



Do clinical outcome measures assess consumer-defined recovery?

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ABSTRACT

There is an international call for mental health services to become recovery-oriented, and also to use evidence-based practices. Addressing this call requires recovery-oriented measurement of outcomes and service evaluation. Mental health consumers view recovery as leading as meaningful life, and have criticised traditional clinical measures for being too disability-oriented. This study compares three measures of consumer-defined recovery from enduring mental illness: the Recovery Assessment Scale, the Mental Health Recovery Measure and the Self-Identified Stage of Recovery, with four conventional clinical measures. Correlational analyses supported the convergent validity of the recovery measures, although certain subscales were unrelated to each other. More importantly, little relationship was found between consumer-defined recovery and the clinical measures. Analyses of variance revealed that scores on the recovery measures increased across self-identified stage of recovery, but scores on most clinical measures did not improve consistently across stage of recovery. The findings demonstrate the qualitative difference between the two types of measures, supporting the claim by consumers that clinical measures do not assess important aspects of recovery. There is a need for further research and refinement of recovery measurement, including assessment of stages of recovery, with the aim of including such measures as an adjunct in routine clinical assessment, service evaluation and research.

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1. Introduction

Mental health consumers with enduring mental illnesses, such as schizophrenia and bipolar disorder, have been advocating for some time that services should be recovery-oriented, and this goal is being incorporated internationally into mental health policy, predominantly in the English speaking world (Slade et al., 2008). 'Recovery', as used by mental health consumer advocates, differs from the commonly-held meaning of the return to a previous level of health and functioning after illness. Consumer-oriented definitions of recovery refer instead to changes in attitude to life and the illness, emphasising the role of hope. They refer to the establishment of a meaningful and fulfilling life, a positive sense of identity and taking responsibility for one's own wellbeing (e.g. Anthony, 1993; Andresen et al., 2003; Resnick et al., 2005; Slade et al., 2008). Treatment approaches based on the consumer recovery model are being developed and applied worldwide. Concurrent with demands for recovery-oriented services, policies internationally are requiring evidence-based mental health services. While traditional outcome measures have tended to assess such things as symptoms, hospitalisations and functioning, and stem from medical conceptualisations of mental illness, consumers describe the experience of *psychological* recovery which can take place (a) in the presence of ongoing or recurring symptoms, (b) with

choice regarding the use of medications, and (c) while choosing to access services and/or hospital treatment (Andresen et al., 2003). The recovery vision is one of attaining a productive and fulfilling life regardless of the presence of recurring symptoms (Crowley, 1997). This entails an examination of one's core self to find a foundation for building a meaningful life in a personally-valued role (Andresen et al., 2003). Measures of symptoms, medication compliance, service utilisation and skills largely exclude these intrapersonal processes of psychological recovery, and so do not reflect the consumer definition of recovery. Lakeman (2004) argues that, rather than informing recovery-oriented practice, such measures rob the lived experience of all meaning: "quantification does not make an observation more objective, 'evidenced based' or meaningful" (p. 212).

This position does not suggest that objective measures should be abandoned, but rather, that they be augmented by measures of consumer-defined recovery. A recent study demonstrated that goal attainment mediated the relationship between baseline levels of symptom distress and progress on recovery (Clarke et al., 2009). Similarly, Resnick et al. (2004) found that, although severity of symptoms was inversely related to a recovery orientation, reduction of symptoms does not automatically lead to psychological recovery. For example, Resnick et al. also found that severity of symptoms was *not* related to hope, the core of the recovery process. It is therefore important to ensure that the achievement of traditional treatment goals is in fact facilitating psychological recovery (Silverstein and Bellack, 2008). To that end, outcome measurement, evaluation studies and research should include assessment of the subjective experience of recovery, as it has been described by consumers.

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To date, there is no universally-accepted criterion for operationalising the concept of recovery. Given that recovery is represented by consumers as a unique, personal journey, there has been a reticence to define it as an outcome (Torrey et al., 2005), however, some recovery measures have been developed. Campbell-Orde et al. (2005) compiled the *Compendium of Recovery Measures*, which includes measures of individual recovery and measures of recovery-promoting environments. Measures of individual recovery can be categorised into two domains: those that focus on psychological processes of the person, and those that assess satisfaction with various life domains and treatment.

This study focuses on measures of the intrapersonal process of psychological recovery, such as hope and optimism, self-determination, resilience, positive identity and finding meaning and purpose in life. Of the measures in the Compendium only two could be considered to fit this narrow definition: the Recovery Assessment Scale (RAS; Corrigan et al., 1999) and the Mental Health Recovery Measure (MHRM; Young and Ensing, 1999; Young and Bullock, 2003). Both the RAS and the MHRM were based on consumers' descriptions of their experience of the recovery process.

In addition to the intrapersonal recovery processes, there exists a substantial literature, based on qualitative research, which describes recovery as taking place in stages or phases. For example, Davidson and Strauss (1992) identified four aspects of recovery of the sense of self in severe mental illness. These were described as: "(1) discovering the possibility of possessing a more active sense of self, (2) taking stock of strengths and weaknesses and assessing possibilities for change, (3) Putting into action some aspects of the self and integrating the results as reflecting one's actual capabilities and (4) using an enhanced sense of self to provide some refuge to provide a resource against the effects of the illness and [such things as stigma]" (Davidson and Strauss, 1992, p. 134). Although Davidson and Strauss point out that these four aspects do not necessarily occur in a linear fashion, but are related and overlapping, there is a logical order to the four aspects. Three emotional stages of recovery were described by Baxter and Diehl (1998): (1) Recuperation, a stage of dependence following crisis; (2) Rebuilding, a time of building independence, and (3) Awakening, a time of building interdependence. Three phases were also posited by Young and Ensing (1999) in a model which encompasses six aspects and numerous processes of recovery. The three phases of recovery were described as: Phase I, *Overcoming "stuckness"*; Phase II, *Regaining what was lost and moving forward*; and Phase III, *Improving quality of life* (Young and Ensing, 1999). Spaniol et al. (2002) identified four phases of recovery in the literature: (1) Overwhelmed by the disability; (2) Struggling with the disability; (3) Living with the disability, and (4) Living beyond the disability. Spaniol et al. were able to place research participants in each of the first three phases, but not in the fourth phase. Tooth et al. (1997) and Lapsley et al. (2002) also found references to stages of recovery in large qualitative studies in Australia and New Zealand respectively.

A stage model of psychological recovery, reflecting the parallel findings of these qualitative studies has been developed (Andresen et al., 2003) (see Table 1). The model consists of a five-stage process: (1) Moratorium (withdrawal, hopelessness and a negative sense of identity), (2) Awareness (hope and an awareness of intact aspects of the self), (3) Preparation (the examination of core values and the implementation of internal and external resources), (4) Rebuilding (taking steps towards meaningful goals) and (5) Growth (living a fulfilling life and looking towards a positive future). The model also identifies four psychological processes: finding and maintaining hope, taking responsibility for one's life and wellbeing, building a positive identity and finding meaning in life. In light of the common findings of the qualitative studies, measures based on a stage model may provide a particularly useful framework for further research. Andresen et al. (2006) developed two measures based on this stage model: the 50-item Stages of Recovery Instrument and the brief Self-Identified Stage of Recovery.

The inclusion of three recovery measures: the Recovery Assessment Scale (RAS; Corrigan et al., 1999), the Mental Health Recovery Measure (MHRM; Young and Bullock, 2003), and the Self-identified Stage of Recovery (SISR; Andresen et al., 2006) with four conventional clinical measures in a large multi-site study (Oades et al., 2005) provides an opportunity to test the construct validity of recovery measurement. First, we build on preliminary work (McNaught et al., 2007) to address the questions (1) Do recovery measures demonstrate convergent validity? (2) Do recovery measures provide unique information that may supplement conventional clinical measures, and (3) Do scores on recovery measures and clinical measures improve across stage of recovery as assessed by the SISR?

2. Method

2.1. Participants

The research used baseline data from participants in the Australian Integrated Mental Health Initiative. This large, multi-site project, investigating the Collaborative Recovery Model (Oades et al., 2005), involved four government and five non-government organisations across the eastern states of Australia. Inclusion criteria for participants were that they were aged 18 years or over, had a diagnosis of a psychotic disorder of at least six months duration and had high support needs as assessed by the CANSAS (Phelan et al., 1995). Case managers recruited participants from their current case load. Individuals with cognitive deficits or brain injury which would prevent them from giving informed consent or from completing the questionnaires were excluded.

After informed consent had been given, a standard battery of instruments was administered during routine clinical sessions. The client-rated measures were completed independently, unless the client requested the assistance of the clinician or a research assistant.

Baseline data from the first 281 participants were accessed. A subset of this data, representing 110 participants, was used for Phase 1 of the study to address the first two research questions. These data were combined with an additional 171 for Phase 2, in which we investigated the third research question. The demographic data for participants in each part of the study are shown in Table 2.

Table 1
Five stages of psychological recovery, incorporating stages and phases of recovery described in four qualitative studies.

Stage of psychological recovery (Andresen et al. (2003))	Davidson and Strauss (1992)	Baxter and Diehl (1998)	Young and Ensing (1999)	Spaniol et al. (2000)
Stage 1 Moratorium		1. Crisis <i>Recuperation</i>		1. Overwhelmed by the disability
Stage 2 Awareness	1. Awareness of a more active self		I. Initiating recovery	
Stage 3 Preparation	2. Taking stock of self 3. Putting self into action	2. Decision	II. Regaining and moving forward	2. Struggling with the disability
Stage 4 Rebuilding	4. Appealing to the self	<i>Rebuilding independence</i>	III. Improving quality of life	3. Living with the disability
Stage 5 Growth		3. Awakening <i>building healthy interdependence</i>		4. Living beyond the disability

Adapted from Andresen, R., Oades, L. & Caputi, P. (2003) The experience of recovery from schizophrenia: towards an empirically validated stage model. *Australian and New Zealand Journal of Psychiatry* (37) 5, 586–594. With permission, Taylor & Francis Ltd, <http://www.tandf.co.uk/journals>.

Table 2
Demographic characteristics of the participants for Parts 1 and 2 of the study.

	Phase 1 Data subset (n = 110)	Phase 2 Full data set (n = 281)
Gender		
Male	54.0%	57.7%
Female	46.0%	42.3%
Age range (M, S.D.)	18–69 (39.49, 11.32)	18–69 (39.71, 11.84)
Diagnosis		
Schizophrenia	68.5%	72.2%
Schizoaffective disorder	12.0%	7.7%
Bipolar Disorder	7.5%	11.3%
Depressive Psychosis	12.0%	8.9%
Duration of illness		
5 years or more	71.8%	67.0%
1–5 years	11.8%	10.6%
Up to 1 year	2.4%	2.8%
Unknown	14.1%	19.7%

2.2. Measures

2.2.1. Recovery measures

A search of the peer-reviewed literature, prior to commencement of the AIMhi project in 2003, revealed only one existing measure of recovery: the RAS (Corrigan et al., 1999). The MHRM had a related peer-reviewed publication, describing the qualitative research on which it was based (Young and Ensing, 1999). These were included in the research, along with the SISR, a measure developed specifically for the project based on the stage model of recovery (Andresen et al., 2003).

The Recovery Assessment Scale (RAS; Corrigan et al., 1999). The RAS is a 41-item, self-rated measure, using a five-point scale from 0 = 'Strongly Disagree' to 4 = 'Strongly Agree'. The scale has demonstrated acceptable test-retest reliability and internal consistency. A factor analysis resulted in five factors, totalling 24 items (Corrigan et al., 2004). These are: Factor 1, *Personal Confidence and Hope* (9 items); Factor 2, *Willingness to ask for Help* (3 items); Factor 3, *Goal and Success Orientation* (5 items); Factor 4, *Reliance on Others* (4 items), and Factor 5, *Not Dominated by Symptoms* (3 items). The RAS has demonstrated concurrent validity with self-esteem, self-empowerment, quality of life, and symptoms, positive relationships with social support (Corrigan and Phelan, 2004) and leisure motivation (Lloyd et al., 2007).

The Mental Health Recovery Measure (MHRM; Young and Ensing, 1999; Ralph, 2000). The MHRM is a 41 item, self-rated, measure, using a five-point scale from 0 = 'Strongly disagree', to 4 = 'Strongly agree'. Eleven items are reverse-scored. The MHRM is based on Young and Ensing's (1999) three-phase model of recovery, which comprises six aspects. These are represented by six subscales: *Overcoming stuckness* (6 items); *Discovering and fostering self-empowerment* (6 items); *Learning and self-redefinition* (9 items) and *Return to basic functioning* (6 items); *Striving to attain overall wellbeing* (6 items) *Striving to reach new potentials* (8 items). Although no peer-reviewed psychometric testing could be found, testing reported in the Compendium includes good internal consistency and test-retest reliability, as well as convergent validity with empowerment, resilience and living skills (Ralph et al., 2000). Since the data in the current study were collected, a revised 30-item version has been developed (Young and Bullock, 2003; Campbell-Orde et al., 2005). The shorter version has been shown to discriminate between groups of individuals based on participation in treatment (Bullock et al., 2002), and sensitivity to change following completion of a recovery treatment program (Bullock et al., 2005).

Self-Identified Stage of Recovery (SISR). Designed specifically for inclusion in the AIMhi project, the SISR is a brief measure based on the stage model of psychological recovery (Andresen et al., 2003). The SISR consists of two parts: Part A (SISR-A) consists of five statements, each representing a stage of recovery: A = *Moratorium*; B = *Awareness*; C = *Preparation*; D = *Rebuilding*, and E = *Growth*. Respondents choose the statement which best represents their current recovery experience. Part B (SISR-B) consists of four items representing four recovery processes: *Hope, Responsibility, Identity and Meaning*, rated on a six-point scale from 1 = 'Disagree Strongly' to 6 = 'Agree Strongly'. The SISR-A correlated moderately with the Stages of Recovery Instrument (STORI; Andresen et al., 2006).

On all the recovery measures, a higher rating indicates better recovery progress.

2.2.2. Clinical measures

Three of the clinical measures are clinician-rated, these are:

Health of the Nation Outcome Scales (HoNOS; Wing et al., 1998). The HoNOS consists of 12 items assessing problems with *Behaviour* (3 items), *Impairment* (2 items), *Symptoms* (3 items) and *Social functioning* (4 items). Scoring is on a five-point scale ranging from 0 = 'No problem' to 4 = 'Severe to very severe problem'. Therefore, a higher rating on the HoNOS indicates poorer mental health. In a review of psychometric studies, the HoNOS was found to have good construct and predictive validity, with adequate test-retest and inter-rater reliability and sensitivity to change (Pirkis et al., 2005).

Life Skills Profile-16 (LSP-16; Rosen et al., 1989). The LSP-16 is an abbreviated version of the 39-item LSP. It comprises four subscales: *Withdrawal* (4 items); *Antisocial behaviour* (4 items); *Self care* (5 items) and *Compliance* (3 items). Ratings for the past three months are made on a 4-point scale ranging from 0 = 'No problem' to 3 = 'Extreme problem'. Therefore, a higher rating on the LSP-16 indicates poorer functioning. The LSP and its derivatives have demonstrated good internal consistency (Eagar et al., 2005), test-retest reliability and concurrent validity (Trauer et al., 1995; Rosen et al., 2001), and marginal inter-rater reliability (Rosen et al., 2001).

Global Assessment of Functioning (GAF; American Psychiatric Association, 1994). The GAF is a single-item assessment of psychological, social and occupational functioning, with scores ranging from 1 to 100. Ten ranges of scores are described: 1–10 = 'Persistent danger of severely hurting self or others OR persistent inability to maintain minimum personal hygiene OR serious suicidal act with clear expectation of death' through to 91–100 = 'Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his or her many qualities. No symptoms'. Therefore, a higher rating on the GAF indicates better functioning. The GAF has demonstrated good validity and inter-rater reliability (Hall, 1995).

One client-rated conventional measure was included:

Kessler-10 (K-10; Andrews and Slade, 2001). The K-10 assesses the level of anxiety and depressive symptoms a person has experienced in the past four-weeks. It consists of 10 items rated on a five-point scale ranging from 1 = 'None of the time' to 5 = 'All of the time'. Therefore, a higher rating on the K-10 indicates more psychological distress. The K-10 has been found to have good content validity (Brooks et al., 2006) and predictive validity for DSM-IV affective disorder (Hides et al., 2007) and serious mental illness (Kessler et al., 2003).

The HoNOS, the LSP-16 and the K-10 are mandatory routine outcome measures in Australia (Stedman et al., 2000; Australian Health Ministers, 2003). Clinicians were trained in the use of the measures according to the NSW Department of Health protocol (New South Wales Department of Health, 2004).

3. Results

Scores on the HoNOS, LSP-16 and K-10 were reversed so that on all measures, a higher score indicates better mental health. The full 41 items of the RAS were included in the total score, but RAS subscales based on the factors included only 24 items in total. The four items of SISR-B were summed to give a total recovery process score in addition to the four individual processes.

3.1. Convergent validity of the recovery measures

3.1.1. Descriptives

Means and standard deviations of scores on all measures for Phases 1 and 2 are shown in Table 3. SISR-A stage of recovery was completed by only 79.1% and 79% of participants in Phase 1 and Phase 2 respectively. The pattern of stages was almost identical in both Phases, with the highest frequency being for Stage 4. Frequencies for each stage are shown in Table 4. Mean scores on all measures and their subscales were higher than the potential mid-point, with the exception of the GAF, which was closer to the mid-point.

The variables were found to be normally distributed, indicating that Pearson's correlations would be appropriate. However, due to the large number of correlations necessary to compare the subscales of the clinical and recovery measures, canonical correlations were performed for that analysis.

3.1.2. Correlations among the recovery measures

Pearson's correlations (2-tailed) were calculated between the total scores on the recovery measures. Spearman's correlations were conducted with the SISR-A. Correlations between MHRM, RAS and SISR-B were quite high, while correlations with the SISR-A were lower (see Table 5). These relationships provide support for the construct validity of the recovery-oriented measures, while suggesting that the SISR-A, in attempting to assess stage, may tap into a unique aspect of recovery not assessed by the continuous measures.

Pearson's correlations were then calculated between the MHRM subscales, the RAS factors and the SISR-B items. All but five of the 74 correlations were significant. Positive correlations ranged from a low of $r_s = 0.21$ ($P < 0.05$) between RAS *Willingness to ask for help* and SISR-B

Table 3
Means and standard deviations on recovery measures and clinical measures.

Measure (theoretical range)	Phase 1 Data subset (<i>n</i> = 110)			Phase 2 Full data set (<i>n</i> = 281)		
	<i>n</i>	Mean	S.D.	<i>n</i>	Mean	S.D.
<i>Recovery measures</i>						
Recovery Assessment Scale (0–164)	96	112.06	20.75	246	112.35	22.06
<i>RAS subscales</i>						
<i>Person confidence & hope</i> (0–36)	96	23.40	5.54	246	23.45	6.05
<i>Willingness to ask for help</i> (0–12)	96	8.39	2.12	246	8.50	2.36
<i>Goal & success orientation</i> (0–20)	96	14.68	3.32	246	14.20	3.56
<i>Reliance on others</i> (0–16)	94	11.87	2.87	244	11.90	2.58
<i>Not dominated by symptoms</i> (0–12)	94	6.68	2.96	244	6.85	2.87
Mental Health Recovery Measure (0–164)	95	107.18	20.48	245	108.29	19.31
<i>MHRM subscales</i>						
<i>Overcoming stuckness</i> (0–24)	95	17.61	3.08	245	17.37	3.19
<i>Empowerment</i> (0–24)	95	15.63	5.81	245	15.46	2.95
<i>Learning and redefinition</i> (0–36)	94	24.70	4.01	244	24.60	5.37
<i>Basic functioning</i> (0–24)	95	14.54	4.45	245	14.97	3.75
<i>Wellbeing</i> (0–24)	94	14.54	4.42	244	14.92	4.42
<i>New potentials</i> (0–32)	95	20.06	5.33	244	20.75	5.33
Self-identified stage of recovery (Part B) (4–24)	88	18.40	3.98	228	18.81	4.16
<i>SISR-B process items</i>						
<i>Hope</i> (1–6)	87	4.46	1.38	227	4.54	1.41
<i>Identity</i> (1–6)	87	4.68	1.26	226	4.77	1.28
<i>Meaning</i> (1–6)	86	4.55	1.43	226	4.69	1.36
<i>Responsibility</i> (1–6)	87	4.72	1.33	226	4.81	1.35
<i>Conventional clinical measures</i>						
Health of a Nation Outcome Scale (Reversed; 0–48)	97	34.38	7.26	257	33.42	7.29
<i>HoNOS Subscales</i>						
<i>Behaviour</i> (0–12)	96	10.36	1.91	255	10.32	1.88
<i>Symptoms</i> (0–12)	97	7.51	2.61	256	7.07	2.85
<i>Impairment</i> (0–8)	97	5.65	1.98	256	5.56	1.84
<i>Social functioning</i> (0–16)	97	10.80	3.38	256	10.36	3.49
Life Skills Profile-16 (Reversed; 0–48)	98	40.77	3.70	256	40.00	4.56
<i>LSP-16 subscales</i>						
<i>Withdrawal</i> (0–12)	98	9.96	1.41	256	9.84	1.79
<i>Antisocial behaviour</i> (0–12)	98	10.95	1.25	256	10.62	1.70
<i>Self care</i> (0–15)	98	12.23	1.90	256	11.86	2.40
<i>Compliance</i> (0–9)	98	7.62	1.37	256	7.66	1.39
Global Assessment of Functioning (1–100)	89	58.58	13.41	245	56.77	16.27
Kessler-10 (Reversed; 10–50)	95	36.91	7.27	245	37.92	7.64

Meaning, to a high of $r_s = 0.74$ ($P < 0.001$) between RAS *Personal confidence and hope* and MHRM *Learning and self-redefinition* (see Table 6).

The non-significant correlations were SISR *Responsibility* with RAS *Willing to ask for help*, RAS *Reliance on others*, and MHRM *Overcoming stuckness*; MHRM *Overcoming stuckness* with RAS *Not dominated by symptoms*; and RAS *Reliance on others* with SISR *Meaning*. Due to the large number of comparisons involved, the False Discovery Rate (FDR) was determined, which confirmed these results. Typically, a procedure such as the Bonferroni method would be used to control for familywise error rate; however, these approaches provide quite strict criteria which are not always appropriate (Storey, 2003, p. 2014). The FDR does not make these restrictions, and is particularly appropriate when conducting exploratory analyses (Storey, 2003).

Eleven of the 15 recovery subscales correlated with the SISR-A. Correlations ranged from $r_s = 0.28$ ($P = 0.01$) for RAS *Not dominated*

Table 5
Correlations between recovery measures.

Measure		RAS	MHRM	SISR-B
MHRM	Pearson <i>r</i>	0.89**		
SISR-B	Pearson <i>r</i>	0.70**	0.80**	
SISR-A	Spearman's <i>rho</i>	0.40**	0.46**	0.43*

RAS, Recovery Assessment Scale; MHRM, Mental Health Recovery Measure; SISR-A, Self-identified stage of recovery (Part A); SISR-B, Self-identified stage of recovery (Part B).

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

by symptoms to $r_s = 0.50$ ($P < 0.001$) for SISR *Meaning*. Five subscales did not correlate with SISR-A: RAS *Willingness to ask for help*, RAS *Reliance on others*, MHRM *Overcoming stuckness*, MHRM *Empowerment* and SISR *Responsibility*.

Although aspects of the recovery measures generally correlated, the low and non-significant correlations between some subscales highlight the complexity of recovery measurement and support the divergent validity of the various elements. Some poor correlations with SISR-A suggest that certain recovery-related concepts may not be good measures of level of recovery. Overall, the results support the convergent validity of the recovery measures, while suggesting that the SISR-A is conceptually different to the continuous measures of the process of recovery.

3.1.3. Comparing recovery and clinical measures

Pearson's correlations (2-tailed) between total scores on the clinical and recovery measures revealed very few positive relationships (see Table 7). The K-10 was the only clinical measure to correlate with all the recovery measures, the GAF correlated only with the MHRM, and the HoNOS and LSP-16 did not correlate with any of the recovery measures.

The relationships between the GAF and the K-10 as well as the subscales of the HoNOS, LSP-16, and the recovery measures were examined using canonical correlation analysis. Only 69 of the 110 cases were included in the analysis, due to missing data. The first canonical function was significant (Wilks' lambda = 0.019, $F_{(150, 387.15)} = 1.56$, $P = 0.000$). Although the second function approached significance ($P = 0.059$), only the first was used for interpretation. The first canonical function had a squared correlation of 0.692. This only accounted for 6.5% of the variance in the clinical subscales, and 20.9% of the variance in the recovery subscales. The canonical loadings for the first function are presented in Table 8.

The K-10 was the only clinical subscale to show a substantial relationship to the recovery subscales, while HoNOS *Behaviour* showed a possible relationship. These clinical subscales were related to MHRM *Learning and self-redefinition*, *Wellbeing* and *New potentials*; RAS *Personal confidence and hope* and *Willingness to ask for help*; and SISR *Identity* and *Meaning*.

In all, these results strongly suggest that the recovery measures are measuring a unique construct that is not comprehensively assessed by conventional clinical measures.

3.2. Effect of stage on recovery and clinical measures

In Phase 2 of the study, analyses of variance (ANOVAs) were conducted on the combined data set ($n = 281$) to examine whether recovery and clinical measures differed across stages of recovery.

3.2.1. Recovery measures across stage of recovery

The RAS total ($F_{(4, 217)} = 5.20$, $P < 0.01$), MHRM total ($F_{(4, 217)} = 9.27$ ($P < 0.001$)) and SISR-B ($F_{(4, 214)} = 10.62$, $P < 0.001$) were found to differ significantly across stages. A graph of the standardised scores on these measures for each stage illustrates an increase over the stages of recovery. However, scores on the RAS at Stage 1 appear higher than expected (see Fig. 1).

Table 4
Frequencies of self-identified stage of recovery on SISR-A for Parts 1 and 2.

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Phase 1	12	13	15	27	20
Phase 2	31	38	39	64	50

Table 6

Pearson's correlations between the subscales of the recovery measures.

RAS subscales	MHRM subscales						SISR-B items			
	Overcoming stuckness	Empowerment	Learning and self-redefinition	Basic functioning	Wellbeing	New potentials	Hope	Identity	Meaning	Responsibility
<i>Personal confidence and hope</i>	0.42**	0.57**	0.74**	0.45**	0.74**	0.71**	0.53**	0.47**	0.62**	0.48**
<i>Willingness to ask for help</i>	0.52**	0.39**	0.47**	0.23*	0.51**	0.58**	0.30**	0.21*	0.38**	0.12
<i>Goal and success orientation</i>	0.54**	0.63**	0.64**	0.57**	0.56**	0.64**	0.66**	0.43**	0.61**	0.41**
<i>Reliance on others</i>	0.32**	0.26*	0.26*	0.33**	0.25*	0.33**	0.23*	0.27*	0.16	0.02
<i>Not dominated by symptoms</i>	0.19	0.39**	0.56**	0.24*	0.57**	0.63**	0.28**	0.31**	0.29**	0.34**
SISR-B items										
<i>Hope</i>	0.49**	0.43**	0.57**	0.42**	0.45**	0.58**				
<i>Identity</i>	0.25*	0.26*	0.58**	0.39**	0.56**	0.60**				
<i>Meaning</i>	0.37**	0.48**	0.66**	0.50**	0.63**	0.60**				
<i>Responsibility</i>	0.05	0.31**	0.45**	0.22*	0.39**	0.42**				

** Correlation significant at the 0.01 level (2-tailed).

* Correlation significant at the 0.05 level (2-tailed).

Significant effects of stage were found on the RAS subscales *Personal confidence and hope* ($F_{(4, 217)} = 7.62, P < 0.01$), *Goal and success orientation* ($F_{(4, 217)} = 3.60, P < 0.01$) and *Not dominated by symptoms* ($F_{(4, 216)} =$

Table 7

Correlations between clinical and recovery measure totals.

		GAF	HoNOS reversed	LSP-16 reversed	K10 reversed
RAS	Pearson r	0.14	0.11	−0.05	0.33**
MHRM	Pearson r	0.24*	0.13	−0.03	0.50**
SISR-B	Pearson r	0.18	0.01	−0.13	0.42**
SISR-A	Spearman ρ	0.10	0.20	0.02	0.27*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 8

Canonical loadings of clinical and recovery subscales.

Variates	Canonical loadings
<i>Dependent variables</i>	
GAF	0.18
HoNOS	
Behaviour	0.28
Symptoms	−0.02
Impairment	0.07
Social	−0.14
LSP	
Withdrawal	0.22
Anti social	−0.17
Self care	−0.13
Compliance	0.04
K-10	0.80
<i>Independent variables</i>	
MHRM	
Overcoming stuckness	0.33
Self-empowerment	0.19
Learning and self definition	0.57
Basic functioning	0.44
Wellbeing	0.58
New potentials	0.61
RAS	
Confidence and hope	0.56
Willing to ask for help	0.72
Goal orientation	0.35
Reliance on others	−0.05
Not dominated by symptoms	0.39
SISR-B	
Hope	0.33
Identity	0.51
Meaning	0.45
Responsibility	0.30

2.78, $P < 0.05$). Subscales which did not show an effect of stage were *Willingness to ask for help* and *Reliance on others*. A graph of standardised scores on each of the RAS factors revealed that it is these two subscales that are responsible for the higher overall RAS scores for Stage 1 (see Fig. 2).

Highly significant stage effects were found on all individual subscales of the MHRM with the exception of *Overcoming stuckness*. These ranged from *Empowerment* ($F_{(4, 217)} = 2.68, P < 0.05$) to *Wellbeing* ($F_{(4, 217)} = 11.09, P < 0.001$). The graphed standardised scores reveal that *Overcoming stuckness* is relatively level across stages, decreasing at Stage 5, while the other subscales increase across stages (see Fig. 3).

Three of the individual items of the SISR-B differed significantly across stages: *Hope*, $F_{(4, 213)} = 7.24 (P < 0.001)$, *Identity*, $F_{(4, 213)} = 7.02 (P < 0.001)$ and *Meaning*, $F_{(4, 213)} = 11.38 (P < 0.001)$. The result for *Responsibility* was non-significant. Fig. 4 illustrates that contrary to expectations, *Responsibility* is higher for Stage 1 than Stage 2 before increasing to Stage 5.

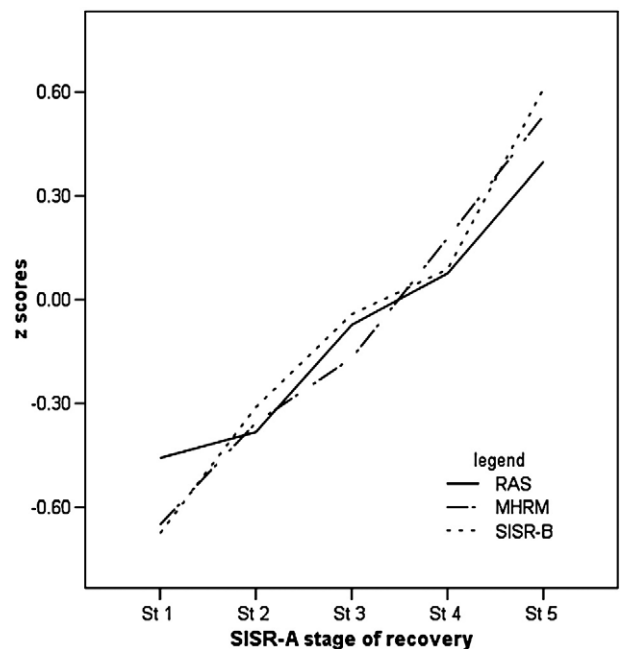


Fig. 1. Standardised scores of the recovery measures across stage on the Self-Identified Stage of Recovery (Part A). Note: RAS, Recovery Assessment Scale; MHRM, Mental Health Recovery Measure; SISR-B, Self-Identified Stage of Recovery (Part B).

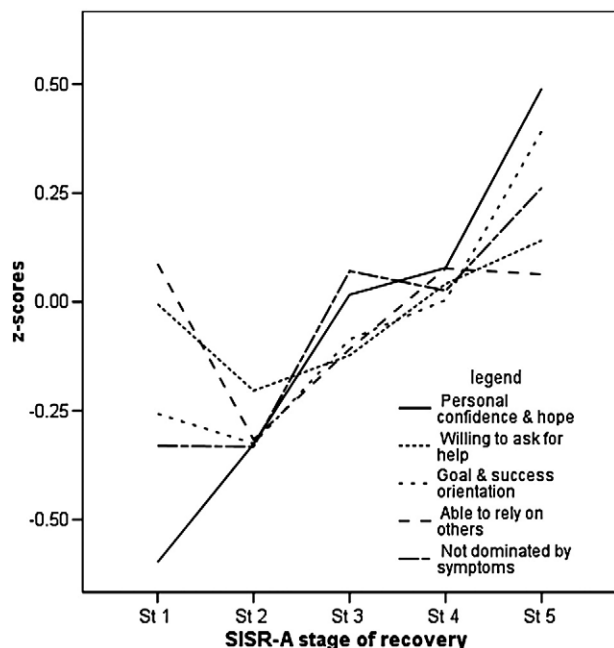


Fig. 2. Standardised scores of the Recovery Assessment Scale subscales across stage on the Self-Identified Stage of Recovery (Part A).

3.3. Clinical measures across stage of recovery

The results of the ANOVAs of the clinical measures showed a significant effect of stage on K-10 scores ($F_{(4, 217)} = 3.98$ ($P < 0.01$), however, the results for the other clinical measures were non-significant. Standardised scores across stage are shown in Fig. 5. The results suggest that traditional clinical measures do not increase as anticipated with a higher self-reported stage of psychological recovery, and the graph indicates little relationship between the various clinical measures across stage.

For the HoNOS subscales, significant stage effects were found on Behaviour ($F_{(4, 196)} = 2.95$, $P < 0.05$) and Symptoms ($F_{(4, 196)} = 2.09$, $P < 0.05$), but no significant effects were found on the Impairment or Social subscales. Symptoms appears to be the only subscale that

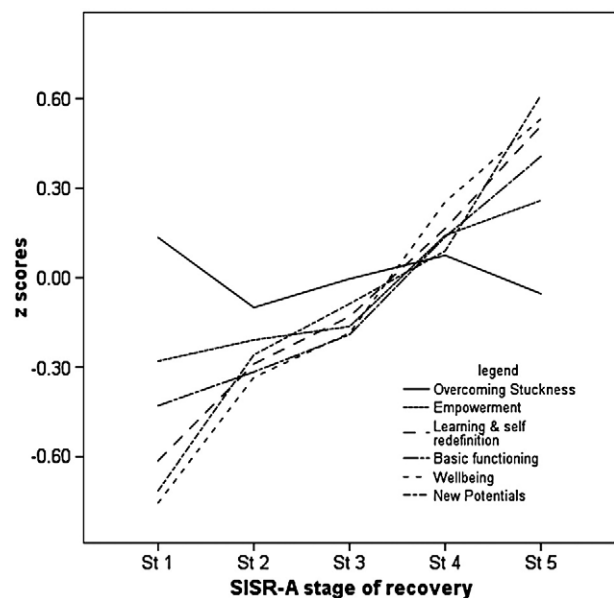


Fig. 3. Standardised scores of the Mental Health Recovery Measure subscales across stage on the Self-Identified Stage of Recovery (Part A).

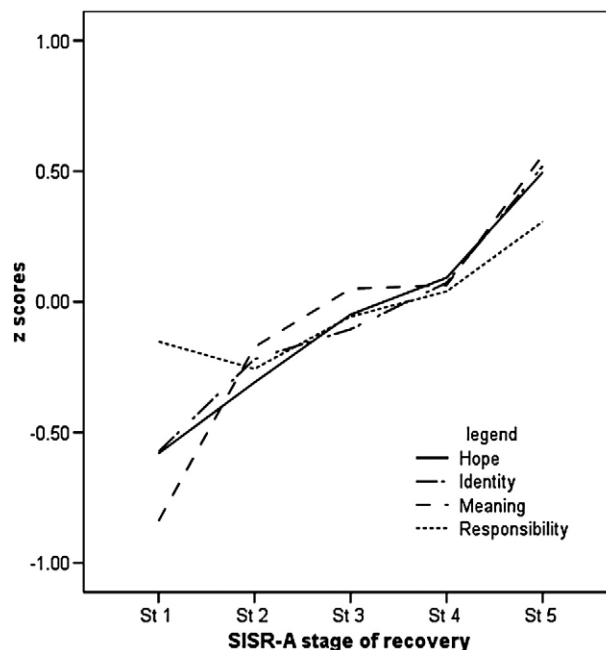


Fig. 4. Standardised scores of Self-Identified Stage of Recovery (Part B) process items across stage on Self-Identified Stage of Recovery (Part A).

improved across all stage groups (see Fig. 6). No effects of stage were found on the LSP-16 subscales, with the pattern of scores appearing to bear little relationship to stage of recovery (see Fig. 7).

4. Discussion

The results reveal large discrepancies between patterns of scores on recovery measures and traditional clinical measures. The convergent validity of psychological recovery is supported, with total scores on the recovery measures and most subscales correlating. Those subscales which did not correlate are interpretable.

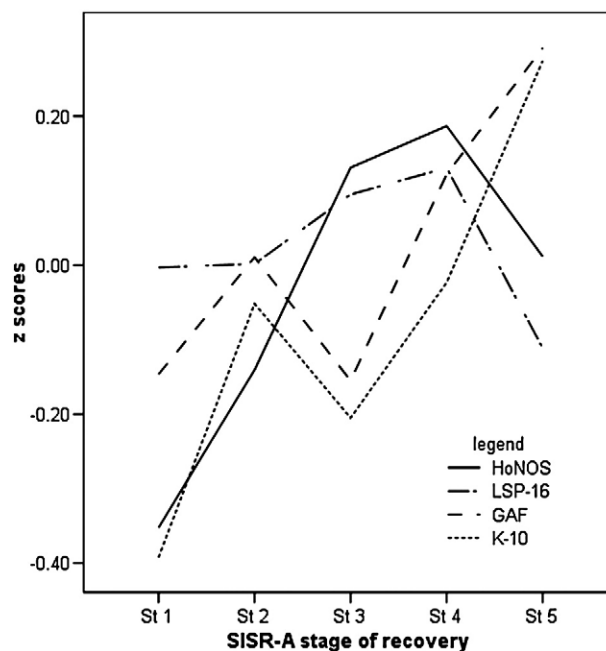


Fig. 5. Standardised scores of clinical measures across stage on Self-Identified Stage of Recovery (Part A). Note: HoNOS, Health of a Nation Outcome Scales; LSP-16, Life Skills Profile-16; GAF, Global Assessment of Functioning; K-10, Kessler-10.

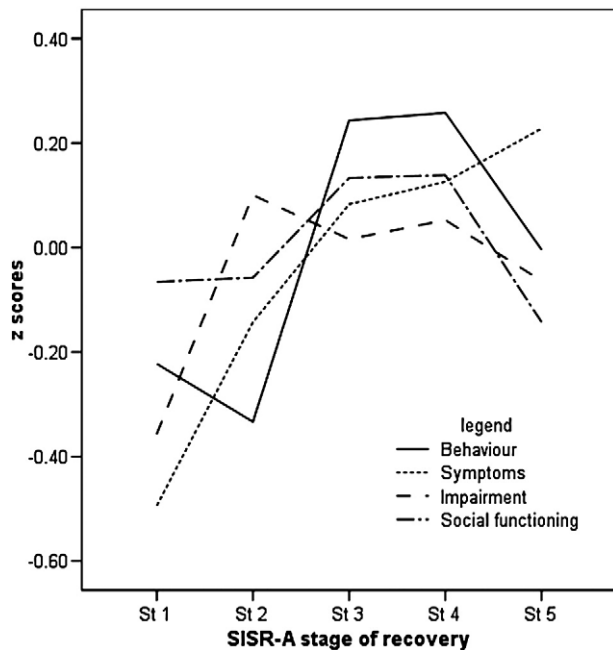


Fig. 6. Standardised scores of Health of a Nation Outcome Scales subscales across stage on Self-Identified Stage of Recovery (Part A).

MHRM *Overcoming stuckness* is based on the earliest phase in Young and Ensing's (1999) model, and RAS *Reliance on others* and *Willingness to ask for help* also represent factors that are important at an early stage of recovery. The analysis of variance showed that RAS *Reliance on others* and RAS *Willingness to ask for help* were higher in the Stage 1 group. While it is important to trust others, putting too much faith in other people might also indicate dependence on others. Similarly, while willingness to seek help when necessary is important to recovery, higher scores on this subscale may not indicate higher levels of recovery. MHRM *Overcoming stuckness* was quite level across stages. This subscale is represented by six items covering a variety of

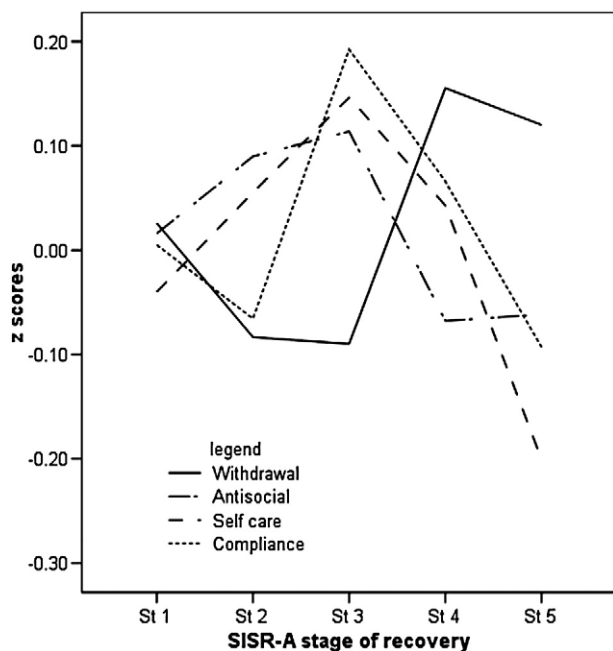


Fig. 7. Standardised scores of the Life Skills Profile-16 subscales across stage on Self-Identified Stage of Recovery (Part A).

themes, including willingness to work hard on recovery, acceptance of illness, spirituality and seeking help from others. All these themes are strongly represented in the recovery literature, but again, the magnitude of these constructs may be a poor indicator of stage of recovery. The new, shorter version of MHRM has only three items in this subscale, representing willingness to work hard at recovery and willingness to seek help when needed. This narrower focus may provide better discrimination between stages.

That MHRM *Empowerment* and SISR-B *Responsibility* did not correlate with stage of recovery is less readily explained. Self-empowerment, referring to the person's self-efficacy and willingness to take control of his or her life (Young and Ensing, 1999), is a strong theme in the recovery literature, as is responsibility, a related construct. Analysis of the full data set revealed that MHRM *Empowerment* increased across stages, but was quite level between Stage 2 (Awareness) and Stage 3 (Preparation). A plateauing in the sense of empowerment after initial awareness, and before taking concrete steps, would seem to be theoretically possible. While this subscale contained some reverse-scored items, the revised version does not (Young and Bullock, 2003), so may give different results. Scores on *Responsibility* were unexpectedly high for Stage 1 participants. While taking responsibility for one's wellbeing is an important aspect of recovery, it is possible that the item "I am the person most responsible for my life and wellness" may be interpreted as self-blame, rather than as a sense of autonomy. It is possible that ratings on this item may be an indication of self-stigma rather than a valid measure of taking control of one's life and wellbeing, which was the intention of the item. Since it is a single item, reliability at a single time-point is untestable. Therefore, this item will need re-working to better capture the essence of personal control in the person's life. Further investigation of the pattern of the recovery processes across stage is warranted.

Correlations between the summary recovery measures and the conventional clinical measures were universally poor, with the exception of the client-rated K-10. The canonical analysis indicated that the main underlying construct of recovery is related to personal growth and wellbeing. The only clinical measure which was strongly related to this was the client-rated K-10. Only the K-10 and, to a lesser degree, HoNOS *Behaviour* were found to be related to these recovery constructs. In other words, degree of recovery affects only certain outcome measures, namely, K-10 and HoNOS *Behaviour*. However this result should be interpreted with caution due to the small numbers included in this analysis. In addition, analyses showed that the K-10 and the HoNOS *Symptoms* subscales were the only two clinical measures to increase across stages of recovery. This is an interesting finding, given the strong consumer literature against focusing on symptom measurement. It demonstrates that reduction of symptoms remains an important focus for treatment, provided it takes place within a recovery-oriented context, as highlighted by Silverstein and Bellack (2008). The positive relationship consistently found between the client-rated K-10 and recovery raises the issue of whether the consumer ratings are reliable. However, an alternative explanation is that some of the content of the K-10 reflects important aspects of recovery. For example, the items "In the last four weeks, about how often did you feel hopeless?" and "In the last four weeks, about how often did you feel worthless?" tap directly into the recovery concepts of hope/hopelessness and positive identity/meaning. Moreover, the predictive validity of the K-10 has been established, supporting its objective validity. Ultimately, whether the recovery measures are measuring a different construct to the clinician-rated measures, or whether the results are due to differences in perception of wellness between the consumer and the clinician, the results highlight the importance of obtaining the client's personal view of his or her recovery progress. This would enable services to honour recovery-oriented care, whilst addressing the need to develop evidence for practice.

The overall pattern of relationships supports the validity of recovery as a measurable outcome, as recovery measures are clearly converging

on an operationalisable construct. On the other hand, little relationship was found between traditional clinical measures of outcome and the consumer-oriented measures of recovery, demonstrating the conceptual difference between “personal recovery” and “clinical recovery” (Slade et al., 2008).

Although limited by the cross-sectional nature of the study, the analyses of variance on the recovery measures lend support to the validity of the stage model of psychological recovery and the SISR, a finding recently supported by Wolstencroft et al. (in press) using an interview assessment tool based on the same stage model. Conversely, the lack of relationship between stage and the clinical measures further highlights the qualitative difference between the two types of measure. Since the study was limited by the necessity of using mandatory clinical measures, it would be informative to replicate this type of study using measures more widely-used in research, such as the Brief Psychiatric Rating Scale (Overall and Gorham, 1962) or the Positive and Negative Syndrome Scale (Kay et al., 1987).

Validation of the recovery measures would be further advanced by comparison with more objective measures. For example, associations have been found between recovery and participation in peer support (Corrigan, 2006), community integration, employment and receipt of social security (Lloyd et al., 2009). Another fruitful line of enquiry would be to use measures of functional capacity, such as the Independent Living Skills Survey (Perivoliotis et al., 2004), which has both informant and self-report formats, or performance-based assessments such as the Test of Adaptive Behaviour in Schizophrenia (Velligan et al., 2007). However, since consumer-defined recovery is highly individual, it is important that any objectively observable measures represent the personal goals of the client. Our own research with a goal-setting program has demonstrated that recovery was related to measurable progress on personal goals (Clarke et al., 2009).

Traditional clinical measures, while providing important information to clinicians, do not assess constructs important to consumer-defined psychological recovery, supporting the drive by consumers for a move towards a “recovery model” in mental health services, and to include assessment of those aspects consumers identify as indicative of recovery. Recovery measures promise to complement clinical measurement in a way that is meaningful to consumers. Well used, recovery measures may enrich the assessment process. They hold promise as a catalyst for clinical work, with scores on the subscales potentially providing rich grounds in which to nurture the therapeutic relationship, by suggesting areas for discussion and goal-setting. In addition, recovery measures would be valuable as an outcome measure for services intent on evaluating their recovery orientation. Stage measures, such as the SISR and the STORI, add another dimension to assessment, potentially providing a basis for a better understanding of the process of recovery and the development of targeted treatment approaches.

The inclusion of valid and reliable measures of psychological recovery is likely to become a necessity in clinical settings, in service evaluation and research. Therefore, further development and rigorous psychometric testing of recovery measures, including the use of objectively observable measures of psychological recovery, is in order. In addition, prospective, longitudinal research is needed to test sensitivity to change and to validate the stages of recovery.

Acknowledgments

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