Sensitivity to Change of Self-Report Questionnaires in Rehabilitation – A Reanalysis of Pooled Data of Orthopaedic and Rheumatic Patients

Igl, W. (1), Schuck, P. (1), Zwingmann, Ch. (2) & Faller, H. (1)

(1) Institute of Psychotherapy and Medical Psychology, University of Würzburg
(2) Federation of German Pension Insurance Institutes (VDR), Department of Rehabilitation Research, Frankfurt/Main

1. Background

- The basic concept of 'sensitivity to change' was introduced by Kirshner & Guyatt (1985) when they put forward a framework for evaluating assessment tools.

- They differentiated three different purposes for their use: discrimation, prediction, evaluation

- For the category of evaluative instruments 'sensitivity to change' is the most important feature, i.e. they have to be able to appropriately reflect 'true' change over time.

- In rehabilitation research patient questionnaires are widely used for evaluative purposes, i.e. to measure improvements or deteriorations over time.

- Such instruments are, for example, the Short-Form 36 Questionnaire (SF-36) or the Symptom Check List (SCL-90 R).

- Addressing this topic has been neglected so far.

2. Aims

- Evaluation of scores, scales and items of these questionnaires (SF-36, SCL-90R) whether they are able to appropriately reflect relevant changes over time, i. e. of their sensitivity to change.

- Recommendations on which instruments should be used for specific evaluation purposes.

3. Methods

3.1 Samples

The reanalysed data consists of pooled data from several research projects of different rehabilitation research networks in Germany.

	Instruments	
	SF-36	**SCL-90 R**
Indication	orthopaedic and rheumatic patients	
Sex	630 (56%) women	149 (55%)
	504 (44%) men	121 (45%)
Age (M (SD))	46 (8.9) years	53 (11.5) years
Overall N	1,134	270

3.2 Design

- Measurement points are the beginning and the end of the rehabilitation treatment.

- Standard rehabilitation treatments (usual care) have been used to induce change in patient health state.

3.3 Statistical Indices

Simple indices (effect sizes) of sensitivity to change, which require only two measurements are reported , i. e.

- SES (Standardized Effect Size)

- SRM (Standardized Response Mean)

  (Stratford et al., 1996, Schuck, 2000).

4. Results

SF-36							
		SES [95% confidence intervalls]			SRM [95% confidence intervalls]		
	N	M	Low	Up	M	Low	Up
Global Scores							
Physical CS	522	0.23*	0.14	0.31	0.30*	0.21	0.39
Mental CS	522	0.22*	0.13	0.30	0.29*	0.21	0.38
Scales							
Physical Functioning	592	0.15*	0.07	0.23	0.23*	0.15	0.31
Role-Physical	543	0.29*	0.20	0.37	0.28*	0.20	0.37
Bodily Pain	626	0.32*	0.25	0.39	**0.43***	0.36	0.50
General Health	589	0.14*	0.06	0.22	0.17*	0.09	0.25
Vitality	589	0.36*	0.28	0.43	**0.43***	0.35	0.51
Social Functioning	588	0.16*	0.09	0.24	0.20*	0.13	0.28
Role Emotional	541	0.14*	0.05	0.22	0.15*	0.07	0.24
Mental Health	588	0.31*	0.23	0.39	0.39*	0.31	0.47
Health Transition	585	**0.82***	0.73	0.91	**0.74***	0.65	0.83

SCL-90 R							
		SES [95% confidence intervalls]			SRM [95% confidence intervalls]		
	N	M	Low	Up	M	Low	Up
Global Scores							
Global Severity Index	202	**0.49***	0.35	0.64	**0.78***	0.62	0.93
Pos. Sympt. Distress Index	211	**0.45***	0.31	0.59	**0.58***	0.44	0.73
Positive Symptom Total	257	**0.65***	0.52	0.78	**0.81***	0.67	0.95
Scales							
Somatization	210	**0.45***	0.31	0.59	**0.71***	0.56	0.86
Obsessive-Compulsive	209	**0.40***	0.26	0.54	**0.61***	0.46	0.75
Interpersonal Sensitivity	209	**0.40***	0.26	0.54	**0.63***	0.48	0.77
Depression	208	**0.55***	0.40	0.70	**0.74***	0.58	0.89
Anxiety	202	**0.44***	0.29	0.58	**0.62***	0.47	0.77
Anger-Hostility	201	**0.47***	0.32	0.61	**0.57***	0.42	0.72
Phobix Anxiety	201	0.30*	0.16	0.44	0.38*	0.23	0.52
Psychotizism	201	**0.40***	0.26	0.55	**0.52***	0.37	0.67
Paranoid ideation	202	0.30*	0.15	0.44	**0.44***	0.29	0.58

Note: " * " means that the 95% confidence interval does not include zero. Effect sizes greater than 0.4 are formated bold. Positive effect sizes indicate improvements.

5. Discussion

All of the statistical indices of the examined global scores and scales reach statistical significance, i.e. they are not equal zero and therefore they should be able to measure change under the described conditions. The indices of the SF-36 seem to be remarkebly lower than the indices of the SCL-90 R. However, one has to be careful when comparing the indices of the SF-36 and the SCL-90 R because one has to allow for sample and treatment differences. Further research will be provided by our project till the end of 2004 when the results of our prospective study with parallel measurements of SF-36 and SCL-90 R with identical study design, samples and treatments will be available.

References
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Contact: wilmar.igl@mail.uni-wuerzburg.de