

# Panic attack symptom dimensions and their relationship to illness characteristics in panic disorder

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## Abstract

Subtyping panic disorder by predominant symptom constellations, such as cognitive or respiratory, has been done for some time, but criteria have varied considerably between studies. We sought to identify statistically symptom dimensions from intensity ratings of 13 DSM-IV panic symptoms in 343 panic patients interviewed with the Anxiety Disorders Interview Schedule for DSM-IV Lifetime Version. We then explored the relation of symptom dimensions to selected illness characteristics. Ratings were submitted to exploratory maximum likelihood factor analysis with a Promax rotation. A three-factor solution was found to account best for the variance. Symptoms loading highest on the first factor were palpitations, shortness of breath, choking, chest pain, and numbness, which define a cardio-respiratory type (with fear of dying). Symptoms loading highest on the second factor were sweating, trembling, nausea, chills/hot flashes, and dizziness, which defines a mixed somatic subtype. Symptoms loading highest on the third factor were feeling of unreality, fear of going crazy, and fear of losing control, which defines a cognitive subtype. Subscales based on these factors showed moderate intercorrelations. In a series of hierarchical multiple regression analyses, the cardio-respiratory subscale was a strong predictor of panic severity, frequency of panic attacks, and agoraphobic avoidance, while the cognitive subscale mostly predicted worry due to panic. In addition, patients with comorbid asthma had higher scores on the cardio-respiratory subscale. We conclude that partly independent panic symptom dimensions can be identified that have different implications for severity and control of panic disorder. © 2005 Elsevier Ltd. All rights reserved.

**Keywords:** Panic disorder; Panic attack; Symptom dimensions; Respiratory subtype; Agoraphobia

## 1. Introduction

Considerable heterogeneity exists in the clinical presentation of panic disorder. DSM-IV criteria require intense distress or fear and 4 out of 13 symptoms to

be present for a diagnosis of panic. However, these symptoms seem to have several sources: the autonomic nervous system (e.g., pounding heart, sweating), the respiratory system (shortness of breath, chest tightness), and the central nervous system/cognitive processing (e.g., depersonalization, fear of losing control, fear of dying). A substantial number of symptoms are suggestive of hypocapnia, such as lightheadedness or dizziness, paresthesias, numbness, and tingling sensations. This has fueled discussions on the role of hyperventilation

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in panic disorder and its relationship with chronic hyperventilation syndrome (Bass, 1997; Bass and Gardner, 1985).

Distinct subtypes of panic attacks in patients with panic disorder have been assumed to be identifiable on the basis of predominant symptom constellations. In particular, two symptom clusters, respiratory and cognitive, have been postulated. The first cluster can be related either to the hyperventilation theory of panic (Ley, 1985) or to the suffocation alarm theory of panic (Klein, 1993). Accordingly, Nardi et al. (2004) observed that patients responding to a voluntary hyperventilation challenge in the laboratory also reported more respiratory symptoms during attacks in their daily life, and Biber and Alkin (1999) found that a respiratory subgroup of patients was more sensitive to CO<sub>2</sub> challenge. Moreover, respiratory subgroups of patients have been shown to have later panic onset (Nardi et al., 2004), longer illness duration, higher cigarette consumption, and increased agoraphobia (as evidenced on the Panic Agoraphobia Score; Biber and Alkin, 1999) have been found in respiratory subgroups. Lack of tolerance for respiratory symptoms in agoraphobic panic patients was observed by Telch et al. (2003). Because a higher prevalence of asthma occurs in panic patients (Carr, 1998), the respiratory symptom constellation may be linked to comorbidity with this disease.

A cognitive symptom cluster would be characterized by few symptoms of autonomic arousal or respiratory dysregulation but a strong feeling of distress or fear together with cognitive symptoms (Clark, 1986; Ley, 1992). However, empirical evidence for a cognitive subtype is scanty. Schmidt et al. (2002) found that patients who reacted with high subjective distress but little physiological activation to an inhaled CO<sub>2</sub> challenge had fewer cognitive symptoms than did patients who showed both high subjective distress and strong physiological activation. Similarly, Forsyth et al. (2000) found little support for a cognitive subtype applying the same classification to the reactions of healthy volunteers to a CO<sub>2</sub> challenge.

Two studies with larger patient samples that attempted to diagnose subtypes of panic by symptom report gave inconsistent results. Briggs et al. (1993) analyzed retrospective symptom reports of patients' last major panic attack using factor and cluster analysis and identified. However, in addition to shortness of breath, choking/smothering sensation, and chest pain/discomfort, the criteria for this subtype included fear of dying, a symptom with obvious relevance to the cognitive domain. Although some symptoms of hyperventilation, tingling and numbness, were included, faintness and dizziness were not. A study by Shioiri et al. (1996) yielded three clusters by factor analysis with a mix of autonomic, respiratory and cognitive symptoms, which was difficult to interpret: cluster 1 included dyspnea,

choking, sweating, nausea, flushes/chills, cluster 2, dizziness, palpitations, trembling/shaking, depersonalization, agoraphobia, and anticipatory anxiety, and cluster 3, fear of dying, fear of going crazy, paresthesias, and chest pain/discomfort.

The low consistency and plausibility of these findings may result from a number of factors. First, dichotomous response formats for symptom report precluded the use of factor analysis as a common strategy to identify dimensions of self-report from an item pool. Second, items from prior versions of the DSM were used, and, as in the case of Shioiri et al. (1996), ratings of agoraphobia and anticipatory anxiety were also included in the item pool. Even smaller variations in item pool such as these can lead to changes in the factorial structure. Third, cultural differences can be expected in symptom patterns. While Shioiri et al. (1996) used a sample of Japanese out patients, the study of Briggs et al. (1993) was based on data from a multinational sample of patients from Europe and in North and South America.

### 1.1. Aims of the study

The goal of our study was twofold: to explore dimensions of panic symptoms in patients with a principal diagnosis of panic disorder with or without agoraphobia and to explore the association of the identified symptom dimensions with specific illness characteristics. We prefer to view symptom constellations as dimensions rather than distinct categories, given the clinical and empirical evidence on varying severity of individual symptoms and their partial intercorrelation. We expected to find evidence for a respiratory dimension of panic symptoms, and possibly also for a cognitive dimension. Based on theory and previous empirical work, we hypothesized that respiratory symptoms would be associated with later panic onset at a older age, longer illness duration, higher cigarette consumption, greater severity of agoraphobic avoidance, and comorbidity with asthma. Because a number of these variables previously associated with respiratory panic symptoms seemed to indicate a greater overall severity of panic, we expected stronger associations of these symptoms with other indicators of severity such as panic frequency, degree of interference with daily life, and amount of distress caused by panic. Cognitive symptoms were expected to be specifically associated with worrying about future attacks.

## 2. Materials and methods

### 2.1. Patients

Our sample was 343 consecutive outpatients presenting to an anxiety disorders specialty clinic for assessment

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