Citation: Macpherson R, Pesola F, Leamy M, Bird V, Le Boutillier C, Williams J, Slade M The relationship between clinical and recovery dimensions of outcome in mental health, Schizophrenia Research, in press.

The relationship between clinical and recovery dimensions of outcome in mental health

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Abstract

Background: Little is known about the empirical relationship between clinical and personal recovery.

Aims: To examine whether there are separate constructs of clinical recovery and personal recovery dimensions of outcome, how they change over time and how they can be assessed.

Method: Standardised outcome measures were administered at baseline and one-year follow-up to participants in the REFOCUS Trial (ISRCTN02507940). An exploratory factor analysis was conducted and a confirmatory factor analysis assessed change across time.

Results: We identified three factors: patient-rated personal recovery, patient-rated clinical recovery and staff-rated clinical recovery. Only the personal recovery factor improved after one year. HHI, CANSAS-P and HoNoS were the best measures for research and practice.

Conclusions: The identification of three rather than two factors was unexpected. Our findings support the value of concurrently assessing staff and patient perceptions of outcome. Only the personal recovery factor changed over time, this desynchrony between clinical and recovery outcomes providing empirical evidence that clinical recovery and personal recovery are not the same. We did not find evidence of a trade-off between clinical recovery and personal recovery outcomes. Optimal assessment based on our data would involve assessment of hope, social disability and patient-rated unmet need.

Trial information: The Refocus study http://www.researchintorecovery.com/refocus was approved by East London Research Ethics Committee (Ref. 11/LO/0083).

1. Introduction

Recovery, defined as "a way of living a satisfying, hopeful, and contributing life even with any limitations caused by illness" (Anthony, 1993), has an increasing empirical evidence base (e.g. Law et al, 2014). However, it is also clear that the term 'recovery' has been used in different ways. The literature contains at least four types of frameworks to understand recovery from mental health problems and these can be summarised as follows**: Clinical recovery** generally refers to clinical outcomes, professionally rated by the presence of symptoms of illness. In this context recovery refers generally to the absence of disease or cure (Torgalsboen, 2013) with schizophrenia-related disorders, and underpins epidemiological research (Austin et al, 2013). The concept of **Personal recovery** which has emerged from the consumer movement in the past 20 years has a number of characteristics which focus on outcomes important to the recovering individual and distinguish it from more clinically based models: Recovery is individually defined, through an understanding of narrative and founded on the concept of an individual's journey of growth and personal development. This form of recovery focuses mostly on social success and individually defined forms of progress, rather than symptom control (Nasrallah, 2006). Dealing with stigma (Deegan,1988) and the development of self-confidence and hope (Corrigan and Watson, 2006) are critical elements of the process. Some authors (Frese et al, 2001) have noted the potential for conflict between evidence based medicine approaches and the recovery approach, given that many with the highest levels of disability often reject the evidence. The authors argue for an integrated model which recognises the need for structured support at times of greatest need, which must give way to greater autonomy as the individual's disability improves.

Internationally, mental health systems are transforming services to promote a recovery focus (MHCC, 2015). Therefore we need to develop clarity about how this approach to mental health work is measured and healthcare professionals need guidance to inform their clinical decision-making and actions (Le Boutillier et al, 2015 a and b). However, empirical research in the field of personal recovery is at an early stage of development and there is an obvious challenge in reducing an individual's recovery to a set of domains for systematic analysis across groups (Slade, 2009). The unpredictability of outcomes, with or without treatment, suggests that finding simple associations between these factors may be difficult. It may be that approaches which use multiple sources to define a multi-faceted approach to defining recovery are needed and this fits with qualitative research which showed that recovery could occur in three domains (biomedical, psychological and social) and could be complete or partial (Henderson, 2010). The evidence base indicates that clinical and recovery measures assess different aspects of outcome. There is a developing literature concerned with the different concepts of recovery and many studies have analysed concepts of recovery beyond symptomatology. Law and Morrison (2014) used a Delphi approach to establish consensus about the meaning of recovery among individuals with experience of psychosis and went on to consider implications for clinical practice. Attempting to find an approach which encompasses service user, professional and political considerations, Whitley and Drake (2014) proposed five superordinate dimensions of recovery and identified lay, professional, and systemic resources that promote each dimension. The empirical analysis by Gordon and colleagues (2014) produced five

core dimensions to the concept of recovery and these authors noted the potential value of an agreed set of dimensions for recovery, which could potentially be used to inform service provision and outcomes. Gould and colleagues (2013) considered the important relationship between recovery and aspects of individual goal attainment.

The aim of this study was to investigate the relationship between clinical outcomes, which relate to illness and deficit amelioration; and recovery outcomes, which relate to subjective experiences such as hope and empowerment. Objective 1 was to identifying groupings of outcome domains. Objective 2 explored how the identified groupings change over time. Objective 3 was to identify the most informative standardised measure for each grouping.

2. Method

2.1 Sample and setting

The REFOCUS Trial was a cluster RCT evaluating a pro-recovery team level intervention (Bird et al, 2011). It took place in adult community mental health teams in two sites: South London and Maudsley NHS Foundation Trust (SLaM) and 2gether NHS Foundation Trust (2gether). Pooled data from both arms were used in the current study. A total of 27 participating teams (18 SLaM, 9 2gether) were recruited, comprising 13 Recovery teams (4 control, 9 intervention), four Psychosis teams (2 control, 2 intervention), three High support teams (1 control, 2 intervention), three assertive outreach teams (3 control), two supported living teams (2 control), one Low support team (1 intervention) and one Early Intervention team (1 control).

All staff providing clinical input to the team were included in the intervention, which was provided to a complete team. A random sample of 15 patients was chosen from each team's caseload. Inclusion criteria were: age 18-65 years, primary clinical diagnosis of psychosis, no immediate plans for discharge or transfer, not currently receiving in-patient care or in prison, speaks and understands English, not participating in substantial other study, in regular contact with at least one worker in the team, and assessed by the clinician as sufficiently well to participate. The intervention was manualised, and involved training staff and supporting behaviour change to lead to more collaborative staff-patient relationships, and a greater staff focus on patient values, strengths, and goal-striving. (Slade et al, 2015)

2.2 Measures

We carefully chose a range of measures to span (a) traditional clinical recovery priorities, including needs, symptoms, functioning and quality of life and (b) emerging personal recovery priorities, such as hope, empowerment and well-being. The selection of measures was informed by existing qualitative research (Bird et al, 2014, Windell et al, 2012) and deliberately wide-ranging because the empirical research to understand the relationship between these outcome domains is limited. Three staff-rated measures and one researcher-rated measures were used. The Health of the Nation Outcome Scale (HoNOS) is a 12-item staff-rated measure of social disability (Wing et al, 1998). The Camberwell Assessment of Needs Short Appraisal Schedule – Staff (CANSAS-S) is a 22-item staff-rated assessment of health and social needs (Slade et al, 2005). The Global Assessment of Functioning (GAF) is a two-item staff rated measure of functioning (Jones et al, 1995). The Brief

Psychiatric Rating Scale (BPRS) is an 18-item observer-rated measure of symptomatology which was completed with the patient by research workers (Overall and Gorham, 1998).

Seven patient-rated measures were used. The CANSAS – Service User (CANSAS-P) is a 22-item measure of health and social needs, both staff and service user perspectives are assessed because they have been shown to differ (Slade et al, 1999). The Manchester Short Assessment of Quality of Life (MANSA) is a 16-item rated measure of quality of life (Priebe et al, 1999). The Questionnaire of the Process of Recovery (QPR) is a 15-item measure of personal recovery (Neil et al, 2009). The Mental Health Confidence Scale (MHCS) is a 16-item measure of empowerment (Carpinello et al, 2000). The Herth Hope Index (HHI) is a 12-item measure of client levels of hope (Herth, 1992). The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) is a 14-item measure of well-being (Tennant et al, 2007). INSPIRE is a 27-item measure of recovery orientation of services, with Support and Relationship sub-scales (Shepherd et al, 2014).

All measures used in the study have been previously validated in patients with mental disorders.

2.3 Procedure

Prior to randomisation, informed consent and baseline assessments using all measures were completed at the community base or within the patient's own home. Teams were allocated on an equal basis to intervention or control, and all staff who provided a clinical input to the team were included in the intervention, which was provided to a complete team. The random sample of service users chosen from each team's caseload were approached by their care coordinator, who asked for permission to be contacted by the research team. Patients were re-assessed one year after baseline, using the same measures.

2.4 Analysis

Objective 1. To examine the underlying relationship of the various recovery measures, we conducted an exploratory factor analysis (EFA) on the measures collected at baseline. The EFA was conducted in Mplus 7.2 using Promax rotation. This approach allowed us to reduce the number of measures of interest into a smaller number of factors to be used in the analysis. We assessed the fit of our model to the data with three goodness-of-fit indices: chi-square ($p>.05$), Root Mean Square Error of Approximation (RMSEA<.06) and the Standardised Root Mean Square Residual (SRMSR <.06). Change scores were calculated subtracting baseline from follow-up scores. To assess trade-off between outcome measures, we explored the correlations across the scales' change scores in Stata 11. Missing data were pro-rated following scale guidelines where available, and otherwise using mean scores where less than 20% of items were missing.

Objective 2. We conducted a confirmatory factor analysis (CFA) on baseline and follow-up data using Mplus 7.2, to compare construct means across these two time points. Prior to conducting the CFA, we tested for measurement invariance to establish whether factor loadings and thresholds were equivalent across time points, which would justify further comparisons. We initially tested an unconstrained model where none of the parameters were fixed to be equal at the two time points (i.e. configural invariance), and then compared this model to a model with a) factor loadings (metric invariance) and b) loadings and intercept (scalar invariance) fixed across time. Measurement invariance was established if (a) the constrained model offered a good fit to the data (defined using

model fit indexes: chi-square>.05, RMSEA<.06, Comparative Fit Index (CFI) >.95; and (b) the difference of model fit between the constrained and the unconstrained models was small (ΔCFI<.01, RMSEA<.015) (Chen, 2007).

Objective 3. We explored Cronbach's alpha coefficients associated with each recovery grouping extrapolated by the EFA, in order to assess their internal consistency and hence to identify the measure that best captures each domain. We assessed the alpha value obtained removing each measure one at the time, and the correlation of each measure with their counterparts (i.e. average inter-item correlation). A reduction in Cronbach's alpha and correlation coefficients, once the measure is removed from the dimension, indicates that the domain describes the dimension and hence is a good fitting measure. This was achieved using the alpha command in Stata 11 with the 'item' and 'std' option, to account for the fact that measures are in different scales.

3. RESULTS

The initial study sample included 403 patients, of whom 258 (64%)% were male, 309 (77%) single and 210 (53%) white British. The highest level of education achieved was: no qualification or GCSE 206 (52%), A-level or higher qualification 192 (48%). Mean age was 44 years (sd = 11) and mean total use of mental health services at time of trial was mean 16 years (sd = 11). Table 1 summarises the scores on the rating scales at baseline and follow up.

Insert Table 1 here

Table 2 shows the number (percentage) of cases with complete information at follow-up.

Insert Table 2 here

Individuals with missing data did not differ from those with complete data on any of the socio-demographic variables.

Objective 1: Outcome domain groupings

The loadings of the INSPIRE Support and Relation subscales did not substantially load on one factor but, rather, loaded onto separate factors. Thus, the EFA was performed again after excluding those scales. The scree plot in Figure 1 indicates that three factors had eigenvalues greater than 1.

Insert Figure 1 here

This 3-factor solution offered a better fit to the data ($chi^2(18)=30.9$, p=.004; RMSEA=.04; 90%CI: .01 to .07; SRMSR=.02) compared to 1-factor ($chi^2(35)=453.5$, p<.001; RMSEA=.17; 90%CI: .16 to .19; SRMSR=.14) and 2-factor ($chi^2(26)=162.3$, p<.001; RMSEA=.11; 90%CI: .10 to .13; SRMSR=.06) solutions. Table 1 shows the factor loadings on the three factors, which we interpreted as Patient-rated personal recovery, Patient-rated clinical recovery and Staff-rated clinical recovery.

Insert Table 3 here

The correlation between change scores of individual outcomes from each grouping were calculated. These are exploratory analyses but due to the large number of correlations, we used a conservative level of significance (p<.001). Pairwise correlations between change scores are shown in Table 4.

Insert Table 4 here

Overall, results indicate that change scores within each dimension were correlated.

Objective 2: Change over time

To ensure the factor structure is consistent over time, and therefore that confirmatory factor analysis can be calculated by constraining the loadings and thresholds to be equal, measurement invariance was tested, shown in Table 5.

Insert Table 5 here

As measurement invariance was present, we compared means across time while holding factor loadings and thresholds equal across time points. We applied a Bonferroni adjustment for 3-pairwise comparisons to account for multiple testing. Patients reported higher scores at follow-up than baseline on factor 1 (z=3.1, p=.002; ES=.13) but no difference was observed for factors 2 (z=0.6, p=.58; ES=.04) or factor 3 (z=1.7, p=.09; ES=.11).

Objective 3: Choice of standardised measure

Reliability of the factors and the effects of deleting individual measures from the factor are shown in Table 6.

Insert Table 6 here

All factors have good internal consistency. For factor 1 (Patient-rated personal recovery), all measures were good indicators. Taking the factor loadings from the EFA shown in Table 1 into account, the HHI has the highest loading and therefore is most strongly associated with the factor. For factor 2 (Patient-rated clinical recovery), Table 4 indicates that exclusion of CANSAS-P unmet needs was associated with a decreased Cronbach's alpha (α = .61) and average inter-item correlation (r = .44), and therefore the best indicator of the factor. Finally, for factor 3 (Staff-rated clinical recovery), HONOS was for the same reasons the best indicator.

4. DISCUSSION

This study compares patient-rated and staff-rated outcomes over one year. Factor analysis of baseline data produced three factors. Factor 1 – interpeted as Patient-rated personal recovery – comprised four patient-rated measures of recovery, empowerment, wellbeing and hope. Factor 2 – interpreted as Patient-rated clinical recovery, comprised two patient-rated measures of health-related quality of life and unmet need, and a researcher-rated measure of symptomatology. The BPRS has been included in a factor labelled patient-rated clinical recovery because unlike the other staff measures, it is not rated by the clinician but by the researcher, on the basis of patient

responses - so likely to reflect the patient views on their symptomatology. Factor 3 – interpreted as Staff-rated clinical recovery – comprised staff-rated measures of unmet needs, social disability and functioning. Factor 1 changed over one year, whereas factors 2 and 3 did not. The optimal measures spanning the three factors are HHI, CANSAS-P and HoNOS.

The development of three rather than two factors in this analysis was unexpected and further demonstrates the complexity of the concepts under consideration: the generation of a patient-rated clinical recovery factor suggests that although staff and patients have differences in their perception of the level and type of morbidity there is some overlap and it is meaningful to consider the patient's own view of morbidity and their stage of recovery. This argues against a simplistic view of the relationship between staff and patient ratings, consistent with other empirical studies assessing subjective and objective domains of recovery (Roe et al, 2011). Previous research has shown better agreement between staff and patients on assessing need in domains with defined service response, than those such as intimate relationships (Lasalvia et al, 2012). Generally the number of needs identified by staff and patients is broadly similar, with a tendency for staff to identify slightly more needs, but the domains of need identified can differ substantially. Other studies have shown a relationship between patient rated unmet need and quality of life measures (Burns et al, 1999) and in a follow up study (Lasalvia et al, 2010) found that patient-rated unmet need and changing levels of unmet need predicted quality of life. Clinical ratings failed to have a predictive relationship. Our finding supports the value of concurrently assessing staff and patient perceptions of morbidity and need. The Patient-rated personal recovery and Staff-rated clinical recovery factors related well to the concepts of personal and clinical recovery, giving further support to the validity of these concepts. Assessing patient and staff perspectives on clinical recovery alongside patient-rated assessment of personal recovery can be recommended for future mental health research.

Patients reported higher scores at follow-up than baseline on only the Patient-rated personal recovery factor. The lack of change in Factors 2 and 3 provides empirical support for evidence of a desynchrony between clinical and recovery outcomes, hence supporting the view that clinical and personal recovery are not the same (Leamy et al, 2011). Recent UK Health policy (UK DoH, 2011) encourages a focus on personal recovery and based on these findings, interventions intended to promote clinical recovery may not be optimal or sufficient to achieve this. The scope of interventions in standard mental health practice may need to be extended, as suggested in recent literature (Slade et al, 2014).

The possibility of a trade-off between symptom reduction and recovery has been proposed (Andresen et al, 2010). The findings in this analysis were again interesting and unexpected. We found that changes in the recovery measures were positively correlated with each other, which gives further validation of these ratings as a group, relating to an individual's recovery. We were interested that the change scores of measures from the personal recovery factor were correlated significantly with the BPRS scores, i.e. that as researcher-rated health and social functioning improved, ratings of personal recovery made by the patient also improved. This argued against a trade-off between personal recovery variables and clinical ratings. In this population studied, it appeared that as patients recovered clinically, their sense of empowerment and hope also improved, suggesting alignment between previously postulated stages of personal recovery (5) and clinical recovery.

The changes in wellbeing scores between baseline and follow up showed significant relationships with global assessments of functioning. The research into wellbeing and the changes in personally defined wellbeing over time is at an early stage of development and such findings add to the view that wellbeing is potentially an important variable to consider as an outcome measure. The change scores for CANSAS patient ratings of unmet need were positively correlated with BPRS and GAF change scores, indicating that such variables are measuring complex, overlapping constructs.

There are a number of limitations which arise from the design of this study. The study population was limited in size. Participants were undergoing a recovery intervention as were staff so this may have had an impact, particularly in terms of the longitudinal ratings. The findings need to be replicated, ideally in broader populations and including patients with less severe mental health problems. The use of empirical measures of recovery is at an early stage but we believe this may provide important new understanding of the patient experience, in keeping with the increasing importance of recovery-based approaches in mental health services. The study was further limited by our use of clinical diagnosis of psychotic illness based on the judgment of the clinical team, rather than more systematic diagnostic assessment and as a result we were unable to consider the impact of clinical variables such as substance abuse and other forms of co-morbidity. In addition, we had only two assessment points: baseline and one follow-up after 1 year baseline for assessing changes in psychotic patients. Two time points is not a sensitive number to measure changes in psychotic patients or to accurately validate recovery, since some of the patients "improved" after one year, could have suffered from worsening between these two time points. Consequently the relationship between the factors extracted should be carefully interpreted taking into account this limitation. It is possible that data were missing in association with selective drop out across time points, although simulation results have shown that selective attrition only marginally affects results (Wolke et al, 2009).

It would be reasonable to recommend one scale from each factor in research and routine clinical practice. Based on our data, the measures with the highest factor loading in each area were HHI, CANSAS-P and HoNOS. A further advantage of this suggestion is the use of scales which capture both staff and patient ratings, as there is evidence to suggest that failure to capture the patient's own assessment is problematic (Lasalvia et al, 2012). Previous research (Salvi et al, 2005) recommended the use of a global severity measure with CANSAS and HoNOS to provide a detailed characterisation of the patient and our results are broadly comparable although we have highlighted the value of an additional measure focusing on personal recovery.

The study has three implications. First, clinical and personal recovery differ, so research and practice into 'recovery' should make clear which version is the focus. Second, patients and staff have independent perspectives on clinical recovery, and patients have differing perspectives on clinical and personal recovery. This complexity needs to be reflected in health service research designs, and in routine outcome assessment. Third, HHI, CANSAS-P and HoNOS emerge as the most informative measures to use in research and clinical practice.

Role of funding source

This work was funded by a grant from the UK National Institute for Health Research (NIHR). The NIHR had no further role in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the paper for publication.

Contributors

Drs. Macpherson, Slade and Pesola conceived the idea and methodology of this study. Drs. Le Boutillier, Bird and Williams were involved in subject recruitment and staff and patient rating assessments. Dr. Pesola conducted the statistical analyses and all authors contributed to and have approved the final manuscript

Conflict of interests: The authors have no competing financial interests to declare in relation to the current work.

Acknowledgements

This article presents independent research funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research (PGfAR) Programme (Grant Reference Number RP-PG-0707-10040), and in relation to the NIHR Biomedical Research Centre for Mental Health at South London and Maudsley NHS Foundation Trust and [Institute of Psychiatry, Psychology & Neuroscience] King's College London. The project will be published in full in the NIHR PGfAR journal. The views expressed in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, MRC, CCF, NETSCC, the PGfAR programme or the Department of Health.

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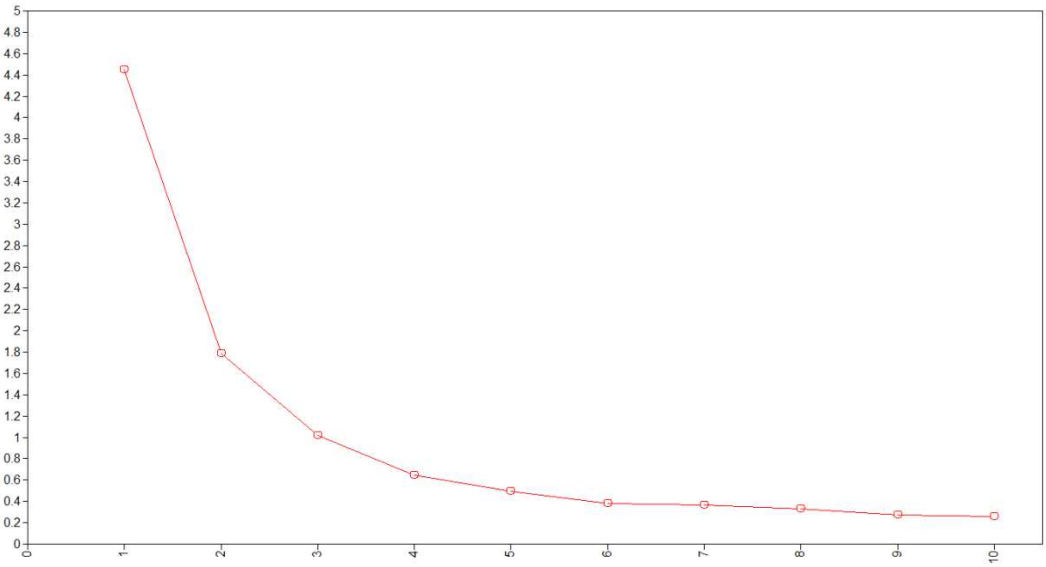
Figure 1. Screeplot graphing the eigenvalue against the factor number



	Baseline	Follow-up
QPR	38.7 (9.1)	40.5 (10.1)
CSQ	25.2 (5.2)	25.5 (5.0)
HHI	35.4 (4.8)	35.5 (5.4)
MANSA	4.7 (0.9)	4.8 (0.9)
MHCS	65.8 (14.4)	66.9 (14.6)
WEM	46.9 (9.8)	47.5 (10.3)
BPRS	33.1 (9.8)	31.5 (10.2)
HONOS	9.3 (5.9)	9.8 (6.3)
CANSAS SU	3.6 (2.9)	3.7 (3.1)
CANSAS worker	3.3 (2.8)	2.7 (2.7)
GAF	64.4 (14.3)	64.6 (15.0)
INSPIRE support	62.5 (21.3)	63.1 (23.0)
INSPIRE relation	77.3 (16.4)	78.1 (18.3)

Table 1: Mean rating scale scores (sd) at baseline and follow-up

	Number (%)
QPR	297 (74%)
CSQ	287 (29)
HHI	278 (69)
MANSA	276 (69)
MHCS	273 (68)
WEM	274 (68)
BPRS	267 (66)
HONOS	70 (17.4)
CANSAS SU	284 (71)
CANSAS worker	346 (86)
GAF	327 (81)
INSPIRE support	282 (70)
INSPIRE relation	273 (68)

Table 2: Number (percentage) of cases with complete information at follow-up - following the pro-rating of missing data (N = 403)

	Factor 1 Patient-rated personal recovery	**Factor 2** Patient-rated clinical recovery	**Factor 3** Staff-rated clinical recovery
QPR	**.75**	.10	.04
HHI	**.93**	-.18	.03
MANSA	.43	**.47**	-.08
MHCS	**.78**	.12	-.04
WEM	**.80**	.05	.04
BPRS	-.08	**-.58**	-.04
GAF	.04	.03	**.72**
HONOS	-.02	.11	**-.89**
CANSAS-P unmet needs	.08	**-.88**	.03
CANSAS-S unmet needs	.07	-.15	**-.54**

Bold $p<0.05$

Table 3. Exploratory Factor analysis - Promax rotated loadings on the 3 factors

	Patient-rated measures					Staff-rated measures			
	QPR	HHI	MHCS	WEM WBS	MANSA	BPRS	CANSAS	GAF	HONOS
FACTOR 1: PATIENT-RATED PERSONAL RECOVERY									
HHI	**0.49 p<.001**								
MHCS	**0.43 p<.001**	**0.45 p<.001**							
WEM	**0.40 p<.001**	**0.41 p<.001**	**0.52 p<.001**						
FACTOR 2: PATIENT-RATED CLINICAL RECOVERY									
MANSA	**0.41 p<.001**	**0.32 p<.001**	**0.35 p<.001**	**0.42 p<.001**					
BPRS	-0.19 p=.003	-0.16 p=.01	**-0.25 p<.001**	-0.17 p=.006	**0.32 p<.001**				
CANSAS-P	-0.08 p=.20	-0.04 p=.54	-0.22 p<.001	-0.14 p = .02	**-0.24 p<.001**	**0.29 p<.001**			
FACTOR 3: STAFF-RATED CLINICAL RECOVERY									
GAF	0.09 p=.18	0.12 p=.09	0.15 p=.03	0.17 p=.01	0.17 p=.01	-0.17 p= .01	-0.14 p=.03		
HONOS	-0.05 p=.45	-0.05 p=.43	0.01 p=.84	0.01 p=.89	0.03 p=.62	0.17 p=.02	0.04 p = .52	**-0.43 p<.001**	
CANSAS-S	0.01 p=.92	-0.02 p=.74	-0.01 p=.86	-0.06 p=.35	-0.03 p=.69	0.03 p=.64	**0.23 p<.001**	**-0.29 p<.001**	**0.31 p<.001**

Bold = p<0.001

Table 4. Correlation matrix of the different scores

	$\chi^2_{(df)}$	df	Scaling Correction Factor	CFI	SRMR	RMSEA (90%CI)
Configural	274.4	145	1.00	0.97	0.042	.047 (.038 to .056)
Metric	285.4	152	1.00	0.97	0.048	.047 (.038 to .055)
Scalar	330.0	160	1.04	0.96	0.052	.051 (.043 to .059)

Table 5. Goodness-of-fit for different levels of measurement invariance

	N	**Cronbach's Alpha within factor**		**Inter-measure correlation within factor**	
		All measures	*Measure deleted*	*All measures*	*Measure deleted*
Factor 1: Patient-rated personal recovery		.90		.69	
QPR	*399*		.87		.69
HHI	*385*		.87		.69
MHCS	*380*		.87		.68
WEMWBS	*388*		.86		.68
Factor 2: Patient-rated clinical recovery		.75		.50	
MANSA	*384*		.67		.51
BPRS	*378*		.71		.54
CANSAS-P	*390*		.61		.44
Factor 3: Staff-rated clinical recovery		.76		.52	
GAF	*379*		.66		.49
HoNOS	*378*		.60		.43
CANSAS-S	*346*		.78		.63

Table 6. Reliability of complete and measure-deleted factors