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Research report

Characteristics of initial fearful spells and their associations with DSM-IV panic attacks and panic disorder in adolescents and young adults from the community

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ABSTRACT

Background: Few studies examined characteristics of initial fearful spells (FS) or panic attacks (PA) and their relation to DSM-IV PA and panic disorder (PD).
Methods: A community sample of adolescents and young adults ($N=3021$) was followed up in 4 waves (T0–T3) over up to 10 years. FS, PA, and PD were assessed at each wave using the DSM-IV/M-CIDI. Characteristics of the initial FS/PA including perceived reasons/triggers, appraisal, duration, and behavioral/emotional consequences of the initial FS/PA were retrospectively assessed at T1 and T2 in those reporting the experience of lifetime FS or PA at these waves ($N=363$). Multinomial logistic regressions adjusted for sex and age were used to reveal associations of initial FS/PA characteristics (aggregated data from T1 and T2) with PA only ($N=88$) and PD ($N=62$; lifetime incidences cumulated across assessment waves) (reference group: No PA/PD).
Results: Alcohol consumption, drugs/medication, and physical illness as perceived reasons for the initial FS/PA were associated with PA-only (OR 2.46 – 5.44), while feelings of depression, feelings of anxiety, and having always been anxious/nervous as perceived reasons for the initial FS/PA, appraising the initial FS/PA as terrible and long-term irritating/burdensome, subsequent feelings of depression, subsequent avoidance, and subsequent consumption of medication, alcohol, or drugs were associated with PD (OR 2.64 – 4.15). A longer duration until "feeling okay again" was associated with both PA-only (OR = 1.29 per category) and PD (OR = 1.63).
Limitations: Initial FS/PA characteristics were necessarily assessed retrospectively by self-report only. Thus, our data might be subject to recall/evaluation biases. Aggregated data were used and strictly prospective-longitudinal studies are necessary that replicate our findings.
Conclusion: Assessing initial FS/PA characteristics might be useful to identify individuals at increased risk for more severe panic pathology.

1. Introduction

DSM-IV panic attacks (PA) describe discrete episodes of intense fear or discomfort, in which at least 4 out of 13 panic symptoms develop abruptly and reach a peak within 10 min (American Psychiatric Association, 1994). Fearful spells (FS) are more broadly defined than PA and merely describe the occurrence of distressing spells of anxiety (Eaton et al., 1994). The assessment of FS usually relies on a single question, which (if endorsed by the respondent) prompts the typical set of PA-questions. Thus, FS include "milder" and full-blown PA that are or are not associated with panic symptoms and/or crescendo in symptom onset (Reed and Wittchen, 1998; Wittchen et al., 1998c; Wittchen et al., 2008).

FS, PA and specific panic symptoms are included in various well-established questionnaires for the assessment of mental health, anxiety, and depressive symptoms (Chorpita et al., 2000, 2005; Mathyssek, et al., 2013; Muris et al., 2002, 2004). Moreover, research suggests that FS and PA *per see* are useful risk markers of

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subsequent psychopathology (Asselmann, et al. 2014; Baillie and Rapee, 2005; Batelaan, et al., 2012; Goodwin and Hamilton, 2002a, 2002b; Goodwin and Hamilton, 2001; Goodwin et al., 2004; Kessler et al., 2006; Kinley et al., 2011; Pané-Farré et al., 2013; Pine et al., 1998; Reed and Wittchen, 1998). For instance, using data of the Early Developmental Stages of Psychopathology Study (a prospective-longitudinal community study among adolescents and young adults), Goodwin et al. (2004) found that PA at baseline (T0) predicted incident anxiety, substance use, and somatoform disorders at follow-up (T1 and T2). Using epidemiological data of young people from upstate New York, Pine et al. (1998) showed that FS in adolescence predicted anxiety and depressive disorders in adulthood. Especially FS might be useful for an identification of high-risk individuals for panic pathology, since FS can be reliably and time-economically assessed using a single question (Wittchen et al., 1998a) and, moreover, often have an earlier onset than full-blown PA (Asselmann et al., 2014; Wittchen et al., 1998c).

Sine FS and PA are strongly related to psychopathology, a series of studies investigated risk factors for the initial PA (i.e. first lifetime PA in individuals with no history of panic). For instance, Mathyssek et al. (2012) found that PA onset in adolescence was predicted by social problems (e.g. in peer relations) as well as internalizing and externalizing problems in childhood. Besides, various other characteristics such as female sex, recent stressful life events, use/abuse of alcohol and drugs, prior depression, and temperamental/personality characteristics (e.g. anxiety sensitivity, negative affectivity, and neuroticism) were shown to predict the onset of PA (Ehlers, 1995; Faravelli, 1985; Faravelli and Pallanti, 1989; Hayward et al., 2000; Keyl and Eaton, 1990; Schmidt et al., 2006; Vonkorff et al., 1985; Watanabe et al., 2005). Also, the initial PA in PD patients was found to be frequently associated with stressful life events, physical illness/injury, alcohol/drug, or subsequent avoidance of the location in which the initial PA had occurred (Craske et al., 1990; Shulman et al., 1994).

Moreover, previous research examined associations between (initial) PA characteristics and different outcomes (Breier et al., 1986; Chen et al., 2009; Goodwin and Hamilton, 2002a, 2002b; Goodwin and Hamilton, 2001; Hara et al., 2012; Langs et al., 2000): Using data of the National Comorbidity Survey, Goodwin and Hamilton (2001) investigated associations of four subtypes of initial PA (early, ≤ 20 years, or late, > 20 years, onset PA with or without fear) with different panic symptoms and mental disorders (excluding PD) and found that associations with symptoms (e.g. dyspnea, choking sensation, nausea, derealization, cognitive symptoms) and disorders (specific affective, anxiety, substance use, and psychotic disorders) considerably differed between these groups. Further research revealed that specific characteristics of the initial PA (location, somatic symptoms, inaccurate cognitive appraisal, and non-spontaneous initial PA) in PD patients were associated with agoraphobia, earlier onset and/or longer duration of disorder (Breier et al., 1986; Hara et al., 2012).

However, previous research in this area mostly examined associations between PA characteristics and psychopathological symptoms and disorders, while fewer studies investigated whether characteristics of initial FS or PA are related to severe panic pathology, including DSM-IV full-blown PA and PD. Doing so would help to early identify high-risk groups for panic pathology and further support the development of early, targeted preventive interventions. Thus, using data from a prospective-longitudinal community study in adolescents and young adults, this study aims to examine associations of initial FS/PA characteristics (including perceived reasons/triggers, cognitive appraisal, duration, and perceived behavioral/emotional consequences) with the experience of full-blown PA-only (i.e. PA but not PD, meeting DSM-IV criteria for PA during the same (initial) or a subsequent spell) and development of PD (lifetime incidences cumulated across assessment waves).

2. Materials and methods

2.1. Sample

Data come from the Early Developmental Stages of Psychopathology Study (EDSP), a 10-year prospective-longitudinal study, which assessed mental disorders and associated risk/protective factors in a representative sample of adolescents and young adults. The study included one baseline (T0, 1995, $N=3021$, response rate 70.8%) and three follow-up investigations (T1, 1996/97, only younger cohort, $N=1228$, response rate 88.0%; T2, 1998/99, $N=2548$, response rate 84.3%; T3, 2003, $N=2210$, response rate 73.2%). The sample was randomly drawn from the population registry of the Munich area. Participants were aged 14–24 years at baseline and 21–34 years at last follow-up. At T1, only the younger EDSP cohort (aged 14–17 at baseline) was examined. To emphasize early stages of psychopathology, 14–15-year-olds were sampled at twice the probability of individuals aged 16–21 years, and 22–24-year-olds were sampled at half this probability. The EDSP has been approved by the Ethics Committee of the Medical Faculty of the Technische Universität Dresden (No: EK-13811). All participants 18 years or older provided written informed consent; for respondents younger than 18 years, parental consent was provided. Detailed descriptions of the EDSP study along with information on methods, design, and response rates have been previously presented (Lieb et al., 2000; Wittchen et al., 1998b). The present analyses refer to participants, who reported lifetime FS or PA at T1 and/or T2 and provided information on initial FS/PA characteristics at the same assessment wave ($N=363$). Sample characteristics are presented in Table 1.

2.2. Diagnostic assessment

The Computer-Assisted Personal Interview (CAPI) version of the Munich-Composite International Diagnostic Interview (DIA-X/M-CIDI) (Wittchen and Pfister, 1997) was used at each wave to assess FS, PA, PD, and other mental disorders along with information about onset, duration, and clinical/psychosocial severity. The M-CIDI is an updated version of the World Health Organization's CIDI version 1.2 (World Health Organization, 1990) with additional questions to cover DSM-IV and ICD-10 criteria. The lifetime version was used at baseline, the interval version at each follow-up. (However, each interval version included an additional panic disorder section stem question for the assessment of lifetime FS). Detailed descriptions on psychometric properties of the M-CIDI have been previously presented (Reed, et al., 1998; Wittchen et al., 1998a).

Consistent with previous studies (Eaton et al., 1994; Reed and Wittchen, 1998; Wittchen et al., 1998c; Wittchen et al., 2008), FS are defined as discrete episode of intense fear or discomfort and refer to individuals affirming the M-CIDI PD section stem question ("Have you ever had an attack when all of a sudden you felt frightened, anxious or very uneasy?"). PA additionally require 4 out of 13 symptoms as well as a crescendo in symptom onset, while the diagnosis of PD requires recurrent PA followed by persistent concern about additional PA, worry about implications and consequences of the PA, or a significant change in behavior.

2.3. Assessment of initial FS/PA characteristics

Retrospectively reported characteristics of the initial FS or the initial PA (in cases, in which the initial FS met criteria for DSM-IV PA) were assessed at T1 (only younger cohort) and T2 (younger and older cohort) in participants reporting the experience of lifetime FS/PA at the same assessment wave. Initial FS/PA characteristics referred to the initial FS/PA (i.e. first spell/attack the individual had ever experienced) and were captured using a list with 22 statements/questions (response format yes vs. no). Initial