

Evaluation of the measurement properties of self-reported health-related work-functioning instruments among workers with common mental disorders ¹

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1 Appendix – Supplementary tables A & B

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Appendix

Table A. Complete search strategy. [CMD=common mental disorder]

	Embase	PsycInfo (EBSCOhost)	PubMed (Medline)
CMD population	((('mood disorder'/exp) OR ('mental disease'/de) OR ('adjustment disorder'/exp) OR ('anxiety disorder'/exp)))	DE "Mental Disorders" or DE "Adjustment Disorders" or DE "Affective Disorders" OR DE "Bipolar Disorder" OR DE "Major Depression" OR DE "Mania" OR DE "Seasonal Affective Disorder" or DE "Bipolar Disorder" OR DE "Cyclothymic Personality" or DE "Major Depression" or DE "Anaclitic Depression" or DE "Dysthymic Disorder" or DE "Endogenous Depression" or DE "Reactive Depression" or DE "Recurrent Depression" or DE "Treatment Resistant Depression" or DE "Mania" or DE "Mania" OR DE "Hypomania" or DE "Seasonal Affective Disorder" or DE "Anxiety Disorders" OR DE "Acute Stress Disorder" OR DE "Castration Anxiety" OR DE "Death Anxiety" OR DE "Generalized Anxiety Disorder" OR DE "Obsessive Compulsive Disorder" OR DE "Panic Disorder" OR DE "Phobias" OR DE "Posttraumatic Stress Disorder" OR DE "Separation Anxiety" or DE "Phobias" OR DE "Acrophobia" OR DE "Agoraphobia" OR DE "Claustrophobia" OR DE "Ophidiophobia" OR DE "School Phobia" OR DE "Social Phobia"	"Mental Disorders"[Mesh:noexp] OR "Anxiety Disorders"[Mesh] OR "Depressive Disorder"[Mesh] OR "Depression"[Majr] OR "Depressive Disorder"[Majr] OR depression OR depressive
Health-related work functioning instruments	Title and abstract: ((('health-related work outcome measure' OR 'work quality' OR 'work productivity' OR workplace OR 'work performance' OR 'work cutback' OR 'cutback days' OR 'lost productivity' OR 'reduced productivity' OR 'light duty' OR workability OR 'modified work' OR 'job accommodation' OR 'performance evaluation' OR 'extra effort' OR presenteeism OR 'job performance' OR 'vocational performance' OR 'work functioning' OR 'work impairment' OR 'vocational impairment' OR 'vocational functioning' OR 'work limitations' OR 'occupational functioning' OR 'work role functioning' OR 'work ability' OR 'vocational outcome' OR 'employment outcome' OR productivity OR 'work participation' OR (participation AND (work OR job OR employment OR occupation* OR vocation*)))) AND [embase]/lim	Title and abstract: health-related work outcome measure OR work quality OR work productivity OR workplace OR work performance OR work cutback OR cutback days OR lost productivity OR reduced productivity OR light duty OR workability OR modified work OR job accommodation OR performance evaluation OR extra effort OR presenteeism OR job performance OR vocational performance OR work functioning OR work impairment OR vocational impairment OR vocational functioning OR work limitations OR Occupational functioning OR work role functioning OR work ability OR vocational outcome OR employment outcome OR productivity OR work participation OR (participation AND (work OR job OR employment OR occupation* OR vocation*))	Title and abstract: health-related work outcome measure OR work quality OR work productivity OR workplace OR work performance OR work cutback OR cutback days OR lost productivity OR reduced productivity OR light duty OR workability OR modified work OR job accommodation OR performance evaluation OR extra effort OR presenteeism OR job performance OR vocational performance OR work functioning OR work impairment OR vocational impairment OR vocational functioning OR work limitations OR Occupational functioning OR work role functioning OR work ability OR vocational outcome OR employment outcome OR productivity OR work participation OR (participation AND (work OR job OR employment OR occupation* OR vocation*))
Validation studies	((('statistical parameters'/exp OR 'psychometry'/exp OR 'questionnaire'/exp OR 'named inventories, questionnaires and rating scales'/exp OR 'outcome assessment'/exp) OR Title and abstract: ((reproducib* OR psychometr* OR clinimetr* OR clinometr* OR 'item selection' OR 'item reduction' OR 'observer variation reliability' OR valid* OR coefficient OR 'internal consistency' OR (cronbach* AND (alpha OR alphas)) OR 'item correlation' OR 'item correlations' OR 'item selection' OR 'item selections' OR 'item reduction' OR 'item reductions' OR agreement OR precision OR imprecision OR 'precise values' OR 'test retest' OR (test AND retest) OR (reliab* AND (test OR retest)) OR stability OR interrater OR 'inter rater' OR intrarater OR 'intra rater' OR intertester OR 'inter tester' OR intratester OR 'intra tester' OR interobserver OR 'inter observer' OR intraobserver OR 'intra observer' OR intertechnician OR 'inter technician' OR intratechnician OR 'intra technician' OR interexaminer OR 'inter examiner' OR intraexaminer OR 'intra examiner' OR inter-assay OR 'inter assay' OR intraassay	(exp measurement/ OR exp test construction/ OR exp interrater reliability/ OR exp statistical analysis/) Title and abstract: reproducib* OR psychometr* OR clinimetr* OR clinometr* OR item selection OR item reduction OR observer variation reliab* OR valid* OR coefficient OR internal consistency OR (cronbach* AND (alpha OR alphas)) OR item correlation OR item correlations OR item selection OR item selections OR item reduction OR item reductions OR agreement OR precision OR imprecision OR precise values OR test-retest OR (test AND retest) OR (reliab* AND (test OR retest)) OR stability OR interrater OR inter-rater OR intrarater OR intra-rater OR intertester OR inter-tester OR intratester OR intra-tester OR interobserver OR inter-observer OR intraobserver OR intra-observer OR intertechnician OR inter-technician OR intratechnician OR intra-technician OR interexaminer OR inter-examiner OR intraexaminer OR intra-examiner OR interassay OR inter-assay OR intraassay OR intra-assay OR interindividual OR inter-individual OR intraindividual OR intra-individual OR interparticipant OR inter-participant	(instrumentation[sh] OR methods[sh] OR Validation Studies[pt] OR Comparative Study[pt] OR "psychometrics"[MeSH] OR psychometr*[tiab] OR clinimetr*[tw] OR clinometr*[tw] OR "outcome assessment (health care)"[MeSH] OR outcome assessment[tiab] OR outcome measure*[tw] OR "observer variation"[MeSH] OR observer variation[tiab] OR "Health Status Indicators"[Mesh] OR "reproducibility of results"[MeSH] OR reproducib*[tiab] OR "discriminant analysis"[MeSH] OR Title and abstract: reliab* OR unreliab* OR valid* OR coefficient OR homogeneity OR homogeneous OR "internal consistency" OR (cronbach* AND (alpha OR alphas)) OR (item AND (correlation* OR selection* OR reduction*)) OR agreement OR precision OR imprecision OR "precise values" OR test-retest OR (test AND retest) OR (reliab* AND (test OR retest)) OR stability OR interrater OR inter-rater OR intrarater OR intra-rater OR intertester OR inter-tester OR intratester OR intra-tester OR interobserver OR inter-observer OR intraobserver OR intra-observer OR intertechnician OR inter-technician OR intratechnician

Table A. Continued

OR 'intra assay' OR interindividual OR 'inter individual' OR intraindividual OR 'intra individual' OR interparticipant OR 'inter participant' OR intraparticipant OR 'intra participant' OR kappa OR kappas OR 'coefficient of variation' OR repeatab* OR ((replicab* OR repeated) AND (measure OR measures OR findings OR result OR results OR test OR tests)) OR generaliza* OR generalisa* OR concordance OR (intraclass AND correlation*) OR discriminative OR 'known group' OR 'factor analysis' OR 'factor analyses' OR 'factor structure' OR 'factor structures' OR dimensionality OR subscale* OR 'multitrait scaling analysis' OR 'multitrait scaling analyses' OR 'item discriminant' OR 'interscale correlation' OR 'interscale correlations' OR ((error OR errors) AND (measure* OR correlat* OR evaluat* OR accuracy OR accurate OR precision OR mean)) OR 'individual variability' OR 'interval variability' OR 'rate variability' OR 'variability analysis' OR (uncertainty AND (measurement OR measuring)) OR 'standard error of measurement' OR sensitiv* OR responsive* OR (limit AND detection) OR 'minimal detectable concentration' OR interpretab* OR (small* AND (real OR detectable) AND (change OR difference)) OR 'meaningful change' OR 'minimal important change' OR 'minimal important difference' OR 'minimally important change' OR 'minimally important difference' OR 'minimal detectable change' OR 'minimal detectable difference' OR 'minimally detectable change' OR 'minimally detectable difference' OR 'minimal real change' OR 'minimal real difference' OR 'minimally real change' OR 'minimally real difference' OR 'ceiling effect' OR 'floor effect' OR 'item response model' OR irt OR rasch OR 'differential item functioning' OR dif OR 'computer adaptive testing' OR 'item bank' OR 'cross-cultural equivalence'))	OR intraparticipant OR intra-participant OR kappa OR kappa's OR kappas OR coefficient of variation OR repeatab* OR ((replicab* OR repeated) AND (measure OR measures OR findings OR result OR results OR test OR tests)) OR generaliza* OR generalisa* OR concordance OR (intraclass AND correlation*) OR discriminative OR known group OR factor analysis OR factor analyses OR factor structure OR factor structures OR dimensionality OR subscale* OR multitrait scaling analysis OR multitrait scaling analyses OR item discriminant OR interscale correlation OR interscale correlations OR ((error OR errors) AND (measure* OR correlat* OR evaluat* OR accuracy OR accurate OR precision OR mean)) OR individual variability OR interval variability OR rate variability OR variability analysis OR (uncertainty AND (measurement OR measuring)) OR standard error of measurement OR sensitiv* OR responsive* OR (limit AND detection) OR minimal detectable concentration OR interpretab* OR (small* AND (real OR detectable) AND (change OR difference)) OR meaningful change OR minimal important change OR minimal important difference OR minimally important difference OR minimal detectable change OR minimal detectable difference OR minimal real change OR minimal real difference OR minimally real change OR minimally real difference OR ceiling effect OR floor effect OR Item response model OR IRT OR Rasch OR Differential item functioning OR DIF OR computer adaptive testing OR item bank OR cross-cultural equivalence	OR intra-technician OR interexaminer OR inter-examiner OR intraexaminer OR intra-examiner OR interassay OR inter-assay OR intraassay OR intra-assay OR interindividual OR inter-individual OR intraindividual OR intra-individual OR interparticipant OR inter-participant OR intraparticipant OR intra-participant OR kappa OR kappa's OR kappas OR repeatab* OR ((replicab* OR repeated) AND (measure OR measures OR findings OR result OR results OR test OR tests)) OR generaliza* OR generalisa* OR concordance OR (intraclass AND correlation*) OR discriminative OR "known group" OR factor analysis OR factor analyses OR dimension* OR subscale* OR (multitrait AND scaling AND (analysis OR analyses)) OR item discriminant OR interscale correlation* OR error OR errors OR "individual variability" OR (variability AND (analysis OR values)) OR (uncertainty AND (measurement OR measuring)) OR "standard error of measurement" OR sensitiv* OR responsive* OR ((minimal OR minimally OR clinical OR clinically) AND (important OR significant OR detectable) AND (change OR difference)) OR (small* AND (real OR detectable) AND (change OR difference)) OR meaningful change OR "ceiling effect" OR "floor effect" OR "Item response model" OR IRT OR Rasch OR "Differential item functioning" OR DIF OR "computer adaptive testing" OR "item bank" OR "cross-cultural equivalence")
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Table B. Quality criteria for measurement properties. [MIC=minimal important change; SDC=smallest detectable change; LoA=limits of agreement; ICC=intraclass correlation coefficient; DIF=differential item functioning; AUC=area under the curve; + = positive rating, ? = indeterminate rating, - = negative rating.]

Property	Rating	Quality Criteria
Reliability		
Internal consistency	+	Cronbach's $\alpha \geq 0.70$
	?	Cronbach's α not determined
	-	Cronbach's $\alpha < 0.70$
Reliability	+	ICC / weighted $\kappa \geq 0.70$ <i>or</i> Pearson's $r \geq 0.80$
	?	Neither ICC / weighted κ , nor Pearson's r determined
	-	ICC / weighted $\kappa < 0.70$ <i>or</i> Pearson's $r < 0.80$
Measurement error	+	MIC >SDC <i>or</i> MIC outside the LOA
	?	MIC not defined
	-	MIC $\leq$ SDC <i>or</i> MIC equals or inside LOA
Validity		
Content validity	+	The target population considers all items in the questionnaire to be relevant <i>and</i> considers the questionnaire to be complete
	?	No target population involvement
	-	The target population considers items in the questionnaire to be irrelevant <i>or</i> considers the questionnaire to be incomplete
Construct validity		
Structural validity	+	Factors should explain $\geq 50\%$ of the variance
	?	Explained variance not mentioned
	-	Factors explain $< 50\%$ of the variance
Hypotheses testing	+	Correlation with an instrument measuring the same construct ≥ 0.50 <i>or</i> $\geq 75\%$ of the results are in accordance with the hypotheses <i>and</i> correlation with related constructs is higher than with unrelated constructs
	?	Solely correlations determined with unrelated constructs
	-	Correlation with an instrument measuring the same construct < 0.50 <i>or</i> $< 75\%$ of the results are in accordance with the hypotheses <i>or</i> correlation with related constructs is lower than with unrelated constructs
Cross-cultural validity	+	Original factor structure confirmed <i>or</i> no important DIF between language versions
	?	Confirmatory factor analysis not applied and DIF not assessed
	-	Original factor structure not confirmed <i>or</i> important DIF found between language versions
Criterion validity	+	Convincing arguments that gold standard is "gold" <i>and</i> correlation with gold standard ≥ 0.70
	?	No convincing arguments that gold standard is "gold" OR doubtful design or method
	-	Correlation with gold standard < 0.70 , despite adequate design and method
Responsiveness		
	+	Correlation with an instrument measuring the same construct ≥ 0.50 <i>or</i> $\geq 75\%$ of the results are in accordance with the hypotheses <i>or</i> AUC ≥ 0.70 <i>and</i> correlation with related constructs is higher than with unrelated constructs
	?	Solely correlations determined with unrelated constructs
	-	Correlation with an instrument measuring the same construct < 0.50 OR $< 75\%$ of the results are in accordance with the hypotheses <i>or</i> AUC < 0.70 <i>or</i> correlation with related constructs is lower than with unrelated constructs