Cross-cultural adaptation, reliability, and validity of the German version of the Pain Catastrophizing Scale

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Abstract

Objective: In patients with chronic pain, catastrophizing is a significant determinant of self-rated pain intensity and disability. The Pain Catastrophizing Scale (PCS) was developed to assist with both treatment planning and outcome assessment; to date, no German version has been validated. **Methods:** A cross-cultural adaptation of the PCS into German was carried out, strictly according to recommended methods. A questionnaire booklet containing the PCS, visual analogue scales (numeric rating scale) for pain intensity and general health, the ZUNG self-rating depression scale, the Modified Somatic Perception Questionnaire (MSPQ), the Fear Avoidance Beliefs Questionnaire (FABQ), and the Roland–Morris (RM) disability questionnaire was completed by 111 patients with chronic low back pain (mean age, 49 years), 100 of which also completed it again 7 days later. **Results:** Cronbach's α (internal reliability) for the three subsections of the PCS—*helplessness*, *magnification*, *rumination*—and for the whole questionnaire (PCS_{whole}) were .89, .67, .88, and .92, respectively. The intraclass correlation coefficients of agreement for the reproducibility were .81, .67, .78, and .80, respectively. The PCS_{whole} scores correlated with the other scores as follows: pain intensity $r=.26$, general health $r=-.29$, ZUNG $r=.52$, MSPQ $r=.53$, $FABQ_{activity}$ $r=.51$, $FABQ_{work}$ $r=.61$ and RM $r=.57$. Factor analysis revealed three factors, with an almost identical factor structure to that reported in previous studies. **Conclusion:** The psychometric properties of our German version of the PCS were comparable to those reported in previous studies for the original English version. It represents a valuable tool in the assessment of German-speaking chronic low back pain patients.

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Introduction

Chronic nonspecific musculoskeletal pain is a burden for patients and is associated with high socioeconomic costs [1–3]. The underlying construct of chronic pain is complex, and biopsychosocial factors influence both its development and its maintenance: psychological components, such as unhelpful pain cognitions [4], depression, and fearful or catastrophizing thoughts, can influence perceived pain, quality of life [5], physical performance [4,6], and subjective disability [6]. Catastrophizing is defined as a maladaptive response to pain and is characterized by an experience of heightened pain intensity and difficulty in disengaging from pain [6]; it is an important predictor of pain severity, and of how people cope with pain [7–9], and appears to predict future disability better than do other variables [6]. Some studies have indicated that pain catastrophizing predicts depression or even mediates the reduction in depression, the perception of pain and the behavior in response to cognitive-behavioral or graded-exercise therapy [10–12]. Diminishing catastrophizing thoughts can positively influence coping with pain, and behavioral and cognitive traits [13–15]. In psychological research, it has been shown that pain catastrophizing behavior can influence those involved with the catastrophizer, leading to overcautious treatment decisions [16,17].

For all these reasons, diminishing catastrophizing thoughts should constitute an important ingredient of

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therapy for chronic low back pain (LBP) [11]. The Pain Catastrophizing Scale (PCS) was developed in the English language by Sullivan et al. [18] to screen patients with catastrophizing thoughts and to improve treatment planning, implementation, and outcome assessment. The English version of the PCS has been well investigated and its psychometric properties are good [18–21]. A systematic search of the literature revealed that, to date, no validated German version exists.

The aim of this study was to cross-culturally adapt the English version of the PCS into German and to evaluate its psychometric properties (internal consistency, construct validity, factor structure, reproducibility) in a large group of patients with LBP.

Methods

The Pain Catastrophizing Scale (PCS)

The PCS is a self-administered questionnaire that consists of 13 items to assess the extent of the patient's catastrophizing thoughts and behaviors. It comprises three subscales: *helplessness*, *magnification*, and *rumination*. The questionnaire is completed in relation to the patient's thoughts and feelings when they are in pain. It contains questions concerning, for example, the degree to which the person worries all the time about whether the pain will end, thinks how awful and overwhelming it is, feels afraid that the pain will get worse, continually thinks how badly they want the pain to stop, and so on. Each item is scored on a five-point scale, with higher values representing greater catastrophizing [18]. The scores for the subscales are given by the sum of the corresponding items, and the total score is computed by summation of all items. The PCS score ranges from 0 to 52 points.

Translation and cross-cultural adaptation

Translation

The translation into German and cross-cultural adaptation of the original English version of the PCS into German was carried out in accordance with previously published guidelines [22,23]. Three native German speakers (T-1, T-2, T-3) carried out independent translations of the PCS from English to German. T-1 was a psychologist, T-2 was a professional translator, and T-3 was a linguist. The forward translations were compared with one another and with the original English version. After discussing any discrepancies, the three versions were synthesized to form one common German version.

Back-translation

Two native English speakers with German as their second-language carried out a back-translation of the German version into English. Both back-translators were considered bilingual, according to the definition of Deyo [24]. None of the back-translators were familiar with the subject matter of the questionnaire. A third bilingual person highlighted any conceptual errors or gross inconsistencies in the content of the translated versions, in preparation for the expert committee meeting.

Expert committee

An expert committee was formed consisting of all of the translators and back-translators, one methodologist, one clinical research scientist, and the originator of the English version of the PCS (M.J. Sullivan). The task of this expert committee was to ensure semantic and idiomatic equivalence and experiential and conceptual equivalence (i.e., to address any peculiarities specific to the cultures examined) between the German and English versions of the questionnaire. A "prefinal" version of the German PCS was produced by the expert committee.

Test of the prefinal version

A group of 15 patients with LBP were given the prefinal version of the PCS questionnaire to complete. They were briefly interviewed in order to check what they thought was meant by each question and the chosen response. They were also asked for their general comments on the questionnaire. All the findings were evaluated by the workgroup (to assess face validity), after which two questions were slightly modified to achieve the final German version of the PCS.

Methods to assess the psychometric properties of the German version of the PCS

Questionnaire battery

The patients were asked to complete a questionnaire booklet, which contained the German version of the PCS and a series of other questionnaires or questions intended to assess the PCS's convergent validity (a subcategory of construct validity). From the literature, interrelationships were expected between pain-related catastrophizing and various other variables. For example, previous studies have found low to moderate positive correlations (ranging from .26 to .64) between catastrophizing and depression [18] fear of activity [25], disability [26], and poor coping style [5]. Further, catastrophizers were shown to have three to five times greater emotional distress and higher pain intensity than noncatastrophizers ($P<.01$) [18]. To cover these constructs, we chose the following questionnaires for inclusion in the questionnaire booklet: the ZUNG self-rating depression scale (ZUNG), a screening instrument to assess depression [27,28]; the Modified Somatic Perception Questionnaire (MSPQ) [27,29,30], to assess heightened somatic awareness or anxiety; the Fear Avoidance Beliefs Questionnaire (FABQ), to measure fear avoidance beliefs in relation to work and to physical activity [31,32]; and the Roland–Morris (RM) questionnaire [33,34], to measure disability in everyday activities due to LBP. The latter