10:57–69.
16. Pilgrim D. 'Recovery' and current mental health policy. *Chronic Illn*. 2008;4:295–304.
17. Jääskeläinen E, Juola P, Hirvonen N, et al. A systematic review and meta-analysis of recovery in schizophrenia. *Schizophr Bull*. 2013;39:1296–1306.
18. Lysaker PH, Roe D, Buck KD. Recovery and wellness amidst schizophrenia: definitions, evidence, and the implications for clinical practice. *J Am Psychiatr Nurses Assoc*. 2010;16:36–42.
19. Wunderink L, Sytema S, Nienhuis FJ, Wiersma D. Clinical recovery in first-episode psychosis. *Schizophr Bull*. 2009;35:362–369.
20. Andreasen NC, Carpenter WT Jr, Kane JM, Lasser RA, Marder SR, Weinberger DR. Remission in schizophrenia: proposed criteria and rationale for consensus. *Am J Psychiatry*. 2005;162:441–449.
21. Fleischhacker WW, Rabinowitz J, Kemmler G, Eerdekens M, Mehnert A. Perceived functioning, well-being and psychiatric symptoms in patients with stable schizophrenia treated with long-acting risperidone for 1 year. *Br J Psychiatry*. 2005;187:131–136.
22. Patterson TL, Kaplan RM, Grant I, et al. Quality of well-being in late-life psychosis. *Psychiatry Res.* 1996;63:169–181.
23. Kasckow JW, Twamley E, Mulchahey JJ, et al. Health-related quality of well-being in chronically hospitalized patients with schizophrenia: comparison with matched outpatients. *Psychiatry Res*. 2001;103:69–78.
24. Meyer B. Coping with severe mental illness: relations of the Brief COPE with symptoms, functioning, and well-being. *J Psychopathol Behav Assess*. 2001;23:265–277.
25. Strauss GP, Sandt AR, Catalano LT, Allen DN. Negative symptoms and depression predict lower psychological well-being in individuals with schizophrenia. *Compr Psychiatry*. 2012;53:1137–1144.
26. Eack SM, Newhill CE. Psychiatric symptoms and quality of life in schizophrenia: a meta-analysis. *Schizophr Bull*. 2007;33:1225–1237.
27. Eack SM, Newhill CE, Anderson CM, Rotondi AJ. Quality of life for persons living with schizophrenia: more than just symptoms. *Psychiatr Rehabil J*. 2007;30:219–222.
28. Lieberman JA, Drake RE, Sederer LI, et al. Science and recovery in schizophrenia. *Psychiatr Serv*. 2008;59:487–496.
29. Harvey PD, Bellack AS. Toward a terminology for functional recovery in schizophrenia: is functional remission a viable concept? *Schizophr Bull*. 2009;35:300–306.
30. Mausbach BT, Moore R, Bowie C, Cardenas V, Patterson TL. A review of instruments for measuring functional recovery in those diagnosed with psychosis. *Schizophr Bull*. 2009;35:307–318.
31. Leese M, Schene A, Koeter M, et al. SF-36 scales, and simple sums of scales, were reliable quality-of-life summaries for patients with schizophrenia. *J Clin Epidemiol*. 2008;61:588–596.
32. Norman RM, Malla AK, McLean T, et al. The relationship of symptoms and level of functioning in schizophrenia to general wellbeing and the Quality of Life Scale. *Acta Psychiatr Scand*. 2000;102:303–309.
33. Andresen R, Oades L, Caputi P. The experience of recovery from schizophrenia: towards an empirically validated stage model. *Aust N Z J Psychiatry*. 2003;37:586–594.
34. Anthony WA. Recovery from mental illness: the guiding vision of the mental health service system in the 1990s. *Psychiatr Rehabil J*. 1993;16:11–23.
35. Administration SAaMHS. SAMHSA's working definition of recovery from mental disorders and/or substance use disorders. Available at: https://store.samhsa.gov/shin/content/PEP12RECDEF/PEP12RECDEF.pdf.
36. Schrank B, Riches S, Bird V, Murray J, Tylee A, Slade M. A conceptual framework for improving well-being in people with a diagnosis of psychosis. *Epidemiol Psychiatr Sci*. 2014;23:377–387.
37. Karow A, Moritz S, Lambert M, Schöttle D, Naber D; EGOFORS Initiative. Remitted but still impaired? Symptomatic versus functional remission in patients with schizophrenia. *Eur Psychiatry*. 2012;27:401–405.
38. Lambert M, Naber D, Schacht A, et al. Rates and predictors of remission and recovery during 3 years in 392 never-treated patients with schizophrenia. *Acta Psychiatr Scand*. 2008;118:220–229.
39. Happell B, Byrne L, Platania-Phung C. The recovery knowledge inventory for measurement of nursing student views on recovery-oriented mental health services. *Issues Ment Health Nurs*. 2015;36:799–808.
40. Bedregal LE, O'Connell M, Davidson L. The Recovery Knowledge Inventory: assessment of mental health staff knowledge and attitudes about recovery. *Psychiatr Rehabil J*. 2006;30:96–103.
41. Davidson L, O'Connell M, Tondora J, Styron T, Kangas K. The top ten concerns about recovery encountered in mental health system transformation. *Psychiatr Serv*. 2006;57:640–645.
42. Molta VE. First person account: living with mental illness. *Schizophr Bull*. 1997;23:349–351.
43. Palit S. Schizophrenia and vision of my life. *Schizophr Bull*. 2016;42:867–869.
44. Deegan PE. Recovery as a self-directed process of healing and transformation. *Occup Ther Ment Health*. 2002;17:5–21.
45. Andreasen NC. *Scale for the Assessment of Positive Symptoms (SAPS)*. Iowa City, IA: Department of Psychiatry, College of Medicine, University of Iowa; 1984.
46. Andreasen NC. *Scale for the Assessment of Negative Symptoms (SANS)*. Iowa City, IA: Department of Psychiatry, College of Medicine, The University of Iowa; 1984.
47. Goldman HH, Skodol AE, Lave TR. Revising axis V for DSM-IV: a review of measures of social functioning. *Am J Psychiatry*. 1992;149:1148–1156.
48. Mausbach BT, Harvey PD, Goldman SR, Jeste DV, Patterson TL. Development of a brief scale of everyday functioning in persons with serious mental illness. *Schizophr Bull*. 2007;33:1364–1372.
49. McIntosh BJ, Zhang XY, Kosten T, et al. Performance-based assessment of functional skills in severe mental illness: results of a large-scale study in China. *J Psychiatr Res*. 2011;45:1089–1094.

50. Corrigan PW, Salzer M, Ralph RO, Sangster Y, Keck L. Examining the factor structure of the recovery assessment scale. *Schizophr Bull*. 2004;30:1035–1041.
51. Mak WW, Chan RC, Yau SS. Validation of the Recovery Assessment Scale for Chinese in recovery of mental illness in Hong Kong. *Qual Life Res*. 2016;25:1303–1311.
52. Dormann CF, Elith J, Bacher S, et al. Collinearity: a review of methods to deal with it and a simulation study evaluating their performance. *Ecography*. 2013;36:27–46.
53. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol*. 1986;51:1173–1182.
54. Kern RS, Glynn SM, Horan WP, Marder SR. Psychosocial treatments to promote functional recovery in schizophrenia. *Schizophr Bull*. 2009;35:347–361.
55. Conway JM, Lance CE. What reviewers should expect from authors regarding common method bias in organizational research. *J Bus Psychol*. 2010;25:325–334.
56. Shanks V, Williams J, Leamy M, Bird VJ, Le Boutillier C, Slade M. Measures of personal recovery: a systematic review. *Psychiatr Serv*. 2013;64:974–980.