

Factor validation and Rasch analysis of the individual recovery outcomes counter (I.ROC)

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Appendix: Supplementary material

Table S1

*Reliability and validity measures for alternative Individual Recovery Outcomes Counter
scoring measures*

Re-scoring method	<u>Separation</u>		<u>Reliability</u>		<u>Infit</u>		<u>Outfit MNSQ</u>	
	<u>MNSQ</u>							
	Person	Item	Person	Item	Person	Item	Person	Item
A. 1-2-3-4-5-6 (original scoring)	2.46	18.13	.86	1.00	1.04	1.01	1.03	1.03
B. 1-2-3-(4-5)-6 = 1-2-3-4-5	2.42	18.37	.85	1.00	1.02	1.00	1.02	1.02
C. 1-(2-3-4)-5-6 = 1-2-3-4	2.11	16.66	.82	1.00	1.00	1.00	0.99	0.99
D. (1-2)-(3-4)-(5-6) = 1-2-3	2.16	16.58	.82	1.00	1.01	1.00	1.02	1.02
E. 1-(2-3)-(4-5)-6 = 1-2-3-4	2.25	16.75	.84	1.00	1.02	1.00	1.00	1.00
F. (1-2)-3-(4-5)-6 = 1-2-3-4	2.22	16.66	.83	1.00	1.01	1.00	1.01	1.01

Infit MNSQ (mean square) = outlier sensitive fit statistic; it is sensitive to unexpected observations by service users on items that are relatively very hard or very easy for them (and vice versa); Outfit MNSQ = Inlier-pattern-sensitive fit statistic, sensitive to unexpected responses by service users on items that are roughly targeted on them (and vice versa).

Table S2: *Fit indices for Confirmatory Factor Analysis using 4-category Individual Recovery Outcomes Counter scoring method 1-(2-3)-(4-5)-6 = 1-2-3-4*

Fit Index	Notional four domain (HOPE) structure ^a	New 2-Factor Structure ^b	Original 2-Factor structure ^c	Single factor structure
Comparative Fit Index	0.949	0.949	0.906	0.902
Normed Fit Index	0.929	0.939	0.899	0.895
Goodness of Fit Index	0.972	0.973	0.929	0.927
Adjusted Goodness of Fit Index	0.957	0.961	0.910	0.909
RMSEA (90% C.I.)	0.0536 (0.0477-0.0597)	0.0507 (0.0451-0.0565)	0.0805 (0.0751-0.0861)	0.0815 (0.0760-0.0870)
X ²	288.666	290.650	652.284	678.479
DF ($p < 0.00001$)	48	53	53	54

^a Home (Mental health; Life skills; Safety and comfort); Opportunity (Physical health; Exercise and activity; Purpose and direction); People (Personal network; Social network; Valuing myself); Empowerment (Participation and control; Self-management; Hope for the future).

^b Factor 1: Self management; Participation and control; Hope for the future; Valuing myself; Mental health; Safety and comfort; Life skills; Personal network. Factor 2: Exercise and activity; Physical health; Purpose and direction; Social network.

^c Factor 1: Self management; Participation and control; Physical health; Valuing myself; Mental health; Safety and comfort; Life skills; Personal network. Factor 2: Exercise and activity; Hope for the future; Purpose and direction; Social network (i.e. physical health and Hope for the future 'swap places').

RMSEA = Root Mean Square Error of the Approximation. CI = Confidence Interval. DF = Degrees of Freedom.

Table S3

Fit indices for Confirmatory Factor Analysis using scoring methods indicated

Fit Index	Notional four domain (HOPE) structure ^a (original 6-category scoring) 1-2-3-4-5-6	Original 2-Factor structure ^b (6-category scoring) 1-2-3-4-5-6	Notional four domain (HOPE) structure ^a with 5-category scoring 1-2-3-(4-5)-6 = 1-2-3-4-5	Original 2-Factor structure ^b with 5-category scoring 1-2-3-(4-5)-6 = 1-2-3-4-5
Comparative Fit Index	0.945	0.942	0.942	0.939
Normed Fit Index	0.927	0.933	0.935	0.930
Goodness of Fit Index	0.966	0.964	0.967	0.965
Adjusted Goodness of Fit Index	0.946	0.948	0.947	0.948
RMSEA (90% CI)	0.0612 (0.0555-0.0672)	0.0599 (0.0544-0.0656)	0.0608 (0.0549-0.0667)	0.0598 (0.0542-0.0645)
χ^2	362.062	384.79	357.01	383.43
DF ($p < 0.00001$)	48	53	48	53

^a Home (Mental health; Life skills; Safety and comfort); Oppportunity (Physical health; Exercise and activity; Purpose and direction); People (Personal network; Social network; Valuing myself); Empowerment (Participation and control; Self-management; Hope for the future).

^b Factor 1: Self management; Participation and control; Hope for the future; Valuing myself; Mental health; Safety and comfort; Life skills; Personal network. Factor 2: Exercise and activity; Physical health; Purpose and direction; Social network.

RMSEA = Root Mean Square Error of the Approximation. CI = Confidence Interval. DF = Degrees of Freedom.

Table S4

Fit indices for confirmatory factor analysis using scoring methods indicated

Fit Index	Notional four domain (HOPE) structure ^a (3-category scoring)	Original 2-Factor ^b structure (3-category scoring)
Comparative Fit Index	0.938	0.933
Normed Fit Index	0.929	0.923
Goodness of Fit Index	0.968	0.965
Adjusted Goodness of Fit Index	0.948	0.948
RMSEA (90% C.I)	0.0591 (0.0532-0.0644)	0.0587 (0.0532-0.0644)
X ²	340.24	371.63
DF ($p < 0.00001$)	48	53

^a Home (Mental health; Life skills; Safety and comfort); Oppportunity (Physical health; Exercise and activity; Purpose and direction); People (Personal network; Social network; Valuing myself; Empowerment (Participation and control; Self-management; Hope for the future).

^b Factor 1: Self management; Participation and control; Hope for the future; Valuing myself; Mental health; Safety and comfort; Life skills; Personal network. Factor 2: Exercise and activity; Physical health; Purpose and direction; Social network.

RMSEA = Root Mean Square Error of the Approximation. CI = Confidence Interval. DF = Degrees of Freedom.

Table S5: *Fit indices for confirmatory factor analysis using 4-category Individual Recovery Outcomes Counter scoring 1-(2-3)-(4-5)-6. Outlier data removed*

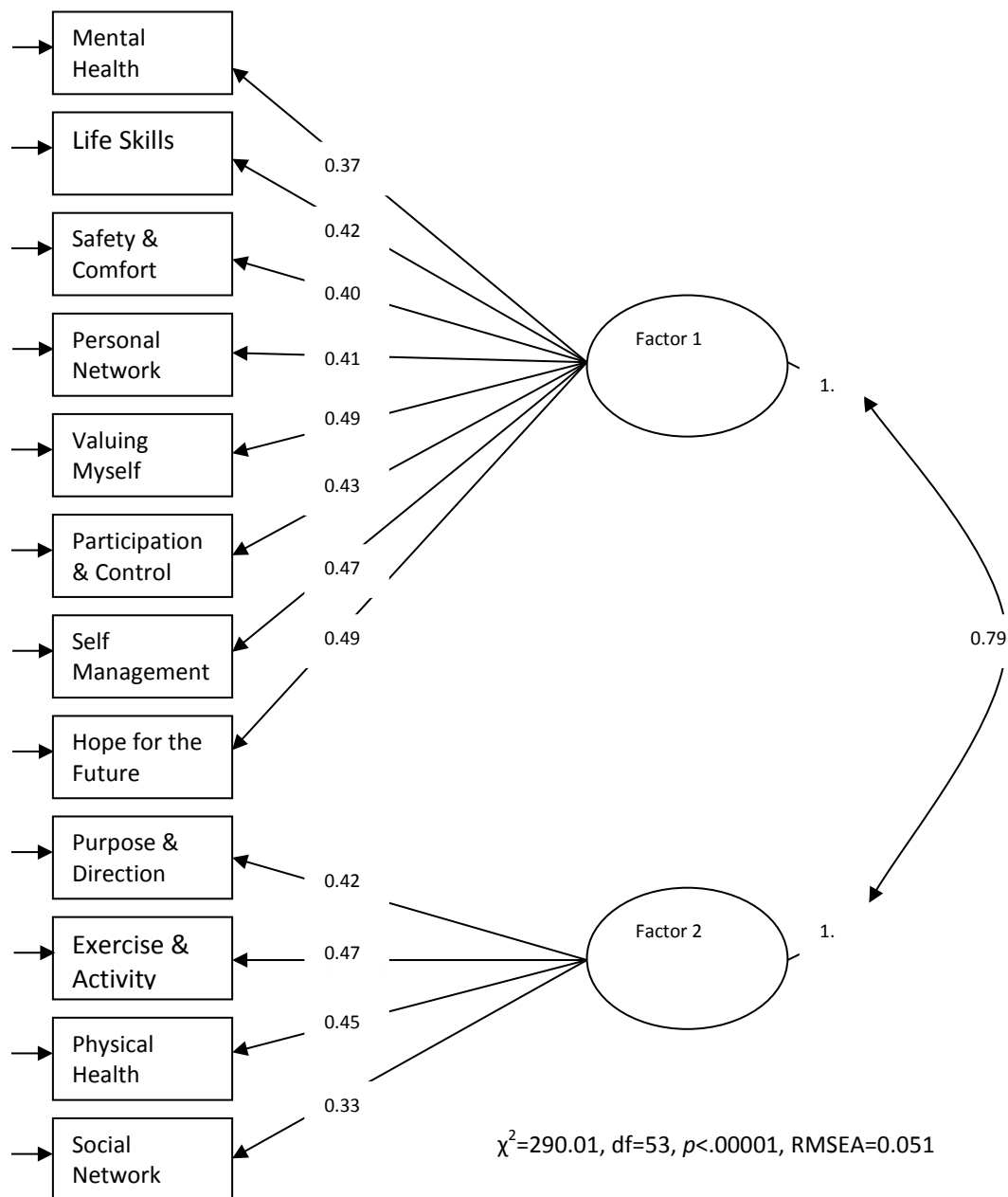
Fit Index	Notional four domain (HOPE) structure ^a	New 2-Factor Structure ^b
Comparative Fit Index	0.951	0.0951
Normed Fit Index	0.0942	0.0941
Goodness of Fit Index	0.0972	0.0972
Adjusted Goodness of Fit Index	0.0956	0.0960
RMSEA (90% C.I)	0.0538 (0.0479-0.0599)	0.0514 (0.0457-0.0572)
X ²	286.356	292.878
DF ($p < 0.00001$)	48	53

^a Home (Mental health; Life skills; Safety and comfort); Oppportunity (Physical health; Exercise and activity; Purpose and direction); People (Personal network; Social network; Valuing myself; Empowerment (Participation and control; Self-management; Hope for the future).

^b Factor 1: Self management; Participation and control; Physical health; Valuing myself; Mental health; Safety and comfort; Life skills; Personal network. Factor 2: Exercise and activity; Hope for the future; Purpose and direction; Social network (i.e. physical health and Hope for the future ‘swap places from the 2-Factor structure reported in Hardie et al., 2013).

RMSEA = Root Mean Square Error of the Approximation. CI = Confidence Interval. DF = Degrees of Freedom.

Figure S2: *Confirmatory factor analysis of the 2-factor intrapersonal interpersonal personal recovery model.*



Note the high (0.79) correlation between the factors which suggests that a single superordinate factor is present. As a result we reanalysed the data with covariance between the factors set at zero as is the assumption of the model. In these circumstances model fit was substantially poorer ($RMSEA=0.0649$). $RMSEA$ = Root Mean Square Error of the Approximation.