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The Development of the Stages of Recovery Scale for Persons With Persistent Mental Illness

Li-Yu Song[1] and Su-Ting Hsu[2]

Abstract

This study aimed to develop a scale which could be used as a valid way to show the evidence of recovery-oriented services. A 51-item scale was developed to assess both the component processes and outcomes of recovery. A sample of 471 participants administered the questionnaire. The factor analysis yielded a 45-item scale with six subscales, including three components of process and three outcomes. The construct validity was confirmed. Each subscale has very good internal consistency ($\alpha = .80$–$.95$), and the 3–5 weeks test–retest reliability was .72. The scale could significantly differentiate the rehabilitation sample and the better functioning sample. The results indicated four stages of recovery. The external construct validity was also ensured. The results supported the psychometric property of the Stages of Recovery Scale (SRS). It could be utilized for both assessment and evaluation to document the evidence of a recovery-oriented program, collectively or individually.

Keywords

recovery, stage of recovery scale, persistent mental illness

Introduction

Recovery has become the ultimate goal of treatment for persons with persistent mental illness in the West (Anthony, Cohen, Farkas, & Gagne, 2002; Liberman & Kopelowicz, 2002). As recovery becomes the primary treatment goal, one issue that emerges is how we assess the progress. Such a measure is desirable as evidence-based practice is now emphasized. For example, in the document prepared by The Evaluation Center@HSRI, four measures were included to assess the recovery-promoting environments, including personal, administrative, and treatment levels (Campbell-Orde, Garrett, & Leff, 2005). In addition, some researchers have focused on the differentiation of stages of recovery and the measurement of those stages (Andersen, Oades, & Caputi, 2003; Davidson & Strauss, 1992; Spaniol, Wewiorski, Gagne, & Anthony, 2002).

The development of such a measurement needs the guidance of a clear definition of recovery. From the consumer's perspective, personal recovery is a unique and individual journey of self-discovery; it does not mean "to be cured," but it is about recovering to a new sense of self and of purpose within and beyond the limits of disability (Deegan, 1988). Anthony et al. (2002) defined recovery as "a unique personal process of changing one's attitudes, values, feelings, goals, skills, and/or roles. It is a way of living a satisfying, hopeful, and contributing life, with or without limitations caused by the illness" (p. 31). These descriptions imply that recovery is a holistic concept, which covers both processes and outcomes. However, the existing measures of recovery have not fully assessed both, and none has the cutoff scores to differentiate the stages of recovery. Therefore, the investigators aimed to develop a scale to fully measure both the components of process and outcomes of recovery, and to further use the scale score to indicate a stage of recovery. The goal was to create an instrument which can be used to show the evidence of recovery-oriented services.

Conceptual Definition of Recovery

Based on the literature, recovery is a holistic concept, including component process and outcomes. The important components in the recovery process include the emergence of hope, acceptance of the disability and becoming able to cope with the symptoms, taking responsibility of own wellness, effective management of own disability, developing a self-identity with potential, and developing a new meaning and sense of purpose for life (Andersen et al., 2003; Anthony et al., 2002; Jenkins & Carpenter-Song, 2006; Kelly & Gamble, 2005; Markowitz, 2001; Onken, Craig, Ridgway, Ralph, & Cook, 2007; Spaniol et al., 2002; Turner-Crowson & Wallcraft, 2002). Song and Shih (2009) summed up the components as emerging sense

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of self, management of disability, and hope, willingness, and action.

The recovery outcomes can be evaluated from both subjective feelings and attitudes and objective performance of functioning. Subjective feelings and attitudes include an enhanced sense of self (Davidson & Strauss, 1992; Deegan, 1988; Fisher, 1991), feeling balanced and having a sense of wholeness (Fisher & Ahern, 1999), improved quality of life (Liberman & Kopelowicz, 2002), personal growth, self-acceptance, and autonomy (Andersen et al., 2003). Among these, sense of self is a key element. According to Davidson and Strauss (1992), it connotes self-efficacy, internal control, and self-esteem. Objective performance of functioning is demonstrated by involvement with the outside world and includes: enhancing social functioning, regaining social role, and participating in the community (Deegan, 1988; Fisher, 1991; Fisher & Ahern, 1999; Liberman, Kopelowicz, Ventura, & Gutkind, 2002; Song & Shih, 2009).

Stage of Recovery and Measurement

Regarding the stages of recovery, Davidson and Strauss (1992) categorized the stage based on the sense of self, including discovering a more active self, taking stock of self, putting the self into action, and appealing to self. Spaniol et al. (2002) differentiated the stages from how well the consumer handled the disability. They derived four stages: overwhelmed by the disability, struggling with the disability, living with the disability, and living beyond the disability. Andersen et al. (2003) focused on psychological recovery and categorized the progress of recovery into five stages based on four key component processes: finding and maintaining hope, the reestablishment of a positive identity, finding meaning in life, and taking responsibility for one's life. The five stages they derived were: moratorium, awareness, preparation, rebuilding, and growth. Although there are different ways of categorizing the stages of recovery, there are similarities among them according to Andersen et al. (2003). Moreover, it is noteworthy that the stage a consumer reaches might be tentative because recovery is a journey of spiral progress (Deegan, 1988; Song & Shih, 2009).

There are existing instruments which measure recovery. Among them, the stage of recovery instrument (STORI; Andersen et al., 2003) is the only one which attempted to differentiate the stages of recovery. The scale is comprised of 50 items and has established an important basis for assessment to capture the rich information on the recovery process. STORI also has good concurrent validity in that the scale scores had a significant and high correlation with other measures, such as Recovery Assessment Scale (RAS) and Psychological Well-Being Scale. However, in the STORI, the discriminant validity among the stages could not be ensured, and the sample size was relatively small ($N = 104$). Furthermore, recovery outcomes were not measured.

There are other existing measures of individual recovery. Campbell-Orde et al. (2005) collected nine measures in the document *Measuring the Promise: A Compendium of Recovery Measures, Volume II*. Among these measures, seven of them had been empirically tested. The Consumer Recovery Outcomes System (CROS 3.0) was a 38-item scale developed by the Colorado Health Networks Partnership. It contains such domains as *hope*, *coping with symptoms*, *daily functioning*, *quality of life*, and *treatment satisfactions*. The initial test was based on a sample of 576 consumers and staff. The scale domains had good internal consistency (range = .79–.90), and the test–retest reliability at 8 days interval ranged from .69 to .76. The scale's external construct validity was demonstrated by a high correlation between the scale scores of the Behavior and Symptom Identification Scale (BASIS-32) and Brief Psychiatric Rating Scale (BPRS), and the Wisconsin Quality of Life Index (WQLI).

The Illness Management and Recovery (IMR) scale was initially tested on 50 adults with severe mental illness and 20 clinicians. It contains 15 items with good test–retest reliability (.82) but not very satisfactory internal consistency (.70 < .80). The client version scale score significantly correlated with the Colorado Symptom Inventory ($r = .38$), the Recovery Assessment Scale ($r = .54$), and the Multnomath Community Ability Scale ($r = .48$). Thus, the concurrent validity of IMR was partially confirmed based on the rule that the correlations should be larger than .50 (Monette, Sullivan, & DeJong, 2008).

The RAS (Corrigan, Salzer, Ralph, Sangster, & Keck, 2004) consisted of 41 items and was tested with 35 consumers with psychiatric disability. It is a five-factor scale, including personal confidence and hope, willingness to ask for help, not dominated by symptoms, goal and success orientation, and ability to rely on others. The RAS has the same drawbacks as the STORI.

The Mental Health Recovery Measure (MHRM) is a 30-item scale and was tested on a sample of 279 cases. The scale is comprised of eight subscales: overcoming stuckness, self-empowerment, learning and self-redefinition, basic functioning, overall well-being, new potentials, spirituality, and advocacy/enrichment. The scale covers some recovery outcomes and has good concurrent validity.

The Ohio Mental Health Consumer Outcomes System (Ohio Outcomes System) focused on measuring recovery outcome instead of process. The adult consumer form A contains 67 items with domains of quality of *life*, *health and symptom distress*, *overall empowerment*, etc. The scale was tested on a large size of sample (nearly 1,500) with good internal consistency on the subscales (.77–.93). The scale had discriminate validity with other constructs, such as the Beck Depression Inventory and the Minnesota Multiphasic Personality Inventory.

The Peer Outcomes Protocol (POP) measures *outcomes of recovery* and other related concepts, such as *employment satisfaction*, *community satisfaction*, *program quality of life*, *program satisfaction*, etc. It is a 241-item scale and was initially tested on 100 consumers. It had good internal consistency on the subscales, but less satisfactory test–retest reliability (.47–.85, interval: 2 weeks or less).

Finally, the Reciprocal Support Scale measures only one element of the recovery outcome. It is a 14-item scale and was tested on 80 adults with mental illness. It had high internal consistency (.95) and significant correlation ($r = .28$) with the self-esteem scale derived from the Ohio Outcomes System.

The existing scales have established some important items of recovery. However, there were some limitations among the scales. First, some scales focused on the component of process (e.g., STORI), some on outcomes (e.g., Ohio Outcome System), and some covered only part of both (e.g., RAS, MHRM); however, it seems that none fully measured both the process and outcomes of recovery. Second, except for the CROS 3.0 and Ohio Outcomes System, the sample size used did not reach the standard of 300 as required for scale development (DeVellis, 1991). Third, the external construct validity had been tested in most of the scale. However, neither discriminant validity among different stages or levels of recovery has been examined, nor cutoff scores developed for stages. Since recovery involves both process and outcomes, the investigators maintain that both should be included in a measure to fully reveal a consumer's status. Since recovery-oriented programs have gained popularity in this field, the instrument with acceptable psychometric property is necessary to demonstrate the effectiveness of various programs. The investigators aimed to expand the examination on different types of validity and to develop the cutoff scores for stages of recovery.

Method

This study followed the eight steps of scale development proposed by DeVellis (1991), including clarifying the definition of the concept, generating an item pool, determining the format of measure, having initial item pool examined by experts, inclusion of validation items, administering items to a development sample, evaluating the items, and optimizing scale length. The goal was to develop a self-administered scale. This study has approved by the Institutional Review Board at the Chang-Gung Hospital in Taiwan.

Generating an Item Pool

The scale items were developed based on the concepts of the component processes and the outcomes of recovery. The former included nine components: hope, willingness to cope, taking responsibility, management of disability, sense of self, new meaning/purpose, self-determination, awareness and potentiality, and competence (confidence, pursuing life goals). The latter included four elements: better social functioning and social roles, overall well-being, life satisfaction, and helping others. During the process, the existing three scales (STORI, RAS, and MHRM) served as important references for the investigators to generate the items. Initially, 70 items were derived and submitted for review by five experts who have some knowledge in recovery. Two of the experts have studied recovery at the Center for Psychiatric Rehabilitation in Boston; one has read extensively on the subject and has promoted recovery-oriented service; and two have been practicing recovery-oriented service. They were asked to rate the adequacy (yes or no) and importance (1 to 5) of each item and to suggest the changes in wording and the new items. The items were retained if at least three experts rated it as adequate and with an average score of importance at least four. As a result, 16 items were deleted during the process. Four items were found redundant and were combined into two, and four additional items were suggested by the experts.

A 56-item scale was thus formed and pilot tested on 35 consumers in two rehabilitation centers, one in Northern and one in Southern Taiwan, to gather their opinions and input on the items and to ensure that wordings were comprehensible for them. The frequency distribution of each item was examined to ensure enough variability captured. The discriminatory power (DP) score of each item was calculated (Monette et al., 2008). Four items with a DP score less than 0.50 were deleted. The process yielded a 51-item scale for the final test which included the 31 component process items and 20 outcome items (see Table 1). The responses were measured with a 4-point Likert-type scale, with response categories as: never (0), seldom (1), sometimes (2), and often (3).

Participants

Participants for this study were persons with severe mental illness (consumers) living in the community. Criteria for sample selection were: (a) consumers must have been at least 18-years-old and hospitalized at least once since the onset of illness; (b) consumers must have a diagnosis other than neurosis, substance abuse, personality disorder, or dementia due to any cause. To increase the variance in the status of recovery and for the examination of discriminant validity, two types of samples were recruited. One sample consisted of those who were participating in the activities in a psychiatric rehabilitation center (*Rehab sample*). The rehabilitation center in Taiwan serves the purpose of enhancing participants' social functioning. The members in the rehabilitation center are comprised of consumers in various states in terms of symptom control and functioning. The second sample consisted of those who once were members of a rehabilitation center but are now living in the community with a life goal, engaging in continuous social participation, and have not been hospitalized within a year (*Better Function sample*).

A list of all the rehabilitation centers was established and the centers were contacted for their participation in the study. There were 34 centers in Taiwan, and 24 of them agreed to collaborate with the investigators. They asked their members' willingness to fill in the questionnaires and contacted those who fit the criteria for the Better Function sample. They also helped to arrange the time for data collection in the center. The questionnaire was filled out by participants, with a research assistant present to clarify questions. As a result, 370 consumers completed data for the Rehab sample, and 101 for the Better Function sample. Among them, 55 agreed to take the test again within 3–5 weeks. Each subject was given a voucher (worth US$6.30) to a convenience store as a payment.

Variables and Instruments

A self-administered questionnaire was designed to collect the data. In addition to the recovery scale instrument, the

questionnaire also included demographic variables and illness variables to depict the sample characteristics. Since social functioning, empowerment, and life satisfaction were individual elements of recovery outcomes based on the unity model of recovery proposed by Song and Shih (2009), they were used as the criteria variables for testing the external construct validity. If the scale truly measures recovery, the scores should highly correlate with these three measures.

Demographic variables included sex, actual age, education (less than high school, high school, and at least some college), marriage (yes/no), and living arrangement (living with family members, relatives, or friends; living alone; living in halfway house).

Illness variables included diagnosis (schizophrenia, affective disorder, other), age of onset, number of hospitalizations since onset, number and length of hospitalizations within the past 2 years, and taking psychiatric medication (yes/no). The information was based on participants' self-report.

Empowerment was measured by the scale developed by Song (2006). It is based on the original scale of Rogers, Chamberlin, Ellison, and Crean (1997) and further expanded and tested by using the samples in Taiwan. There are eight dimensions among the 34 items, including self-efficacy and internal control, external control, interpersonal communication skills, interpersonal assertiveness, social assertiveness, social–political resources and influence, social–political power, and social–political action. The scale used a 4-point Likert-type scale, with response categories ranging from strongly disagree (1) to strongly agree (4).The scale has good psychometric properties, and the internal construct validity was confirmed. The scale could discriminate the power scores among social work educators, social workers, and clients. In addition, the external construct validity was ensured by the significant association with participation in group activities, role opportunity and support, and life satisfaction. The internal consistency of the entire scale was .95, and the 3 weeks test–retest reliability was .80 (Song, 2006). The Cronbach's α for the data in this study was .92.

Social functioning was measured using a 36-item scale designed for testing on persons with mental illness (Song, 2001). The scale had seven subscales: social/withdrawal, interpersonal communication, independence-ability, independence-performance, recreation, prosocial, and occupation/employment. Each subscale had an acceptable reliability (α = .52–.86), given the number of items, and each had good test–retest reliability (γ = .75–.94). The interrater reliability between consumers and their caregivers, internal construct validity, and discriminant validity (consumers vs. their siblings) have been confirmed. The scale has been widely utilized as an evaluation tool in both research and practice in Taiwan. The Cronbach's α for the data in the current study was .88.

Life satisfaction was measured by a scale of seven items developed by Song (2006). The scale captured the level of satisfaction on various life aspects of living status, work, finance, interpersonal relations, children's status, self-competence, and external environment. Items were phrased in ways such as: "I am satisfied with my living status." The participants rated each item among four categories: strongly disagree (1), disagree (2), agree (3), and strongly agree (4). The construct validity of this scale was ensured by its significant correlation with level of empowerment (γ = .66), and the Cronbach's α was .80. The Cronbach's α for the current study was .86.

Data Analysis

The investigator used SPSS software to conduct the analyses. In addition to the descriptive analysis, the following analyses were performed:

Factor analysis. Common factor analysis with varimax rotation was conducted to examine the factor structure of the scale. The criteria for the decision of the number of factors was an eigenvalue greater than 1, and for the retention of items was factor loading greater than 0.4.

Reliability test. Cronbach's α was calculated to test the internal consistency of items for the entire scale and factors.

Cluster formation. Two steps of cluster analyses were performed. First, initial cluster analysis, using Ward's method (hierarchical cluster analysis), was conducted on the entire sample to derive the initial cluster solutions. The classification was based on the Euclidean distances between consumers on the score of recovery dimensions. Cluster centers (the means for each factor) were examined for each cluster solution alternative. Also, discriminant function analysis and one-way ANOVA were performed to help decide the best solution according to the following considerations: (a) whether significant differences existed among clusters on each factor of the recovery scale, (b) the number of consumers in each cluster, and (c) the rate of accurate classification (hit ratio). The cluster solution that maximized differences among clusters was decided to be the best solution. Second, the cluster solution derived from the previous stage was internally validated using K-Means cluster analysis. In this procedure, a priori cluster solutions and cluster centers were specified with constrained solutions (not allowing updating the cluster centers). The coefficient of agreement, κ, was computed for the previous classification and K-Means constrained solutions. High κ value indicated high validity of cluster solution derived from the previous step.

Pearson correlation. This was used to determine the test–retest reliability and to examine the external construct validity of the recovery scale.

Discriminant function analysis. This analysis was used to test the discriminant validity of the recovery scale, to determine if the scale could differentiate the Rehab sample and Better Function sample.

Multiple regression analysis. This method was used for the external construct validity by testing the multiple correlations among the criteria variables and the recovery score.

Recovery score was used as the dependent variable, and empowerment, social functioning, and life satisfaction were independent variables. These independent variables were simultaneously entered into the analysis.

Multivariate analysis of variance (MANOVA). The analysis was conducted for further testing of the external construct validity by examining if the stage of recovery could differentiate the three criteria variables: empowerment, social functioning, and life satisfaction. The criteria variables were treated as dependent variables, and the stage of recovery as the independent variable. Scheffe's test was used to compare the means among groups.

Results

Sample Characteristics

Among the 471 subjects, 55.6% ($n = 262$) were males. The mean age was 36.96 ($SD = 9.60$), with a range of 18–68-years-old. The majority ($n = 240$, 51.1%) had a high school education, and 28% ($n = 132$) had some college education. Most were not married ($n = 361$, 76.6%), and only 7.4% ($n = 35$) were married. Just over two-thirds ($n = 322$, 69%) were living with their family, relatives, or friends; 25.7% ($n = 121$) were living in a halfway house; and 5.1% ($n = 24$) were living alone. Only 24.8% ($n = 117$) were employed (part-time or full-time).

The predominant diagnosis was schizophrenia ($n = 339$, 72.0%), followed by affective disorder ($n = 105$, 22.3%). The average age of onset was 24.59 ($SD = 8.85$). The mean number of hospitalizations since onset was 3.67 times ($SD = 4.2$). A very high percentage ($n = 460$, 97.7%) of them took psychiatric medicine regularly. Within the past 2 years, the mean number of hospitalizations was one time ($SD = 1.61$, media $n = 1.0$; range = 0–20). The mean length of hospitalization was 2.64 months ($SD = 5.04$, media $n = .55$, range = 0–36).

Factor Structure of the Recovery Scale

Prior to examining the factor analysis, the DP score of each item was examined. With the exception of items 14 and 23 (DP = 0.67 and 0.35, respectively), the rest of the items each had a DP score larger than 1.3, which was acceptable (DP $\geq$ 1.0; Monette et al., 2008).

The measure of sampling adequacy (MSA) among the items was 0.97, and Barlette's test was significant ($p = .000$), indicating that the items were suitable for factor analysis. The MSA for each item was very high, except for items 14 (0.80) and 23 (0.62). Since the two items also had a low DP score, they were deleted from the following analysis. In accordance with the rule of item retention (loading $\geq$ 0.4), items 13, 39, and 41 were deleted. Also, item 33 was cross-loaded on both Factor 1 (0.410) and Factor 4 (0.406); thus, it was deleted. The remaining 45 items yielded a high overall MSA (0.94), and the MSA for each was above 0.94. The results revealed a six-factor structure, with 57.8% of the variance among the items explained (see Table 1).

The first factor, *regaining autonomy*, was comprised of 15 items. They represented multiple concepts of the component process, including sense of self, competency, finding new meaning/purpose, awareness and potentiality, and self-determination. The second factor was named *disability management/taking responsibility*. It was composed of three components: taking responsibility, willingness to cope, and management of disability. The third factor, *overall well-being*, was a dimension of recovery outcome. The eight items represented a status of self-acceptance, inner serenity, and satisfaction of current life situation. The fourth factor, *social functioning/role performance*, was another dimension of recovery outcomes, which measured social interaction, demonstration of interpersonal engagement, and reciprocity. *Sense of hope* was the fifth factor, and it represented the subjects' positive expectations about their mental illness and themselves. The last factor, *helping others*, captured the willingness and positive experience of helping. The last four factors confirmed the original design of the concept and its items. The first two factors were a combination of related concepts as described above. *Regaining autonomy*, *disability management/taking responsibility*, and *sense of hope* were the components of recovery process. *Social functioning/role performance*, *overall well-being*, and *willingness to help* were elements of the outcomes. The correlations among the subscales ranged from .47 to .79. The total score of recovery significantly correlated with the subscales, with a range of .71–.95. The mean of total scores was 96.17 ($SD = 29.36$, skewness = −0.637), with a range 0–135.

Reliability of the Scale

The internal consistency (Cronbach's α) for the entire scale was 0.97. Each factor also had very good internal consistency ($\alpha = .80$–.95) (see Table 1). The 3–5 weeks test–retest reliability was .72 ($p < .05$, $N = 55$) for the entire scale.

Exploration of Discriminant Validity

In exploring whether there was a significant difference on the recovery score between the *Better Function sample* and the *Rehab sample*, investigators found that the difference in characteristics between the two samples mainly stemmed from employment and social functioning. *The Better Function sample* had a higher employment rate than *the Rehab sample* (79.2% vs. 10%). Moreover, the mean score of social functioning was significantly higher for the *Better Function sample* (71.03 vs. 66.49). The two subsamples were not significantly different on the demographic variables, illness variable, living arrangement, empowerment, and life satisfaction. The results of the discriminant function analysis showed that the *Better Function sample* had significantly higher recovery total score than the *Rehab sample* (Mean = 101.29 vs. 94.78, $t = -1.982$, $p < .05$). The *Better Function sample* also had

Table 1. The Factor Structure of the Recovery Scale ($n = 470$)

Factors and Items	DP Score	Commonality	Factor Loading
F1: Regaining autonomy; eigenvalue = 6.41 (14.25%), $\alpha = .95$			
21. I still can work toward my goals despite my mental illness.	1.85	0.717	0.658
22. I can still find focus in my life despite my mental illness.	1.85	0.694	0.634
24. I know what my goal is when I do things.	1.78	0.621	0.585
26. I can still try new things despite my mental illness.	1.72	0.580	0.575
25. When I do things, I can clarify the situation and make decisions.	1.77	0.605	0.568
31. I can reach my goal as long as I make effort.	1.83	0.641	0.565
28. I think positively about my future.	1.89	0.658	0.551
16. I am capable of doing things despite my mental illness.	1.54	0.565	0.531
15. Even though I may still have a mental illness, I value myself as a person of worth.	1.55	0.493	0.514
29. I can overcome my mental illness by using my own abilities (strengths) or the help from others.	1.69	0.576	0.488
27. I believe that I will have a better future, even though the current situation may not necessarily fit my expectation.	1.70	0.556	0.483
19. I just started to think about how to make my life more meaningful.	1.63	0.578	0.480
17. I know how to live my life, despite my mental illness.	1.65	0.516	0.455
30. I can use my own abilities or the help from others to eliminate social stigma about mental illness.	1.81	0.501	0.440
20. I have learned something through my mental illness.	1.55	0.432	0.410
F2: Disability management/taking responsibility; eigenvalue = 5.98 (13.28%), $\alpha = .92$			
10. I have tried some ways to improve my situation.	1.49	0.646	0.678
5. I am willing to use any way possible to improve my situation.	1.41	0.654	0.655
9. I am accountable for the results of my behaviors and decisions.	1.49	0.617	0.653
8. I make an effort to enrich my life.	1.55	0.645	0.635
6. I strive to improve my symptoms through my own effort.	1.47	0.589	0.583
4. I am willing to use any way possible to improve my symptoms.	1.37	0.589	0.567
7. I strive to take care of my own daily life.	1.34	0.594	0.563
12. I try to seek opportunities for fulfillment.	1.52	0.554	0.555
11. I try various ways to cope with prejudice.	1.58	0.461	0.541
F3: Overall well-being; eigenvalue = 5.11 (11.35%),$\alpha = .91$			
48. I live a happy life.	1.78	0.735	0.743
47. I am satisfied with the life that I have now.	1.82	0.675	0.730
46. I am happy with my life, structured as it is now.	1.80	0.653	0.697
44. I am at peace with myself.	1.90	0.623	0.554
42. I feel good about myself.	1.80	0.610	0.530
18. I like the way I am now.	1.62	0.420	0.511
43. I live a life like others.	1.75	0.604	0.489
45. I don't feel lonely.	1.78	0.483	0.462
F4: Social functioning/role performance; eigenvalue = 3.76 (8.37%), $\alpha = .85$			
36. I try to make new friends.	1.71	0.538	0.559
35. When my family, relatives, or friends are in need, I help them.	1.79	0.609	0.544
40. I have my own duties at home.	1.68	0.460	0.492
37. I go out to participate in social activities (e.g., go to movies or concerts.)	1.31	0.365	0.466
34. When I am in need, my family, relatives, or friends will help me.	1.60	0.465	0.452
38. I participate in activities held by social groups (e.g., go to church, parties, tour.)	1.29	0.329	0.444
32. I know how to talk to or engage with people.	1.73	0.541	0.420
F5: Sense of hope; eigenvalue = 2.68 (5.95%), $\alpha = .80$			
2. I believe that someday I will be normal again.	1.28	0.536	0.594
1. I believe that, as long as I receive treatment or rehabilitation, my mental illness will improve.	1.31	0.542	0.571
3. I believe that I still have the opportunity to demonstrate my abilities, despite my mental illness.	1.31	0.533	0.501
F6: Willing to help others; eigenvalue = 2.07 (4.60%), $\alpha = .89$			
50. I am willing to help others in need if I have the opportunity.	1.73	0.823	0.694
51. I know the pleasure that comes from helping others.	1.76	0.711	0.588
49. I can still help others despite my mental illness.	1.85	0.678	0.547

Note: Variance explained = 57.80%, overall scale $\alpha = .97$.

Table 2. Results of Discriminant Validity

Factors	Group[a]	*N*	Means	*SD*	*T* Value (df)	*P* Value
Total score	0	370	94.78	29.82	−1.982 (469)	.048
	1	101	101.29	27.13		
Regaining autonomy	0	370	2.12	.74	−2.021 (176.083)	.045
	1	101	2.28	.65		
Disability management	0	370	2.24	.72	−1.909 (173.790)	.058
	1	101	2.38	.64		
Overall well-being	0	370	1.95	.81	−2.110 (469)	.035
	1	101	2.13	.74		
Better social function	0	370	2.00	.74	−1.722 (182.078)	.087
	1	101	2.13	.63		
Sense of hope	0	370	2.23	.77	−.888 (469)	.375
	1	101	2.31	.77		
Helping others	0	370	2.15	.89	−1.091 (469)	.276
	1	101	2.26	.80		

[a] 0 = Rehab sample; 1 = Better Function sample.

Table 3. Scores of Recovery by Stage (Mean [*SD*])

Scale Score	Stage 1 ($n = 49$)	Stage 2 ($n = 140$)	Stage 3 ($n = 165$)	Stage 4 ($n = 117$)	Total ($N = 471$)
Total recovery score[a]	39.88 (13.80)	75.61 (11.17)	106.84 (9.30)	129.31 (4.92)	96.17 (29.36)
Autonomy[b]	.87 (.44)	1.67 (.41)	2.42 (.35)	2.90 (.17)	2.16 (.72)
Disability management	1.01 (.52)	1.88 (.52)	2.54 (.37)	2.90 (.18)	2.27 (.70)
Overall well-being	.74 (.38)	1.49 (.50)	2.16 (.53)	2.85 (.22)	1.99 (.79)
Social functioning	.92 (.48)	1.58 (.50)	2.22 (.44)	2.76 (.26)	2.03 (.72)
Hope	.93 (.65)	1.98 (.58)	2.42 (.59)	2.88 (.26)	2.25 (.77)
Help others	.87 (.63)	1.54 (.61)	2.52 (.55)	2.99 (.06)	2.17 (.87)

[a] The total recovery score was the sum of all the 51 item scores.
[b] For the purpose of comparisons among the factors, the score of each factor was computed by taking the sum score divided by the number of items within each factor.

higher mean score on regaining autonomy and overall well-being than the *Rehab sample* (see Table 2). The results seem contradictory to the fact that no significant difference on empowerment and life satisfaction between the two groups was found. The reason might be that the empowerment scale measured various domains of power, including intrapersonal, interpersonal, and social–political. *Regaining autonomy* overlapped only with the dimension of self-efficacy and internal control on the empowerment scale. The correlation between *regaining autonomy* and empowerment was .57. *Overall well-being* was more subjective in the appraisal of self; whereas life satisfaction measures were more specific in objective life domains. The two overlapped but were different concepts, and the Pearson correlation coefficient between the two was .58.

Classification of Recovery Stage

The hierarchical cluster analysis (Ward's method) yielded two potential cluster solutions—four-cluster and three-cluster. Further examination using discriminant function analysis revealed that the four-cluster solution was best while considering the number of consumers in each cluster and the rate of accurate classification. The differences on each of the six dimensions of recovery scale were significant among the four clusters. The initial cluster solution was further verified using K-Means cluster analysis. The solution based on the Ward's method was confirmed by the K-Means cluster analysis, with the agreement coefficient (κ) between the two in terms of participant classification being .844. The hit ratio was 96.8% based on the four-cluster solution yielded by the K-Means. This was a 2.42 times improvement over chance in terms of the classification of the participants (Hair, Anderson, & Tatham, 1987, pp. 89–90). The number and percentage of subjects in each cluster is shown in Table 3. There were significant differences ($p < .05$) between groups on all the dimensions of recovery. Scheffe's tests indicated that the differences were: Stage 1 < Stage 2 < Stage 3 < Stage 4. (see Table 3). The higher stage revealed improvements on both the process components and outcomes of recovery over the previous stage. For the purpose of comparison among the factors, the score of each factor was computed by taking the sum score divided by the number of items within each factor. As shown in Table 3, the participants in Stage 1 had the lowest mean score on all of the factors of recovery. Each stage had a progressively higher mean score. Stage 1 was named *overwhelmed by the disability*, Stage 2 was

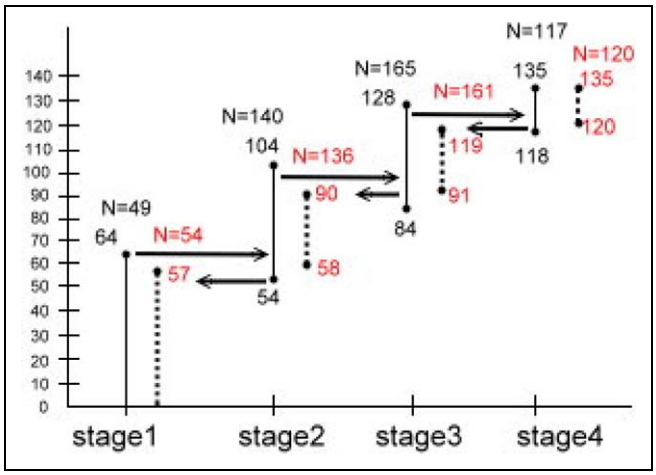

Figure 1. The illustration of cutoff scores derivation.

named *struggling with disability*, Stage 3 was named *living with disability*, and Stage 4 named *living beyond disability*.

The investigators further developed the cutoff scores for each stage based on the range and distribution of recovery total score within each stage. The ranges of recovery scores were: Stage 1, 0–64 ($n = 49$); Stage 2, 54–104 ($n = 140$); Stage 3, 84–128 ($n = 165$); and Stage 4, 118–135 ($n = 117$). As can be seen, there was overlap between stages in the range of scores (see Figure 1). An approximate cutoff score was decided by examining the distribution and making as minimal a number of shifts in stages as possible. For example, the cutoff score for Stage 1 was decided to be 57, which resulted in two participants originally in Stage 1 (with scores of 58 and 64) regrouped into Stage 2, and seven participants originally in Stage 2 (with scores of 54, 56, and 57) regrouped into Stage 1. Thus, the cutoff scores for each stage were: Stage 1, 0–57 ($n = 54$); Stage 2, 58–90 ($n = 136$); Stage 3, 91–119 ($n = 161$); and Stage 4, 120–135 ($n = 120$). The κ between the classifications based on K-Means solution and the one based on the new cutoff scores was .89 ($p < .05$), indicating a high consistency between the two.

External Construct Validity

The investigators examined the correlations between recovery and empowerment, social functioning, and life satisfaction by using both the total score and the recovery stage. The recovery score was significantly correlated with all the three measures, with Pearson γ being .61, .57, and .49, respectively. Furthermore, a multiple regression analysis was performed to examine the multiple correlations among the three measures and recovery by taking into account sex and diagnosis (using affective disorder as the reference group). All the independent variables were simultaneously entered into the model. After six outliers were deleted from the analysis, the results showed that the model was significant (adjusted $R^2 = .573$, $p < .05$) (see Table 4). Sex and diagnosis were not significant ($p > .05$). Empowerment, social functioning, and life satisfaction were the significant correlates of recovery ($p < .05$), with empowerment being the most important one (β = .416).

Table 4. Regression Analysis on Recovery Total Score (Valid $N = 464$)

I.V.	β	SE. of β	β	*T* Value	*P* Value
Constant	−57.708	7.475		−7.720	.000
Sex	2.676	1.749	.047	1.529	.127
Diagnosis		2.104			
Schizophrenia (1)	−3.129		−.050	−1.487	.138
Other (1)	−4.894	4.027	−.040	−1.215	.225
Empowerment	.855	.085	.416	10.047	.000
Social functioning	.744	.074	.349	10.102	.000
Life satisfaction	6.861	1.779	.154	3.856	.000

Note: R^2 (adjusted) = .573; $F(6, 475) = 105.47$; $p = .0000$.

MANOVA was conducted to see whether the linear combination of empowerment, social functioning, and life satisfaction could differentiate the subjects in different stages of recovery by include sex and diagnosis as control variables. The results revealed the model was significant for each of the three measures. Differences among participants in different stages were significant on empowerment, social functioning, and life satisfaction, respectively (see Table 5). Scheffe's tests further revealed that the direction of differences was as expected: Stage 1< Stage 2 < Stage 3 < Stage 4. As shown in Table 6, the scale scores of Stage 1 and Stage 2 were below the average of the respective scale; those of Stage 3 and Stage 4 were above average. The results remained very similar to those using the stages derived by the cutoff scores. The findings indicated that both the recovery total score and the recovery stage had external construct validity.

Discussions and Implications

The Preliminary Analysis Confirmed the Psychometric Property of the Stages of Recovery Scale (SRS)

The SRS measured both the component processes and the outcomes of recovery. The component processes include three dimensions: regaining autonomy, disability management/taking responsibility, and sense of hope. The outcomes of recovery cover overall well-being, social functioning/role performance, and helping others. The results demonstrated the internal construct validity of this 45-item scale. The internal consistency of the scale was high. The preliminary discriminant validity was also confirmed for the total score. The external construct validity was ensured through both the bivariate and multiple correlations between the total score and empowerment, social functioning, and life satisfaction. Most importantly, a four-stage solution was found in this study that confirmed the categories of stages proposed by Spaniol et al. (2002). Cutoff scores for each stage were developed to facilitate the utilization of the scale in practice. Moreover, the external construct validity was also ensured for the stages since the results showed that

Table 5. The Results of Analysis of Variance on Empowerment, Social Functioning, and Life Satisfaction by Stage of Recovery

Dependent Variables	Source	*df*	Mean of Variance	*F*	*p*	η^2
Empowerment	Corrected model	6	6064.05	53.08	.000	.411
	Intercept	1	1431062.40	12525.92	.000	.965
	Stage	3	11652.17	101.99	.000	.401
	Sex	1	923.14	8.08	.005	.017
	Diagnosis	2	62.00	0.54	.582	.002
	Error	457	114.25			
Life satisfaction	Corrected model	6	8.94	30.42	.000	.285
	Intercept	1	1230.52	4187.95	.000	.902
	Stage	3	17.39	59.19	.000	.280
	Sex	1	0.58	1.96	.162	.004
	Diagnosis	2	0.10	0.35	.705	.002
	Error	457	0.29			
Social functioning	Corrected model	6	4263.99	34.39	.000	.311
	Intercept	1	698629.76	5633.96	.000	.925
	Stage	3	8158.68	65.79	.000	.302
	Sex	1	60.54	0.49	.485	.001
	Diagnosis	2	167.53	1.35	.260	.006
	Error	457	124.00			

Note: Scheffe's tests indicated significant differences between groups on all three scales: Stage 1 < Stage 2 < Stage 3 < Stage 4.

Table 6. Scores of Empowerment, Social Functioning, and Life Satisfaction by Stage (Mean [*SD*])

Scale Score	Stage 1 ($n = 49$)	Stage 2 ($n = 140$)	Stage 3 ($n = 165$)	Stage 4 ($n = 117$)	Total ($N = 471$)
Empowerment	82.43 (14.45)	90.77 (9.80)	100.44 (10.62)	107.59 (12.83)	97.47 (13.97)
Social function	53.59 (11.94)	62.65 (11.85)	68.95 (10.23)	76.95 (11.82)	67.47 (13.31)
Life satisfaction	2.27 (.69)	2.66 (.52)	2.92 (.54)	3.30 (.59)	2.87 (.64)

different stage groups reach significant differences on empowerment, social functioning, and life satisfaction.

The Stability Needs to be Further Tested

The stability of the SRS was less satisfactory (0.72), which might be due to a longer interval (3–5 weeks) between the two tests, allowing real changes to occur. On the other hand, perhaps the measure itself is not stable. Deegan (1988) mentioned that the recovery process is not a linear or successive movement of growth but includes setbacks and splits. Such a phenomenon might pose the challenge of ensuring the stability of this measure. A shorter interval (e.g., 1 week) might be used to examine the test–retest reliability in the future study.

The Limitation of this Study

The study sample was mainly drawn from rehabilitation centers, possibly comprised of consumers who had reached a certain level of stability and functioning. In other words, those who were completely recovered or were in the worst situations might not have been included. However, the investigators had asked the agency to recruit consumers at different levels of function. As shown in the results of the stages of recovery, some were classified as overwhelmed by the disability (total score = 0–57, $n = 54$). Future studies could apply the scale to the consumers at Stage 1 or fully recovered to further test its validity.

The Utilization of SRS

The SRS could be utilized for both assessment and evaluation. It would reveal the status of consumers in both the recovery components and outcomes. The subscale scores could indicate the relative strengths and weaknesses of a particular consumer and suggest the directions for improvement. Long-term progress can be mapped out by using either the total scores or the stages of recovery. Since a 45-item scale might be considered long, the practitioners could select only the subscales pertaining to either processes or outcomes, according to their purposes. The long scale might also undermine the quality of self-report data and some of the items might inevitably induce social desirability. Therefore, careful checking for each participant's response pattern and cautious clarifications are necessary in administration of the scale. The scale was developed based on universal concept of recovery and thus the items are not designed for specific cultural background. Nevertheless, the responses to the items might vary in different cultural and ethnic background. For example, although the investigators found no empirical direct comparison, persons with persistent

mental illness in Taiwan have suffered higher social stigma, had more family support, and engaged in fewer recreational and prosocial activities compared to Western societies. These factors might have affected their responses. Thus, future validations on different cultural and ethnic communities are necessary for cross-cultural utilization. With good psychometric property of this scale, the investigators hope that this scale could provide the social work field with an instrument to document the evidence of a recovery-oriented program, and to portray the individualized and bountiful journey of recovery.

Declaration of Conflicting Interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

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