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COMPLAINTS SCALE

Validity of the Ghent Multidimensional Somatic Complaints Scale in a Clinical Sample

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Abstract

Objective: To evaluate the validity of the Ghent Multidimensional Somatic Complaints Scale (GMSCS) in a Clinical Sample. *Method:* 354 non-clinical subjects and 151 clinical patients completed the GMSCS, an 18-item 5-factorial scale for the assessment of somatic complaints. *Results:* The five factorial structure was reliable and valid in the non-clinical as well as the clinical sample. Furthermore, group differences after controlling for the other factors were only significant for pain and fatigue. *Conclusion:* The GMSCS is a suitable multidimensional scale for assessing five clusters of somatic complaints in a clinical (primary care and pain patients) and non-clinical population.

Keywords: somatic complaints, assessment, factor structure

Validity of the Ghent Multidimensional Somatic Complaints Scale in a Clinical Sample

Traditionally, scales for the assessment of somatic complaints are one-factorial [1-3]. However, Confirmatory Factor Analysis (CFA) shows that a multifactorial model, with high correlations between the factors is more suitable to obtain a good fit [4-5]. This has led to a theoretical model where somatic complaint items load on a number of first-order, symptom or syndrome specific factors, and these first-order factors load on one higher-order general somatic complaint factor (cf figure 1) [6]. Recently, this model was used for the construction of the Ghent Multidimensional Somatic Complaints Scale (GMSCS). This scale was developed to assess the higher-order multifactorial nature of somatic complaints, without loosing practical usability. At the first-order, five factors were found, namely pain in head and shoulders, gastro-intestinal complaints, cardio-respiratory complaints, temperature regulation complains, and fatigue [7]. The first-order factors load on one higher-order somatic complaint factor. Because the GMSCS was only validated in non-clinical samples, the present research investigates whether the scale is also reliable and valid in a patient sample. More specifically, our aims are to examine whether the higher-order multifactorial structure of the scale is both valid in a non-clinical and a patient sample, and whether the lower-order factors are reliable and differentiate between the samples.

Method

Participants and Procedure

The non-patient sample consisted of 354 working adults, who were recruited by master students in psychology ; 52.3% were female, 6.3% was low educated (not finished high-school), 32.8% was medium educated (high-school degree), 60.5% was high educated (college or university degree). The mean age of the non-patient sample was 38.6 years (range 18-61). The

patient sample consisted of 85 primary care patients, who were consecutively recruited through general practitioners from different primary care units, and 66 secondary care pain patients, who filled in the scale as part of the intake questionnaire to one of the largest pain clinics in Flanders, the Dutch-speaking part of Belgium. The mean age of the sample was 45.6 years (range 18-71); 38.4% were female, 48% was low educated, 32.9% medium educated and 19.1% was high educated. In both samples, patients were eligible for study inclusion if they were at least 18 years old, and reported no pregnancy or severe injury. In the non-clinical sample, respondents were employed and reported not to suffer from any medical disease.

Measure

The Ghent Multidimensional Somatic Complaints Scale is an 18 item questionnaire for the assessment of somatic complaints. This scale is hierarchically structured with at the lower level five factors. People have to indicate the frequency with which they have experienced the complaints on a 8-point Likert scale: 0 (never) to 7 (all the time). Reliabilities of the lower-order factors as well as for the higher-order somatic complaints factor have proven to be adequate [7].

Data Analysis

A multigroup CFA was performed to examine whether the factorial structure in the non-clinical and the patient sample was the same [8][1]. For the present study, several criteria of model fit were used: the likelihood ratio statistic (χ^2 and χ^2/degrees of freedom); the Comparative Fit Index (*CFI*); the Standardized Root Mean Square Residual (*SRMR*); and, finally, the Root Mean Square Error of Approximation (*RMSEA*) [9]. A well-fitting model has a non-significant χ^2 statistic or at least evidence of a χ^2/df value between two and four with lower values indicative of greater fit [10]. Hu and Bentler [11] suggest a cut-off value of .90 for *CFI* and of .08 for *RMSEA*.

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[1] We tested the factorial invariance model in which factor loadings and intercepts of the indicators are fixed to be the same in the two samples. Information on configural and metric invariance can be requested from the first author.

They suggest that the *SRMR* should be close to .08, with lower values indicating better fit. For the

CFA analysis, the Maximum Likelyhood procedure corrected for non-normality of the mean and

variance (MLMV) was used as a model estimator. The CFA analyses were performed in Mplus.

Next, α-reliabilities were calculated for each factor. Cronbach's α values of .70 or higher were

considered acceptable [12].

Finally, to investigate group differences, we first conducted a MANOVA with the five

first-order complaint factors of the GMSCS as dependents and the sample as predictor. Second,

to obtain the "net effect" of the group on each of the five complaint factors, five ANCOVA's

were performed with in each case one of the five complaint factors as dependent, the group as

predictor, and the other four complaint factors, age, sex, and educational level as covariates.

Results

The higher-order multigroup CFA model showed a good fit (χ^2/df = 2.34; *CFI* = .91;

RMSEA = .061; *SRMR* = .073), indicating that the model is comparable between the patient and

the non-clinical sample. Figure 1 gives an overview of the standardized factor loadings[2]. In both

groups the fatigue factor had the highest loading on the general factor. The reliability of the scale

as a whole was α=.87 for the patient group and α=.89 for the non-clinical group. The reliabilities

for the first-order factors were also satisfactory (see Table 1).

Table 1 shows the factor means. The MANOVA showed that the multifactorial effect of

group was significant $F(5, 474)$ = 14.998; $p < .001$; *partial η^2* = .137. Also the between-subject

effects were all significant, with the patients scoring higher on all factors.[3] The ANCOVA's

showed that the net effects of group on heart, stomach, and temperature were not significant.

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[2] Covariance matrices for both samples can be requested from the first author.
[3] The pain and the primary care sample did not differ significantly. However, there was a tendency of pain patients to report more pain (M_{pain} = 9.5, $M_{primarycare}$ = 8.6), warmth-coldness (M_{pain} = 6.5, $M_{primarycare}$ = 5.7), and fatigue (M_{pain} = 14.8, $M_{primarycare}$ = 13.1). Primary care patients had more stomach problems (M_{pain} = 7.1, $M_{primarycare}$ = 8.5) and for cardio-vascular complaints, there was hardly any difference.

Group did show significant effects on pain and fatigue when controlled for the other four complaint factors.

Discussion

The higher-order model, which was defined by Deary [6] and operationalized in the Ghent Multidimensional Somatic Complaints Scale [7] proved to be valid and reliable in a patient and a non-clinical sample. The fatigue factor had the highest loading on the general factor, probably due to the centrality of fatigue in symptomatology [e.g. 13]. Finally, group comparisons showed that there were clear differences between factors when isolating the symptom specific variance. This shows that it is important to distinguish between different factors when assessing somatic complaints. Only interpreting a general somatic complaint factor yields a limited picture. The main limitations in the present study were that the samples differed with respect to age and educational level and that only pain and primary care patients were included. Despite these limitations, the GMSCS can be considered superior to other measures for the assessment of somatic complaints, because the scale is theory-driven and has a strong factorial validity. **Because until now, we have no norms for the scale as a whole and for different subscales, we suggest to use it only as a research tool. Future studies should try to obtain norms for the scale and to do research in different patient groups to investigate the applicability in these groups. When proper norms are obtained,** we estimate that the Ghent Multidimensional Somatic Complaints Scale would be an excellent screening tool for assessing the frequency and intensity of somatic complaints in clinical samples.

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Figure Caption: Higher-order model of the Ghent Multidimensional Somatic Complaints Scale

with standardized loadings in the patient and the non-clinical sample
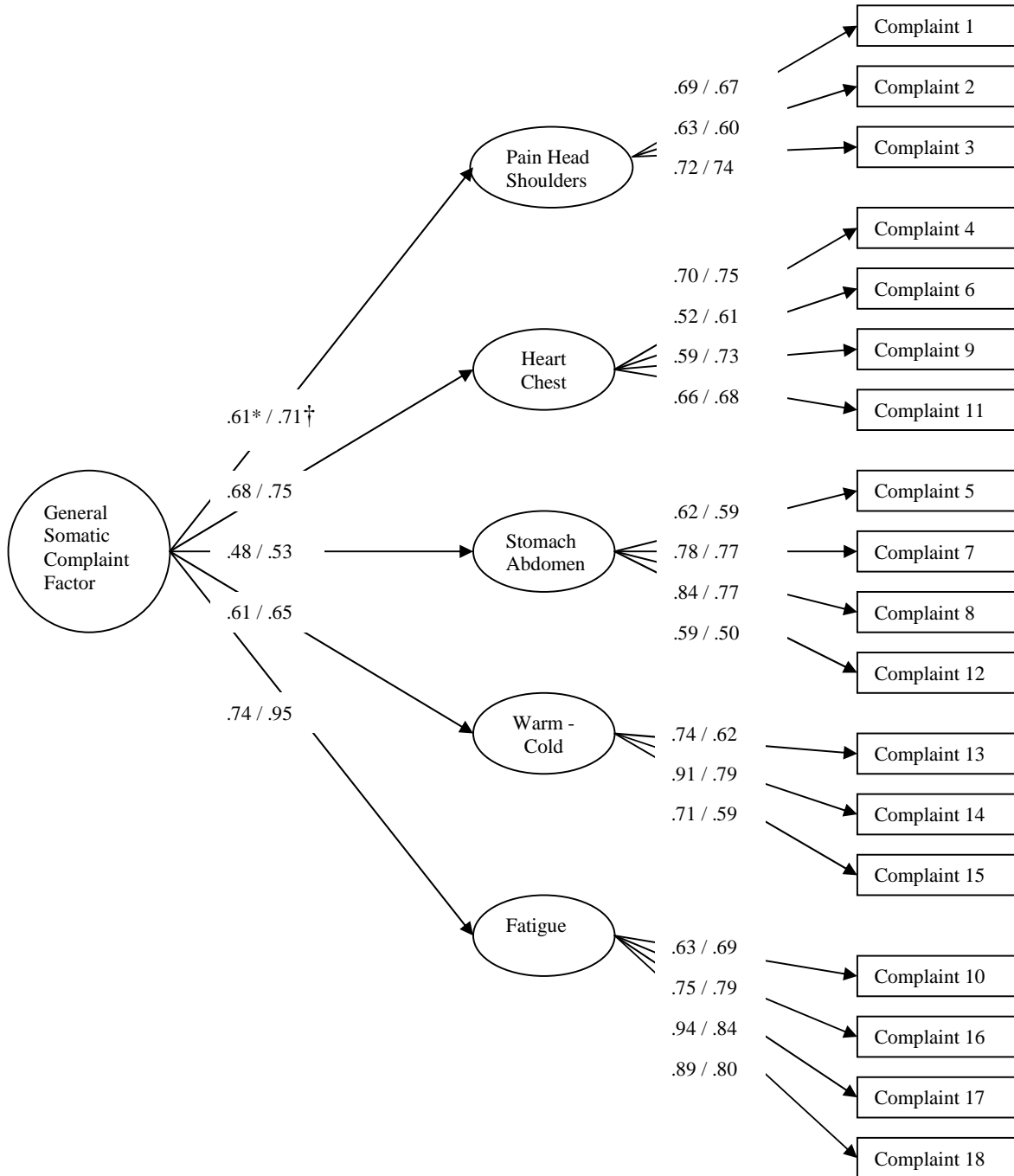
* patients; † non clinical

Table 1

Means and SD's of factors

	Non-clinical sample			Patient sample			Between subject effects*		Net effect†	
	α	Mean	*SD*	α	Mean	*SD*	*F*	Partial eta²	*F*	Partial eta²
Pain	.67	1.73	1.26	.72	2.99	1.69	46.082 §	.088	12.194§	.025
Cardio	.79	.77	.94	.72	1.41	1.23	23.912 ‡	.048	.475	.001
Gastro	.77	1.50	1.12	.78	1.97	1.44	7.048§	.015	.081	.000
Temperature	.71	1.43	1.21	.81	2.03	1.75	8.973‡	.018	.926	.002
Fatigue	.86	2.03	1.27	.87	3.44	1.73	59.300‡	.110	18.930‡	.038

Note. * Between subject effects: group comparisons of factors, controled for age, sex and education level

† Net effect: group comparison of a factor controlled for the other complaint factors, age, sex and education level

§: p<.01

‡ p<.001