

# Examining the Factor Structure of the Recovery Assessment Scale

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## Abstract

**This article follows up on earlier research examining the factor structure of a measure of recovery from serious mental illness. Exactly 1,824 persons with serious mental illness who were participating in the baseline interview for a multistate study on consumer-operated services completed the Recovery Assessment Scale (RAS) plus measures representing hope, meaning of 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 no domination by symptoms. Subsequent regression analyses showed that these five factors were uniquely related to the additional constructs assessed in the study. We compared these findings with those of other studies to summarize the factor structure that currently emerges on recovery.**

**Keywords:** Recovery, assessment, factor analysis, hope.

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For persons with severe mental illness, recovery has been defined as living a satisfying life within the constraints of their mental illness (Deegan 1988, 1996; Leete 1989; Unzicker 1989; Anthony 1993; Hogan 2003), in much the same way as persons with physical disabilities can 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 and Ralph, in press). Outcome models of recovery challenge many traditional notions of psychiatry. Kraepelin (1913) voiced the most notable of these ideas: 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 30 years or more (Harding 1988). If Kraepelin was right, the majority of these people should have ended up in 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 being connected to others, receiving support from family, friends, and professionals, and having people who believe that the consumers 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 themselves and to others (Campbell and Schraiber 1989; Godbey and Hutchinson 1996; Ralph and Lambert 1996; Ralph et al. 1996; Borkin et al. 2000; Smith 2000; Ridgway 2001).

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 in

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which a person's life was used 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 (CFA) 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 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 narratives 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 is now 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 the process of recovery. Hence, the goals of this study are twofold: (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., submitted). This Center for Mental Health Services (CMHS)-funded multisite study examined the impact of consumer services on people with serious mental illness; criteria for the definition of consumers included a *DSM-IV* (APA 1994) Axis I diagnosis consistent with a serious mental illness such as 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 Social Security Disability Insurance (SSDI); two or more state hospitalizations; or self-reported interference with housing, employment, or social support.

Exactly 1,824 individuals completed baseline analyses and provided usable data; missing values for some

items have lowered the *n* to 1,750 for some of the individual analyses. The sample was 60.1 percent female and had a mean age of 41.8 years (standard deviation = 10.4; range 18–78); 32.9 percent had not earned a high school diploma, 25.3 percent had graduated from high school or received a GED, 27.9 percent had some college or vocational training, 5.6 percent had earned associate's degrees, 5.2 percent had earned bachelor's degrees, and 3.0 percent had studied in graduate school (note that the frequencies reported for higher education levels do not subsume lower education levels). In terms of ethnicity, 23.8 percent described themselves as African-American, 74.5 percent European-American, 3.4 percent Latino or Hispanic, 18.1 percent Native American, and 1.4 percent Asian or Pacific Islander (note that the cumulative frequency of ethnic affiliations is greater than 100 percent because some participants identified themselves as more than one ethnic group). In terms of marital status, the sample was 46.7 percent single and never married, 12.6 percent married, 35.8 percent separated or divorced, and 4.2 percent widowed. Some 3.6 percent of the sample identified themselves as gay or lesbian, 5.5 percent as bisexual, and 88.1 percent as heterosexual. Finally, 51.7 percent 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 article include the RAS and measures of symptoms and psychosocial functioning. Participants completed the RAS (Giffort et al. 1995), a 41-item scale on which respondents described themselves using a five-point agreement scale (5 = strongly agree; 1 = strongly disagree). 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).

Construct measures were selected that were thought to be related to recovery processes: empowerment, quality of life, hope, meaning of life, and symptoms. Research participants completed the Empowerment Scale (Rogers et al. 1997), which comprises 28 statements about empowerment that respondents answer on a four-point agreement scale (4 = strongly disagree). Items were reversed where appropriate so that a high total score on the Empowerment Scale represented high endorsement of that factor. The short version of the subjective component of Lehman's (Lehman 1983b) Quality of Life Interview (QOLI) was selected to measure quality of life. It comprises six items about various domains of independent living to which participants respond on a seven-point scale (7 = delighted; 1 = terrible). The QOLI yields one score

that has been shown to have satisfactory reliability and validity (Lehman 1983a, 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, 1993); research participants are instructed to respond to individual items in this 12-item measure using a four-point Likert scale (4 = strongly agree; 1 = strongly disagree). A sample item includes "I have a positive outlook toward life." A single overall score has demonstrated reliability and validity. The second 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 that 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 et al. 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 compose 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 CFA. Results from the two steps are summarized in table 1.

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 percent of RAS variance. Factor loadings for individual items are summarized under the EFA column in table 1. A subsequent CFA was completed by creating structural equation models that corresponded with the item-factor loadings that emerged in the EFA. The fit of a CFA is considered sufficient when fit indexes (i.e., Bentler's comparative fit index [CFI; Bentler and Bonett 1980], Bentler and Bonett's [1980] non-normed index [NNI], and Bentler and Bonett's normed fit index [NFI]) exceed 0.90. Unfortunately, the eight-factor CFA failed to yield sufficient fit indicators (i.e., >0.90). Reviews of the Lagrange multipliers generated by the first CFA suggested that removing factors 7, 6, and 2 from the EFA would yield a factor solution with good fit. A subsequent CFA without these three factors produced satisfac-

tory fit (CFI = 0.93; NNI = 0.92; NFI = 0.91) and is the factor solution summarized in table 1.

Results of the EFA and CFA yielded five factors. Factor 1 is titled "personal confidence and hope"; the nine items it comprises include statements about respondents liking themselves, having hope for the future, and being able to handle stress. Factor 2, "willingness to ask for help," includes items related to seeking help from others. Factor 3 was "goal and success orientation"; its five items include having a desire to succeed and being able to meet goals. Factor 4 illustrates the importance of others in recovery and is titled "reliance on others." Factor 5, "no domination by symptoms," includes items that suggest that 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.

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).

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 0.424, suggesting that other variables are also important elements of the RAS factors. Results of the multiple regression showed that 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. Factor 3, "goal and success orientation," was correlated with Meaning of Life and Empowerment along with the Herth Hope Index. Factor 4, "reliance on others," was associated with the Herth Hope Index, Quality of Life, and Empowerment. Factor 5, "no domination 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

**Table 1. Results of EFA and CFA of RAS on random halves of the sample**

	EFA <sup>1</sup>	CFA <sup>2</sup>
Factor 1: Personal confidence and hope ( $\alpha = 0.87$ ) <sup>3</sup>		
11. Fear doesn't stop me from living the way I want to.	0.458	0.543
14. I can handle what happens in my life.	0.491	0.666
15. I like myself.	0.683	0.722
16. If people really knew me, they would like me.	0.605	0.586
20. I have an idea of who I want to become.	0.342	0.643
22. Something good will eventually happen.	0.493	0.645
24. I am hopeful about my future.	0.518	0.740
25. I continue to have new interests.	0.408	0.704
36. I can handle stress.	0.403	0.591
Factor 2: Willingness to ask for help ( $\alpha = 0.84$ )		
30. I know when to ask for help.	0.741	0.760
31. I am willing to ask for help.	0.810	0.764
32. I ask for help when I need it.	0.805	0.818
Factor 3: Goal and success orientation ( $\alpha = 0.82$ )		
1. I have a desire to succeed.	0.695	0.534
2. I have my own plan for how to stay or become well.	0.487	0.679
3. I have goals in life that I want to reach.	0.762	0.693
4. I believe I can meet my current personal goals.	0.516	0.793
5. I have a purpose in life.	0.504	0.746
Factor 4: Reliance on others ( $\alpha = 0.74$ )		
6. Even when I don't care about myself, other people do.	0.684	0.581
37. I have people I can count on.	0.674	0.720
39. Even when I don't believe in myself, other people do.	0.755	0.764
40. It is important to have a variety of friends.	0.335	0.537
Factor 5: No domination by symptoms ( $\alpha = 0.74$ )		
27. Coping with mental illness is no longer the main focus of my life.	0.739	0.589
28. My symptoms interfere less and less with my life.	0.745	0.873
29. My symptoms seem to be a problem for shorter periods of time each time they occur.	0.675	0.648

Note.—CFA = confirmatory factor analysis; EFA = exploratory factor analysis; RAS = Recovery Assessment Scale.

<sup>1</sup> Values under this column were the factor loadings for each item generated from the EFA.

<sup>2</sup> Values under this column were standardized estimates for each item generated from the CFA.

<sup>3</sup> Alphas for each factor were determined on complete sample ( $n = 1,824$ ).

what is meant by recovery and initial development of the RAS. 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 relation 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).

The five factors identified in the RAS seem to correspond to the four domains (internal factors, self-managed care, external factors, and empowerment) identified by Ralph (2000a) (see introduction). Factor 1 (personal con-

fidence and hope) corresponds with internal factors related to confidence and self-determination. Factors 2 and 4 (willingness to ask for help and reliance on others) appear to tap external factors associated with the ability to reach out to others. Factor 5 (no domination by symptoms) assesses the self-managed care and coping domain. Factor 3 (goal and success orientation) seems to correspond with empowerment issues associated with recovery, although 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 fac-

**Table 2. Results of multiple regression analyses for each of the five RAS factors**

Variable	Standardized beta	<i>t</i>	<i>p</i>
Factor 1: Personal confidence and hope ( $r = 0.831$ )			
Herth Hope Index	0.413	17.23	<0.001
Meaning of Life	0.182	8.19	<0.001
Total Empowerment Scale	0.180	9.78	<0.001
Total Hopkins Symptom Checklist	-0.149	-8.54	<0.001
Subjective Quality of Life	0.066	3.76	<0.001
Factor 2: Willingness to ask for help ( $r = 0.526$ )			
Herth Hope Index	0.372	10.18	<0.001
Subjective Quality of Life	0.107	4.00	<0.001
Total Empowerment Scale	0.052	1.81	<i>ns</i>
Total Hopkins Symptom Checklist	-0.050	-1.88	<i>ns</i>
Meaning of Life	0.028	0.83	<i>ns</i>
Factor 3: Goal and success orientation ( $r = 0.725$ )			
Herth Hope Index	0.365	12.30	<0.001
Meaning of Life	0.261	9.48	<0.001
Total Empowerment Scale	0.160	7.01	<0.001
Total Hopkins Symptom Checklist	-0.030	-1.38	<i>ns</i>
Subjective Quality of Life	-0.003	-0.12	<i>ns</i>
Factor 4: Reliance on others ( $r = 0.595$ )			
Herth Hope Index	0.424	12.28	<0.001
Subjective Quality of Life	0.197	7.77	<0.001
Total Empowerment Scale	0.110	4.12	<0.001
Total Hopkins Symptom Checklist	0.046	1.82	<i>ns</i>
Meaning of Life	-0.011	-0.36	<i>ns</i>
Factor 5: No domination by symptoms ( $r = 0.575$ )			
Herth Hope Index	0.257	7.30	<0.001
Total Hopkins Symptom Checklist	-0.200	-7.83	<0.001
Meaning of Life	0.099	3.03	<0.005
Subjective Quality of Life	0.088	3.42	<0.005
Total Empowerment Scale	0.058	2.15	<0.005

Note.—*ns* = nonsignificant; RAS = Recovery Assessment Scale.

tors. 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 0.83 (factor 1, "personal confidence and hope") to 0.52 (factor 2, "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 EFA and CFA yielded factors that incorporated only 24 of the 41 RAS items. This might suggest that there are additional factors involved in 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 composing factor 2, "willingness to ask for help," shows that its 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 RAS. 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, all of which were 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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