Journal of Anxiety Disorders 28 (2014) 83–87

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

Don't panic: Interpretation bias is predictive of new onsets of panic disorder

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ARTICLE INFO

Article history:
Received 12 May 2013
Received in revised form 2 October 2013
Accepted 26 November 2013

Keywords:
Interpretation bias
Panic disorder
Risk factor
Prospective
Anxiety sensitivity
Fear of bodily sensations

ABSTRACT

Psychological models of panic disorder postulate that interpretation of ambiguous material as threatening is an important maintaining factor for the disorder. However, demonstrations of whether such a bias predicts onset of panic disorder are missing. In the present study, we used data from the Dresden Prediction Study, in which a epidemiologic sample of young German women was tested at two time points approximately 17 months apart, allowing the study of biased interpretation as a potential risk factor. At time point one, participants completed an Interpretation Questionnaire including two types of ambiguous scenarios: panic-related and general threat-related. Analyses revealed that a panic-related interpretation bias predicted onset of panic disorder, even after controlling for two established risk factors: anxiety sensitivity and fear of bodily sensations. This is the first prospective study demonstrating the incremental validity of interpretation bias as a predictor of panic disorder onset.

1. Introduction

A pounding heart, hot flashes, lightheadedness – these could merely be signs that one is falling in love. However, individuals suffering from panic disorder often interpret these bodily sensations as signifying an imminent catastrophe such as a heart attack. Psychological models of panic disorder postulate that such biased interpretations serve to maintain the disorder (e.g., Beck, Emery, & Greenberg, 1985; Clark, 1986; McNally, 1994). In particular, these models postulate that patients suffering from a panic disorder automatically interpret bodily sensations as threatening, inciting a vicious circle that can culminate in panic.

Modifying a measure by Butler and Mathews (1983), McNally and Foa (1987) developed an Interpretation Questionnaire containing ambiguous scenarios that were panic-related or panic-unrelated. They found that patients suffering from agoraphobia and panic interpreted panic-related scenarios as threatening more often than did treated agoraphobia/panic patients and healthy control subjects. Other investigators replicated and extended these findings. Harvey, Richards, Dziadosz, and Swindell (1993) found that relative to social phobia patients and healthy control subjects, panic patients exhibited an interpretation bias specific for the ambiguous panic scenarios, whereas both anxiety groups exhibited a threatening interpretation bias for the panic-unrelated scenarios. Results of Clark et al. (1997) further clarified this issue, demonstrating that patients suffering from panic disorder are more likely to believe their (biased) interpretations compared to other anxiety patients and healthy controls. Finally, Rosmarin, Bourque, Antony, and McCabe (2009) showed that panic patients exhibited a self-referential, not a global interpretation bias for threat.

Extending this work, Teachman, Smith-Janik, and Saporito (2007) studied the role of dysfunctional panic-related interpretations by combining a scenario based assessment with a reaction time (RT) based assessment. The scenario based assessment (Brief Body Sensation Questionnaire, BBSQ; Clark et al., 1997) included ambiguous panic-related scenarios as well as ambiguous scenarios describing generally threatening situations. The RT assessment involved the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), a computerized categorization task using RTs as indices for the strength of memory associations. The IAT results showed that panic patients, compared to healthy controls, had stronger associations of concepts related to the self and panic.[1]

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[1] Please see Teachman et al. (2007) for outcomes of a second IAT assessing different panic-related associations.

0887-6185/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.janxdis.2013.11.008

The BBSIQ results showed a panic-related interpretation bias in patients, but not in healthy subjects.

It remains unclear whether this interpretation bias is a consequence of panic disorder or a predictor, and possible causal risk factor, for the disorder (Kraemer et al., 1997). To (partly) investigate this question, Schneider, Unnewehr, Florin, and Margraf (2002) administered the Anxiety Interpretation Questionnaire for Children (AIQ-C), based on McNally and Foa's Interpretation Questionnaire, to children of panic patients, children of parents with animal phobia, and children of healthy subjects. The AIQ-C included three types of ambiguous scenarios, i.e., descriptions of panic-related and panic-unrelated body sensations as well as animal-related situations. Results demonstrated that children of parents who suffered from a panic disorder exhibited a panic-related interpretation bias, but only after they had been primed with panic-relevant but not with panic-irrelevant material.

Another way to investigate this issue is to study people who are at risk of developing panic disorder. For example, cross-sectional and longitudinal research shows that anxiety sensitivity predicts the onset of panic attacks (e.g., Cox, Endler, Swinson, & Norton, 1991; Schmidt, Lerew, & Jackson, 1997) and anxiety disorders (Schmidt, Zvolensky, & Maner, 2006). Hence, examining panic-related interpretation biases in people scoring high on anxiety sensitivity may provide valuable information. Teachman (2005) found that individuals high on anxiety sensitivity exhibited a panic-related interpretation bias (see also Richards, Austin, & Alvarenga, 2001).

Studies on patients undergoing cognitive behavior therapy (CBT) suggest that reduction in interpretation biases over the course of therapy predicts reduction in symptom severity and panic frequency (Teachman, Marker, & Clerkin, 2010). Similarly, reduction in the strength of automatic panic associations predicts symptom reduction during CBT (Teachman, Marker, & Smith-Janik, 2008). Though longitudinal, these studies could not test whether premorbid interpretation biases predict the onset of panic disorder.

Accordingly, in this study we used a prospective design to test whether a version of McNally and Foa's Interpretation Questionnaire predicted new onset of panic disorder in an epidemiologic study of young German women tested at two time points over an approximately 17-month time interval. We hypothesized that women who interpret ambiguous panic-related scenarios in a threatening manner at baseline are more likely to develop panic disorder at follow-up than are women who have benign interpretations of these scenarios at baseline. In addition, we expect that the panic-related interpretation bias retains its predictive significance, even after controlling for levels of anxiety sensitivity and for fear of bodily sensations, which are two established correlates of panic disorder.

2. Method

2.1. Participants

Participants were 1538 German women who took part in the Dresden Predictor Study (DPS; Trumpf et al., 2010). The study involved two assessments. The baseline assessment occurred between July 1996 and September 1997, and the follow-up assessment occurred about 17-months after that (M = 16.9 months, SD = 6, range = 7–30 months). During both assessments, participants completed a diagnostic interview and a battery of self-report questionnaires including the Interpretation Questionnaire (see Trumpf et al., 2010). This article includes the data of participants who completed the diagnostic interview at both time points.

Participants were female residents drawn randomly from the population register of Dresden whose age the time of the initial interview ranged between 18 and 25 years old. There were 5203 eligible women, and 2068 of them completed the baseline diagnostic interview and 997 of these participants completed only the questionnaires for a response rate of 58.9%. Of those who completed the diagnostic interview, 1538 (74.4%) completed the interview at follow-up.

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; Margraf, Schneider, Soeder, & Becker, 1996). The F-DIPS is an extended version of the Anxiety Disorders Interview Schedule (ADIS-IV-L; Di Nardo, Brown, & Barlow, 1995) that assesses DSM-IV Axis I disorders. Baseline interviews assessed 7-day information and lifetime and point prevalence. Follow-up interviews also assessed 7-day information plus the time interval since baseline (for details about procedure, training of interviewers, and reliability ratings see Trumpf et al., 2010).

2.3. Anxiety Sensitivity Index (ASI; Ehlers, 1986; Reiss, Peterson, Gursky, & McNally, 1986)

The ASI is a 16-item self-report questionnaire measuring fear and concerns regarding anxiety-related symptoms such as "It scares me when my heart beats rapidly". Items are rated on a five-point Likert scale (0 = "Very little" to 4 = "Very much").

2.4. Body Sensations Questionnaire (BSQ; Chambless, Caputo, Bright, & Gallagher, 1984; Ehlers, Margraf, & Chambless, 1993)

The BSQ includes 17 items that reflect specific bodily sensations (e.g., heart palpations, 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").

2.5. Interpretation Questionnaire

The Interpretation Questionnaire consisted of 18 brief scenarios used in earlier studies (Ebert, 1993); 14 were translated from the Interpretation Questionnaire of McNally and Foa (1987). Nine items described panic-related situations (e.g., "You feel discomfort in your chest area. Why?"), and the other nine described general, threat-related situations (e.g., "You smell smoke"). Below each scenario, three interpretations appeared, one threatening. To illustrate, for the first example the following explanations were presented: (1) Something is wrong with your heart, (2) You have a sore muscle, and (3) You have indigestion. Participants had to indicate the interpretation (explanation) must likely to come to mind if they were to experience the sensation in the scenario. Panic-related and general threat-related scenarios were presented alternating, and the order of threatening and non-threatening explanations was randomized across scenarios. All participants received the same order of scenarios.

3. Results

3.1. Participant characteristics

At baseline (i.e., T1), 45 of the 1538 women met criteria for lifetime panic disorder with or without agoraphobia, and 114 women diagnosed with another lifetime psychological disorder served as a comparison group. Within this latter group, 70 suffered from a mood disorder, 19 from a somatoform disorder, 10 from a substance