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Examining the Factor Structure of the Recovery Assessment Scale

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Abstract

This paper follows-up earlier research examining the factor structure of a measure of recovery from serious mental illness. 1824 persons with serious mental illness, participating in the baseline interview for a multi-state study on consumer operated services, completed the Recovery Assessment Scale (RAS) plus measures representing hope, meaningful life, quality of life, symptoms, and empowerment. Results of exploratory and subsequent confirmatory factor analyses of the RAS for random halves of the sample yielded five factors: personal confidence and hope; willingness to ask for help; goal and success orientation; reliance on others; and symptom coping. Subsequent regression analyses showed these five factors were uniquely related to the additional constructs assessed in the study. We compared these findings with other studies to summarize the factor structure that currently emerges on recovery.

## Examining the Factor Structure of the Recovery Assessment Scale

Recovery has been defined as persons with severe mental illness living a satisfying life within the constraints of one's mental illness (Anthony 1993; Deegan 1988; Deegan 1996; Leete 1989; Unzicker 1989; Hogan 2003). It has been compared to the experiences of persons with physical disabilities who are able to overcome deficits that result from physical illness or trauma and accomplish most life goals and roles when provided suitable assistance and reasonable accommodations. Specific models have been expressed in terms of the process and outcomes of recovery (Corrigan & Ralph in press). Outcome models of recovery challenge many traditional notions of psychiatry. Kraepelin (1913) voiced the most notable of these ideas; i.e., persons with schizophrenia will inevitably experience a progressive downhill course, eventually ending up demented and incompetent. Longitudinal research fails to support this assertion. Researchers in Vermont and Switzerland followed several hundred adults with severe mental illness for thirty years or more to find out how mental illness affected the course of the disorder over the long term (Harding 1988). If Kraepelin was right, the majority of these people should end up on the back wards of state hospitals. Instead, research discovered that from half to almost two thirds of the samples no longer required hospitalization, were able to work in some capacity, and lived comfortably with family or friends (Harding 1988). Hence, recovery from serious mental illness is an attainable outcome.

Ralph (2000a) summarized the findings from several quantitative and qualitative studies on recovery as a process. Dimensions that emerged from analyses of consumer comments about recovery included: internal factors, such as awareness of the toll the illness has taken, recognition of the need to change, insight about how change can begin, and determination to

recover; self-managed care, where consumers describe how they manage their own mental health and how they cope with the difficulties and barriers they face; external factors, which include interconnectedness with others, supports provided by family, friends, and professionals, and having people who believe that they can cope with and recover from their mental illness; and empowerment where internal strength is combined with interconnectedness to yield self-help, advocacy, and caring about what happens to ourselves and to others (Borkin et al. 2000; Campbell and Schraiber 1989; Godbey and Hutchinson 1996; Ralph et al. 1996; Ralph and Lambert 1996; Ridgway 2001; Smith 2000).

One quantitative study cited in the Ralph (2000b) review examined the factor structure of recovery as a process. Six hundred twelve people completed the Self-Help Survey to test a well-being model of recovery based on a person's life as the organizing construct (DeMasi et al. 1996). The proposed areas of well-being were: health (both physical and mental health), psychology, (self-esteem, hope, coping, and confidence), and social quality of life (economical and interpersonal). Confirmatory factor analysis supported the structure of the hypothesized model; namely, items representing recovery in the Self-Help Survey best fit a model with the three proposed areas of well-being.

In a second set of quantitative studies on the process of recovery, Giffort and colleagues (Giffort et al. 1995) combined participatory action research and narrative analysis to generate items for their Recovery Scale. Four persons with severe mental illness told their stories of recovery. Analyses of the resulting narrative yielded 39 items representing the construct. These items were then reviewed by an independent group of 12 consumers; changes based on their feedback yielded the 41-item measure that now comprises the Recovery Assessment Scale (RAS). Subsequent research showed the RAS total score to have adequate test-retest reliability

and internal consistency (Corrigan et al. 1999). Moreover, analysis of the concurrent validity showed the RAS total score to be positively associated with empowerment, and quality of life and inversely associated with psychiatric symptoms. Absent from previous research is an analysis of the factor structure of the RAS. This kind of information would add to our knowledge about what does the process of recovery comprise. Hence, the goals of this study are two fold; (1) determine the factor structure of the RAS and (2) examine the psychosocial and symptom variables that are correlates of individual factors.

## Methods

### Subjects

Data from this study were obtained during baseline assessment of participants in the Consumer Operated Services Project (Campbell et al. manuscript submitted). This CMHS-funded multi-site study examined the impact of consumer services on people with serious mental illness; criteria for the definition of consumers included a DSM-IV, Axis I diagnosis consistent with serious mental illness like schizophrenia, bipolar disorder, or major depression AND a significant functional disability that resulted from the mental illness. People with primary diagnoses of substance abuse and V codes were excluded. Proxies that represented significant functional disability included: receipt of SSDI; two or more state hospitalizations; or self-reported interference with housing, employment, or social support.

1824 individuals completed baseline analyses and provided useable data; missing values for some items may have lowered the N to 1750 for some of the individual analyses. The sample was 60.1% female and had a mean age of 41.8 years ( $SD=10.4$ ; range 18 to 78). 32.9% had not earned a high school diploma, 25.3% had graduated from high school or received a GED, 27.9%

had some college or vocational training, 5.6% had earned associates degrees, 5.2% had earned bachelor's degrees, and 3.0% had some graduate school. Note that the frequencies reported for higher education levels do not subsume lower education levels. In terms of ethnicity, 23.8% described themselves as African American, 74.5% European American, 3.4% Latino or Hispanic, 18.1% Native American, and 1.4% Asian or Pacific Islander. Note that the cumulative frequency of ethnic affiliations is greater than 100% because some participants identified themselves as more than one ethnic group. In terms of marital status, the sample was currently 46.7% single and never married, 12.6% married, 35.8% separated or divorced, and 4.2% widowed. 3.6% of the sample identified themselves as gay or lesbian, 5.5% as bi-sexual, and 88.1% as straight. Finally, 51.7% of the sample said they were challenged by a physical disability in addition to a psychiatric disability.

### Measures

Research participants were administered several interview-based, measures before entering the Consumer Operated Services Project. Data reported in this paper include the Recovery Assessment Scale and measures of symptoms and psychosocial functioning. Participants completed the Recovery Assessment Scale (Giffort et al. 1995), a 41-item scale on which respondents described themselves using a 5-point agreement scale (5=strongly agree). Sample items include: "I have a desire to succeed." and "I can handle it if I get sick again." A previous study of the scale showed overall scores to have satisfactory reliability and validity (Corrigan et al. 1999).

Measures were selected that assessed four psychosocial constructs that were thought to be related to recovery processes: consumer empowerment, quality of life, hope, and meaning of life. Research participants completed the Empowerment Scale (Rogers et al. 1997); the Scale

comprises 28 statements about empowerment which respondents answer on a 4-point agreement scale (4=strongly disagree). Items were reversed where appropriate so that a high total score on the Empowerment Scale represents high endorsement of that factor. The short version of the subjective component of Lehman's (Lehman 1983a) Quality of Life Interview (QOLI) was selected to measure quality of life. It comprises 6 items about various domains of independent living to which participants respond on a 7-point, delighted-terrible scale (7=delighted). The QOLI yields one score that has been shown to have satisfactory reliability and validity (Lehman 1983b; Lehman 1988).

As described above, key components of the process of recovery are hope and a purposeful life. The first construct was measured using the Herth Hope Index (Herth 1991; Herth 1993); research participants are instructed to respond to individual items in this 12 item measure, using a 4 point Likert Scale (4=strongly agree). A sample item includes "I have a positive outlook toward life." A single overall score has demonstrated reliability and validity. The latter construct was assessed using the Meaning of Life Subscale of the Life Regard Index (Battista and Almond 1973; Debats 1990). The Subscale includes 14 items which participants answer using a five point Likert Scale (5=strongly disagree). Items were reversed so that a higher total score (which has been shown to be reliable and valid) endorses a meaningful life. Finally, consistent with an earlier study (Corrigan et al. 1999) psychiatric symptoms were measured using the short version of the Hopkins Symptom Checklist (Derogatis 1974). For this test, research participants were instructed to respond to 25 items (e.g., How bothered or distressed have you been during the past week by poor appetite?) on a four point Likert Scale (1= not at all; 4=extremely).

## Results

Two analytic steps were completed to determine reliable factors that comprise the RAS. First an exploratory factor analysis (EFA) was completed on RAS items on a random half of the sample. The factor structure that emerged from this analysis was then cross-validated on the remaining half of the sample using confirmatory factor analysis (CFA). Results from the two steps are summarized in Table 1.

-- Insert Table 1 about here. --

A principal component analysis and varimax rotation was completed on a random half and yielded eight factors with eigenvalues greater than 1.00. These eight factors accounted for 60% of RAS variance. Factor loadings for individual items are summarized under the EFA column in Table 1. A subsequent confirmatory factor analysis was completed by creating structural equation models that corresponded with the item-factor loadings that emerged in the exploratory factor analysis. The fit of confirmatory factor analyses are considered sufficient when fit indices (i.e., Bentler's Comparative Fit Index (CFI); Bentler & Bonett's (1980) Non-normed Index (NNI); and Bentler & Bonett's normed fit index (NFI)) exceed 0.90).

Unfortunately, the eight factor CFA failed to yield sufficient fit indicators (i.e.,  $>.90$ ). Reviews of the LaGrange multipliers generated by the first CFA suggest removing factors 7, 6, and 2 from the EFA will yield a factor solution with good fit. A subsequent CFA without these three factors produced satisfactory fit (CFI=0.93; NNI=0.92; NFI=0.91) and is the factor solution summarized in Table 1.

Results of the exploratory and confirmatory factor analyses yielded five factors. Factor 1 is titled "personal confidence and hope"; the 9 items it comprises include statements about

respondents liking themselves, having hope for the future, and being able to handle stress.

Factor 2 was labeled “willingness to ask for help” and included items related to seeking help from others. Factor 3 was “goal and success orientation”; five items included having a desire to succeed and being able to meet goals. Factor 4 illustrates the importance of others in recovery and is titled “rely on others”. Factor 5 suggests symptoms are no longer central to people in recovery. Titled “not dominated by symptom”, this factor includes items that suggest psychiatric symptoms are no longer the center or focus of the person’s life. Note that the alphas for these five factors were all adequate and ranged from 0.74 to 0.87 .

#### Regression Analysis to Determine Concurrent Correlates

Previous research on the RAS suggested that the total scale score was associated with several measures of psychosocial functioning and symptoms (Corrigan et al. 1999). We decided to replicate and expand on these analyses by using five variables to describe the convergent validity of each of the five factors in Table 1. Results of a multiple regression analysis are summarized in Table 2. The  $R^2$  values for each factor range from moderate ( $R^2=27.7\%$  for Factor 2) to fairly high ( $R^2=68.9\%$  for Factor 1).

-- Insert Table 2 about here. --

The Herth Hope Index was found to be the highest correlate of each of the five factors suggesting that hope is an important element of recovery across the board. Although hope is common to all factors, the standardized beta representing this relationship was never greater than .424 suggesting other variables are also important elements of the RAS factors. Results of the multiple regression showed Factor 1, “personal confidence and hope”, was independently associated with each of the five correlates. Factor 2, “willingness to ask for help” was independently correlated with the Herth Hope Index and quality of life score. Factor 3, “goal

and success oriented”, was correlated with Meaning of Life and the Empowerment scales along with the Herth Hope Index. Factor 4, “rely on others”, was associated with the Herth Hope Index, Quality of Life, and Empowerment Scales. Factor 5, “not dominated by symptoms”, was associated with all five variables and showed especially high correlation with psychiatric symptoms.

### Discussion

A reliable and valid measure of recovery is needed to match the growing interest in this construct in mental health care. The current study extends previous conceptual advances and resulted in a clearer understanding of what is meant by recovery and initial development of the Recovery Assessment Scale. Factor analysis is a logical next step in the development of the measure because it defines some of the component domains underlying the recovery concept. Moreover, examination of emergent factors, in relations to other concurrently measured constructs, provides support for the validity of factor labels as well as the uniqueness of the RAS (i.e., it is measuring a construct that is related to, yet distinct from, other related constructs).

Recall that Ralph (2000a) previously identified four domains associated with recovery: internal (awareness of problem areas, recognition of the need to change, knowledge of how to change, confidence and self-determination); self-managed care (self-management and coping with the difficulties and barriers they face); external (reliance on and ability to reach out to supportive others); and empowerment (combines internal strength and interconnectedness to yield self-help, advocacy, and caring about what happens to ourselves and to others). The five factors identified in the RAS seem to correspond to several of the aforementioned domains. Factor 1 (personal confidence and hope) corresponds with internal factors related to confidence and self-determination. Factors 2 and 4 (willingness to ask for help and rely on others) appear to

tap external factors associated with the ability to reach out to others. Factor 5 (not dominated by symptoms) assesses the self-managed care and coping domain. Factor 3 (goal and success oriented) seems to correspond with empowerment issues associated with recovery, though this relationship is somewhat tenuous. These results suggest that the RAS corresponds with many of the recovery processes.

The regression analyses reported in Table 2 examined the extent to which a set of variables seemingly related to recovery were associated with each of the recovery factors. A few important observations can be made from these findings. First, hope was highly correlated with all five analyses suggesting that hope may be an essential element of recovery. Second, each of the remaining four variables was correlated with at least two of the recovery factors. This suggests that the factors associated with recovery as measured by the RAS represent a complex amalgam of constructs whereby each factor is associated with more than one construct and each construct more than one factor. Of special interest in this mix was an inverse relationship between psychiatric symptoms and self-reported recovery. Third, the R ranged from .83 (personal confidence and hope) to .52 (willingness to ask for help), indicating that the combination of variables accounted for a substantial amount of variance in the recovery factors, but also that the factors are measuring something distinct. These results offer some evidence of convergent validity at the factor level, but also show that the recovery factors assess something unique.

There are some important limitations to note in this study. First, the exploratory and confirmatory factor analysis yielded factors that incorporated only 24 of the 41 RAS items. This might suggest there are additional factors comprising the process of recovery that were not found in this study. Conversely, results might suggest that a 24 item RAS is sufficient to assess

recovery. A second concern about the study is the content of items. For example, a quick review of the items comprising RAS Factor 2: “willingness to ask for help” shows that three composite items overlap significantly in content. Hence, this may not be a true or important recovery process but instead represent an artifact of item development.

This study extends previous measurement development efforts with the Recovery Assessment Scale. Recovery has been a challenging construct to conceptualize because it seems to consist of, and be related to, so many constructs, including hope, empowerment, meaning of life, and quality of life that were all examined in this study. Overall, the RAS appears to have solid psychometric and conceptual features that likely make it useful in mental health services research. However, additional efforts to examine the measure’s construct validity, especially clearer evidence of convergence and divergence from other constructs, would greatly add to confidence in using the RAS to assess recovery. Part of this effort might include examining how recovery changes over time.

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Table 1. Results of exploratory and confirmatory factor analysis of Recovery Assessment Scale (RAS) on random halves of the sample.

Factor 1: Personal confidence and hope ( $\alpha=0.87$ )<sup>1</sup>

	<u>EFA</u> <sup>2</sup>	<u>CFA</u> <sup>3</sup>
11. Fear doesn't stop me from living the way I want to	.458	.543
14. I can handle what happens in my life	.491	.666
15. I like myself	.683	.722
16. If people really knew me, they would like me	.605	.586
20. I have an idea of who I want to become	.342	.643
22. Something good will eventually happen	.493	.645
24. I am hopeful about my future	.518	.740
25. I continue to have new interests	.408	.704
36. I can handle stress	.403	.591

Factor 2: Willingness to ask for help ( $\alpha=0.84$ )

	<u>EFA</u>	<u>CFA</u>
30. I know when to ask for help.	.741	.760
31. I am willing to ask for help.	.810	.764
32. I ask for help when I need it.	.805	.818

Factor 3: Goal and success oriented ( $\alpha=0.82$ )

	<u>EFA</u>	<u>CFA</u>
1. I have a desire to succeed.	.695	.534
2. I have my own plan for how to stay or become well.	.487	.679
3. I have goals in life that I want to reach.	.762	.693
4. I believe I can meet my current personal goals.	.516	.793
5. I have a purpose in life.	.504	.746

Factor 4: Rely on others ( $\alpha=0.74$ )

	<u>EFA</u>	<u>CFA</u>
6. Even when I don't care about myself, other people do.	.684	.581
37. I have people I can count on.	.674	.720
39. Even when I don't believe in myself, other people do.	.755	.764
40. It is important to have a variety of friends.	.335	.537

Factor 5: Not dominated by symptoms ( $\alpha=0.74$ )

	<u>EFA</u>	<u>CFA</u>
27. Coping with mental illness is no longer the main focus of my life.	.739	.589
28. My symptoms interfere less and less with my life.	.745	.873
29. My symptoms seem to be a problem for shorter periods of time each time they occur.	.675	.648

Note: 1. Alphas for each factor determined on complete sample (N=1824)

2. Values under this column were the factor loadings for each item generated from the exploratory factor analysis.
3. Values under this column were standardized estimates for each item generated from the confirmatory factor analysis.

Table 2. Results of multiple regression analyses for each of the five Recovery Assessment Scale Factors.

Factor 1: Personal confidence and hope (R=.831)

Variable	Standardized Beta	t	p .
Herth Hope Index	.413	17.23	<.001
Meaning of Life	.182	8.19	<.001
Total Empowerment Scale	.180	9.78	<.001
Total Hopkins Symptom Checklist	-.149	-8.54	<.001
Subjective Quality of Life	.066	3.76	<.001

Factor 2: Willingness to ask for help (R=.526)

Variable	Standardized Beta	t	p .
Herth Hope Index	.372	10.18	<.001
Subjective Quality of Life	.107	4.00	<.001
Total Empowerment Scale	.052	1.81	N.S.
Total Hopkins Symptom Checklist	-.050	-1.88	N.S.
Meaning of Life	.028	0.83	N.S.

Factor 3: Goal and success oriented (R=.725)

Variable	Standardized Beta	t	p .
Herth Hope Index	.365	12.30	<.001
Meaning of Life	.261	9.48	<.001
Total Empowerment Scale	.160	7.01	<.001
Total Hopkins Symptom Checklist	-.030	-1.38	N.S.
Subjective Quality of Life	-.003	-0.12	N.S.

Factor 4: Rely on others (R=.595)

Variable	Standardized Beta	t	p .
Herth Hope Index	.424	12.28	<.001
Subjective Quality of Life	.197	7.77	<.001
Total Empowerment Scale	.110	4.12	<.001
Total Hopkins Symptom Checklist	.046	1.82	N.S.
Meaning of Life	-.011	-0.36	N.S.

Factor 5: Not dominated by symptoms (R=.575)

Variable	Standardized Beta	t	p .
Herth Hope Index	.257	7.30	<.001
Total Hopkins Symptom Checklist	-.200	-7.83	<.001
Meaning of Life	.099	3.03	<.005
Subjective Quality of Life	.088	3.42	<.005
Total Empowerment Scale	.058	2.15	<.05