Brief assessment of subjective health complaints: Development, validation and population norms of a brief form of the Giessen Subjective Complaints List (GBB-8)

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ABSTRACT

Objective: Although there is no causal relationship to medical morbidity, routine clinical assessment of somatic symptoms aids medical diagnosis and assessment of treatment effectiveness. Regardless of their causes, somatic symptoms indicate suffering, distress, and help-seeking behavior. The aim of the present study was to develop and validate a brief self-report questionnaire to assess somatic symptom strain.

Methods: A brief form of the Giessen Subjective Complaints List (GBB-8) was developed and validated in a large population sample representative of the Federal Republic of Germany ($N = 2008$). Psychometric analyses included confirmation of factor structure, classical item analysis, and measurement invariance tests. The sample furthermore served as a norm group. As indicators of construct validity, correlations with measures of anxiety, depression, alexithymia, and primary care contact were computed.

Results: Psychometric analyses yielded excellent scale properties regarding item characteristics, factor structure, and measurement invariance tests (Cronbach's alpha = 0.88; CFI = 0.980, TLI = 0.965, RMSEA = 0.049) for the second-order four-factor model; strict invariance was confirmed for gender, depression status, and physician contacts; strong invariance was confirmed regarding age and age × gender.

Conclusions: The GBB-8 with its four subscales exhaustion, gastrointestinal complaints, musculoskeletal complaints, and cardiovascular complaints proves to be an economic measure of subjective symptom strain. Psychometric analyses deem it suitable for epidemiological research. The availability of norms makes it a potential everyday tool for general practitioners and psychosomatic clinics.

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1. Introduction

Somatic symptoms are highly prevalent in the general population [1–3] as well as in primary care patients [4,5]. Although they do not bear a one-to-one relationship with medical conditions, they may indicate conditions such as coronary heart disease and cancer. Patients suffering from comparably severe medical conditions report high interindividual variability in the extent of somatic symptoms. As shown by previous work [2], somatic symptoms are more strongly related to symptoms of anxiety and depression than to self-reported general health. This finding reflects the close relationship of somatic symptoms with mental disorders. Assessing somatic symptom stress is of high relevance in the context of epidemiological research, relating it to a reduced health related quality of life and higher utilization of health care services [2,6,7]. So far, comparability of assessment of somatic symptom burden in the general population has been limited by a lack of agreement on the scales used.

In a recent systematic review, Zijlema and colleagues [8] identified 40 self-report somatic symptoms questionnaires and assessed them regarding their usability for large scale population studies. Their criteria included: (1) including the relevant symptoms, (2) a reasonable recall

period, (3) applicability to a variety of populations and regions, (3) validation and establishment, (4) brevity, (5) training needed for use, and (6) availability in multiple languages. The authors recommended the Patient Health Questionnaire-15 [9] and the somatization scale of the Symptom Checklist 90 [10]. While psychometrically sound, both lack the brevity needed in epidemiological research. Surveys involving large representative population samples are very cost-intensive. In this context, the inclusion or exclusion of every single item in a questionnaire has a monetary equivalent and hence needs to be thoroughly justified. Shorter yet psychometrically sound questionnaires not only save money; there are multiple additional benefits. The drop-out rate and rate of missing values is lower in shorter surveys. Furthermore, the risk of participants experiencing boredom or fatigue is reduced, which is especially important in patient samples with restricted attention spans. Finally, a shorter questionnaire that does not include a number of highly similar questions has higher face validity because of its lack of redundancies.

In German speaking countries, a popular and well established questionnaire for the assessment of subjective health complaints is the Giessen Subjective Complaints List (*Gießener Beschwerdebogen - GBB*). Developed in 1978, this self-report questionnaire has been continuously improved. In recent years, the 24-item version GBB-24 became increasingly popular. Hundreds of researchers have used the *GBB* in their studies, for example, to assess physical complaints following medical procedures, social stressors, psychotherapy as well as comparative research regarding symptom strain in minority or marginalized groups. In Germany, the *GBB* has been recommended as part of the basic documentation in psychosomatic medicine and psychotherapy [11].

The GBB-24 consists of 24 health complaints that are rated on a Likert scale ranging from 0 (not at all) to 4 (very much), indicating how troubling each complaint is perceived. The individual complaints can be aggregated on four scales: exhaustion, gastrointestinal complaints, musculoskeletal complaints, cardiovascular complaints. These subscales correspond well to symptom clusters that are commonly reported [8], and closely resemble the structure of a new bodily distress questionnaire recently proposed by Budtz-Lily and colleagues [12].

1.1. Aims of the study

The aim of this study was to develop a brief form of the Giessen Subjective Complaints List that combines high psychometric quality with reasonable brevity. We aimed to maintain the original factor structure by choosing two items from each subscale based on psychometric properties.

2. Methods

The development of the brief form of the GBB was carried out in two phases. Phase 1: The GBB-24 was administered to a representative community sample. Based on the data collected in Phase 1, the items were evaluated and a brief form (GBB-8) was compiled.

Phase 2: In a second general population survey, the newly developed GBB-8 was administered and evaluated. Norms regarding age and gender were computed for the total score as well as for each subscale.

2.1. Procedure: phases 1 and 2

The overall design of the two surveys was similar. Both surveys were conducted by the University of Leipzig and were carried out by the same contractor (an independent institute for opinion and social research [USUMA, Berlin]), using the same procedure. The goals of these surveys were (a) to assess prevalence rates of a variety of relevant physical or mental disorders and related risk behaviors (descriptive epidemiology), (b) to examine causes and conditions of these disorders (analytic epidemiology), and (c) to analyze psychometric properties and provide German norms for clinical-psychological instruments.

2.1.1. Study design and participants

The development of the brief form was carried out based on data from a representative sample of Germany from a 2001 survey by the University of Leipzig ($N = 1979$ aged 18–95 years) and authorized by the Ethics Committee of the Medical Faculty of the University of Leipzig. The newly created brief questionnaire (GBB-8) was analyzed based on an independent survey ($N = 2508$, aged 14–92) that was again representative of Germany with regard to its psychometric parameters. The representative sample of this survey furthermore served as a norming group. Validation of the GBB-8 short scale was based on data from a representative survey carried out by the University of Leipzig in 2013, also authorized by the local Ethics Committee. Demographic information about participants from each phase can be obtained from Table 1. The response rate from phase 1 was 65%, in phase 2, 57.5% of the contacted individuals completed the questionnaire. Participant selection in phase 1 was based on randomly drawing households based on election regions whereas participant selection in phase 2 was based on random route procedures (for more details please refer to [13] for phase 1, and to [14] for phase 2).

2.1.2. Statistical analyses

Criteria for the shortened scale were (1) maintaining the original factor structure and having an equal number of items per factor (as is the case in the original long form), (2) the selected items should be among those with the highest item total-correlation from each subscale, (3) the selected items should have a mean above 0.5 in the general population to avoid floor effects. Original wording was maintained for all items.

2.2. Measures

As the surveys served multiple epidemiological purposes (see Section 2.1), only those measures that were used in the validation process are discussed in this paper. In addition to excessive demographical information (see Table 1), health related behavior, such as the number of sick days, doctor visits, and hospital stays, were assessed. The following measures were used for the validation of the short version in phase 2.

Table 1
Demographic characteristics of the study sample from phase 1 and 2.

	Phase 1 ($N = 1,979$)	Phase 2 ($N = 2,508$)
Age		
Mean (*SD*)	49.16 (16.90)	49.67 (18.30)
Median		50.00
Range	18–95	14–92
Age group, *N* (%)		
14–24 years	203 (9.8)	257 (10.2)
25–34 years	321 (15,5)	360 (14.4)
35–44 years	407 (19.6)	382 (15.2)
45–54 years	349 (16.8)	445 (17.7)
55–64 years	378 (18.2)	454 (18.1)
65–74	279 (13.4)	381 (15.2)
≥75 years	139 (6.7)	229 (9.1)
Living with a partner, *N* (%)	1206 (60.9)	1315 (52.4)
Years of education, *N* (%)		
≤8 years	932 (47.1)	942 (37.6)
9–11 years	779 (39.3)	1023(40.8)
≥12 years	268 (13.6)	455 (18.1)
Employment status		
Pupil/student	76 (3.9)	192 (7.7)
Working (<35 h/week)	132 (6.7)	210 (8.4)
Working (≥35 h/week)	793 (40.1)	996 (39.7)
Unemployed	153 (7.7)	189 (7.6)
Homemaker	179 (9.0)	104 (4.1)
Retired	628 (31.7)	745 (29.7)