



Catastrophizing misinterpretations predict somatoform-related symptoms and new onsets of somatoform disorders



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ABSTRACT

Background: Somatoform disorders are characterized by multiple recurring symptoms that resemble physical illnesses but defy medical explanation. Psychological models suggest that catastrophizing misinterpretations of harmless physical symptoms play a key role. However, the question of whether such biases predict somatoform-related symptoms and the onset of somatoform disorders has not been addressed. Hence, the aim of the present study was to further advance our understanding of the role of catastrophizing misinterpretations in somatoform disorders.

Methods: In the present study, we used data from the Dresden Predictor Study ($N = 1538$), in which an epidemiologic sample of young German women was tested at two time points approximately 17 months apart. Each participant completed a diagnostic interview, an interpretation questionnaire for somatoform and hypochondriacal symptoms, and three measures of such symptomatology: somatization subscale of the Symptom Checklist-90-Revised (SCL-90-R), Whiteley Index (WI), Body Sensations Questionnaire (BSQ).

Results: At follow-up, 33 women were diagnosed with new onsets of lifetime somatoform disorder. Results showed that catastrophizing misinterpretations assessed at baseline were predictive of somatoform-related symptoms at follow-up, i.e., symptoms assessed with the WI and BSQ. Moreover, catastrophizing misinterpretations were predictive of new onsets of somatoform disorders, even after controlling for general threat-related misinterpretations and indices of somatoform symptoms (i.e., SCL-90-R and BSQ).

Conclusions: This is the first prospective, longitudinal study to demonstrate that catastrophizing misinterpretations have incremental validity as predictors of future somatoform-related symptomatology and somatoform disorders.

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1. Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders [1], somatoform disorders are characterized by multiple recurring bodily symptoms that resemble physical illness but cannot be explained medically. Hence, the term ‘medically unexplained symptoms’ is used interchangeably with somatoform disorders [2]. Psychological models of somatoform disorders [3–6] suggest that the interpretation of ambiguous bodily symptoms plays a key role in somatoform disorders. The central assumption is that (harmless) physical symptoms are interpreted in a negative and/or catastrophizing manner, and that implausible and unhelpful explanations are used to account for the bodily sensations [2]. To illustrate, patients suffering from a somatoform disorder might interpret a harmless physical symptom such as dizziness on a hot day as a sign of

severe illness rather than a consequence of the heat. Once patients make such an interpretation, their attention becomes increasingly focused on bodily sensations. As a consequence, they experience and interpret these as more intense and disturbing, which in turn amplifies the perception and negative interpretation of bodily sensations. The repetitive and self-reinforcing nature of this process creates a vicious circle in which (harmless) bodily symptoms are interpreted in an ever-more catastrophizing manner. Following this, the interpretation of ambiguous bodily symptoms in the context of somatoform disorders can be summarized best as ‘catastrophizing misinterpretations’.

Previous research has focused on elucidating the role of catastrophic misinterpretations of bodily symptoms in somatoform disorders. To illustrate, a study [7] investigated whether patients suffering from hypochondriasis differ from control patients in their perceived risk of developing physical illness and being susceptible to physical harm (measured by the Comparative Risk Questionnaire [8,9]). Indeed, results showed that hypochondriacal patients perceived a significantly higher total risk than control patients. Further support for the specific role of catastrophic misinterpretations in somatoform disorders comes from

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findings that college students' levels of hypochondriasis were concurrently predicted by dysfunctional beliefs about physical illness [10].

Indirect approaches to measuring catastrophizing misinterpretations that bypass self-report measures have yielded similar results in the area of pain disorders. For example, research has shown that participants who exhibited catastrophizing interpretations in relation to pain, compared to non-catastrophizers, showed increased attentional interference during a threatening but low-intensity electrocutaneous stimulation [11]. Finally, on a modified Stroop task, individuals scoring high on health anxiety displayed relatively more interference for (i.e., more attention towards) illness-related words than other emotional words compared to individuals scoring low on health anxiety [12]. Related results are reported in the context of catastrophic misinterpretations in somatoform disorders [13–19,6,2].

In conclusion, there is empirical consensus that somatoform disorders are characterized by catastrophic misinterpretations of bodily symptoms. However, it remains unclear whether catastrophic misinterpretations are a consequence or a predictor of somatoform disorders, or even a possible causal risk factor. [20] We know of no longitudinal, population-based study that tested whether catastrophic misinterpretations could predict future somatoform-disorder related problems and new onsets of somatoform disorders. Such an investigation is important from both a theoretical and clinical perspective. Identifying cognitive mechanisms underlying somatoform disorders advances the understanding of their etiology, which could aid the development and refinement of psychological models. Identifying individuals who exhibit catastrophic misinterpretations and therefore might belong to an elevated risk group could aid the prevention of somatoform disorders.

Accordingly, we employed a longitudinal prospective design to test whether catastrophic misinterpretations predict somatoform-related symptomatology and new onsets of somatoform disorders. An epidemiologic, population-based sample of young German women completed an assessment on two occasions. Each assessment included a DSM diagnostic interview, an interpretation questionnaire for somatoform disorders and hypochondriasis, and measures of somatoform-related symptomatology. We predicted first that catastrophic misinterpretations at baseline would predict somatoform-related symptomatology at follow-up, and second that catastrophic misinterpretations at baseline would predict new onsets of somatoform disorders at follow-up.

2. Methods

2.1. Study design and participants

Participants were 1538 female participants of the Dresden Predictor Study (DPS), i.e., residents who were drawn randomly from the population register of Dresden whose age at the time of the initial interview ranged from 18 to 25 years. Full details of the study design, data collection, procedures, etc., have been reported elsewhere [21]. The study involved two assessments approximately 17 months apart ($M = 16.9$ months, $SD = 6$, range = 7–30 months). During both assessments, participants completed a diagnostic interview and self-report questionnaires.

2.2. Diagnostic interview

At both assessments, a trained interviewer administered the “Diagnostisches Interview bei psychischen Störungen – Forschungsversion” (F-DIPS; translation: Diagnostic Interview for Mental Disorders – Research Version) [22] individually to each participant. The F-DIPS assesses DSM-IV Axis I disorders. Baseline interviews assessed participants' symptoms over the past 7 days, and the lifetime and point prevalence of selected DSM mental disorders. Follow-up interviews also assessed 7-day symptoms plus symptoms in the time interval since baseline assessment. The F-DIPS has good reliability (Kappa for anxiety disorders: 0.64,

affective disorders: 0.71, somatoform disorders: 0.66; Yule for substance abuse: 0.85, and for eating disorders: 0.94) [23].

2.3. Somatization problems and hypochondria

Whiteley Index (WI). [24,25] The WI is a 14-item questionnaire assessing possible hypochondriacal concerns such as “Are you afraid of illness?”. Items are rated on a five-point Likert scale (1 = “Not at all” to 5 = “A great deal”). The WI's internal consistency is generally adequate and reliability is good [26].

Symptom Checklist-90-Revised: Somatization subscale (SCL-90-R somatization). [27,28] The SCL-90-R assesses various symptoms of psychopathology, amongst them somatization. The somatization subscale includes 12 items, e.g., “Feeling weak in parts of your body”, and participants use a five-point Likert scale (0 = “Not at all” to 4 = “Extremely”) to rate them. The somatization subscale has sufficient to good internal consistency [29].

Body Sensations Questionnaire (BSQ). [30,31] The BSQ includes 17 items reflecting specific bodily sensations (e.g., heart palpitations, dizziness). Participants are asked to indicate the degree to which they experience anxiety related to these sensations by means of a five-point Likert scale (1 = “Not at all” to 5 = “Extremely”). The BSQ has good to excellent internal consistency and reliability [32].

2.4. Assessment catastrophic misinterpretations and general threat-related misinterpretations

The Interpretation Questionnaire for Somatization and Hypochondriasis [33] was used to assess participants' misinterpretations. It targets two types of misinterpretations: catastrophic misinterpretations related to ambiguous bodily reactions, e.g., “You are in a shop and you feel dizzy” (*catastrophic misinterpretations*), and misinterpretations related to general ambiguous threat situations, e.g., “You smell smoke” (*general threat-related misinterpretations*). The questionnaire includes 18 scenarios, eight for catastrophic misinterpretations and ten for threat-related misinterpretations. Below each scenario, three explanations are provided that vary in their somatoform- or threat-relatedness, respectively. To illustrate, for the first example targeting catastrophic misinterpretations the following explanations are given: 1. My sense of balance is not very good, 2. The air is very bad inside; 3. These are the first signs for a brain tumor. Participants are told, “Please choose the explanation most likely to come to mind if you experienced this situation.”

When a catastrophic misinterpretation was checked for a somatoform scenario or when a threat-related misinterpretation was checked for a threat scenario, the response was coded ‘1’; otherwise it was coded ‘0’. Each participant's score was thus the sum of these codes. The questionnaire's reliability assessed in the present sample is acceptable (Cronbach's $\alpha = .77$).

2.5. Statistical analysis

Statistical analyses were performed using SPSS version 22 (IBM Corp, USA) and were carried out two-tailed on a 5% level. Given our specific hypotheses, we also cautiously interpreted marginally significant results where appropriate. As the present study uses data collected via a large epidemiologic study, all analyses are secondary analyses of an existing data set.

To test our first prediction, that catastrophic misinterpretations assessed at baseline would predict somatoform-related symptomatology at follow-up, we correlated baseline and follow-up data of catastrophizing misinterpretations, threat-related misinterpretations, levels of hypochondriasis (WI), levels of somatization (SCL-90-R somatization subscale), and fear of bodily sensations (BSQ). To test the incremental validity of catastrophizing interpretations as predictors of future problematical outcomes, we conducted three linear hierarchical regressions, one per somatoform-related symptom assessed at follow-up. The first predicted

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