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PANIC-RELATED FEARS IN PERSONS REPORTING A FAMILY HISTORY OF PANIC DISORDER

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We administered the Body Sensations Questionnaire, Health Hardiness Index, Panic Attack Questionnaire, and the Symptom Checklist 90-R to college students ($n = 71$) who either reported or did not report a family history of panic disorder. Participants who reported a family history of panic disorder reported significantly less perceived control over their health status, a greater fear of bodily arousal, and greater frequency of unexpected panic attacks compared to participants without such a history, although no significant group differences were detected for Symptom Checklist-90-R scales that measure negative emotional experiences. After controlling for personal history of panic, differences between the positive family history group remained only for the control over health measure. We discuss the results as preliminary evidence that certain cognitive responses are overrepresented in self-classified first-degree relatives of persons with panic disorder.

Keywords: Panic; Control; Fear; Panic disorder; Anxiety; Relatives

Panic disorder is characterized by recurrent panic attacks and fear about the possibility of experiencing future panic attacks (American Psychiatric Association (APA), 1994). Researchers are increasingly exploring the possibility that psychological factors that characterize panic disorder also may be risk factors for the disorder. A growing body of evidence, for example, indicates elevated levels of anxiety sensitivity, defined beliefs about the potential negative consequences of anxiety symptoms (Reiss *et al.*, 1986), predicts heightened anxious

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responding and panic attacks (Maller and Reiss, 1992; Schmidt *et al.*, 1997), and discriminates persons with panic disorder from nonclinical controls as well as persons with other anxiety disorders (Taylor *et al.*, 1992). In addition to anxiety sensitivity, other psychological factors, including the perception of limited control over aversive bodily and environmental events (Rapee *et al.*, 1996) and a fear of symptoms associated with heightened somatic activity ("fear of fear"; Chambless *et al.*, 1984) also may be risk factors.

Barlow *et al.* (1996) suggest that a lack of control over aversive events is a critical variable in determining individual susceptibility to panic disorder. Specifically, the unexpected experience of a panic attack may lead to the development of panic disorder in individuals who perceive that they cannot control emotional experiences, bodily reactions, or negative life events that affect their health (Rapee *et al.*, 1996). Persons with panic disorder report significantly less control over their health compared to nonclinical controls and depressed patients (Adler and Price, 1985; Hoffart and Martinsen, 1991) and respond anxiously when unable to control stimuli that elicit somatic arousal (Sanderson *et al.*, 1989; Zvolensky *et al.*, 1998). Taken together, a perceived lack of control over health may increase the chance that physical sensations associated with bodily arousal are experienced as anxiety evoking (Barlow *et al.*, 1996).

Related to anxiety sensitivity, fear about physical symptoms associated with autonomic activity is conceptually distinct from beliefs about the harmful consequences of anxiety-related stimuli (i.e., anxiety sensitivity). In particular, fear of fear is specific to fear of physical sensations associated with arousal whereas anxiety sensitivity relates to fear about the consequences of these symptoms and related stimuli that can evoke anxiety (see McNally, 1994, pp. 115-119). As indexed by the Body Sensations Questionnaire (Chambless *et al.*, 1984), fear of arousal discriminates persons with panic disorder from nonclinical controls as well as persons with other anxiety disorders (Chambless and Gracely, 1989). Furthermore, fear of fear increases anxious responding to biological challenge provocation in nonclinical populations (Schmidt and Telch, 1994).

Despite the association between perceptions of limited control and fear of bodily sensations to panic disorder, it is not clear whether these psychological characteristics are risk factors for the disorder.

If a perceived lack of control over health status and fear of bodily arousal are specific risk factors for panic disorder, and possibly related anxiety pathology, they would be expected to exist at elevated levels prior to the onset of the disorder. Although a longitudinal study is necessary to truly test this hypothesis, such an investigation would be prohibitively costly and time consuming at this preliminary stage of evaluating whether these cognitive characteristics may be risk factors. Nonetheless, it is possible to test a prediction from this conceptualization by evaluating whether data are consistent with a risk factors hypothesis. In particular, one could test whether heightened levels of the specified psychological factors are overrepresented in persons who are at risk for, but do not currently have, panic disorder. Given that panic disorder runs in families (Crowe *et al.*, 1983; Torgersen, 1983), healthy (i.e., persons without panic disorder) first-degree relatives of persons with the disorder are a viable population to test such a hypothesis. Because first-degree relatives are at an increased risk for developing panic disorder (Crowe, 1990), potential risk factors for developing the disorder should be overrepresented in this group and therefore discriminate between persons with and without a positive first-degree history of the disorder.

We investigated whether the specified psychological factors associated with panic disorder exist at elevated levels in first-degree relatives. Specifically, we administered the Body Sensations Questionnaire, Health Hardiness Index-control subscale, a modified version of the Panic Attack Questionnaire, and several scales of the Symptom Checklist-90-R that tap negative emotional experiences to two groups of college students who either reported or did not report a family history of panic disorder. We hypothesized that persons with a first-degree relative with panic disorder would be more likely to report (1) less perceived control over their health status, (2) elevated fear of bodily sensations, and (3) more frequent uncued panic attacks compared to a group without a family history of panic disorder. Because research suggests frequency of anxiety symptoms does not predict anxious response to stimuli that elicit bodily arousal (McNally, 1994, pp. 115-119), we were not expecting elevations on the scales of the Symptom Checklist-90-R in the group with a positive family history of panic disorder. Rather, we included these scales to rule out the alternative hypothesis that elevations on our

hypothesized risk factors were a function of pre-existing negative emotional states.

METHOD

Participants

Undergraduate students in introductory psychology classes ($n = 1677$) were screened for self-reported family history of panic disorder with a brief screening measure. Based on the finding that panic disorder runs in families (Crowe, 1990), healthy individuals reporting a positive first-degree family history of panic disorder were considered to be at an increased risk for developing the disorder. Sixty-two persons reported a positive family history of panic disorder; 18 of these were excluded from the study as a result of inconsistent family history data (i.e., reported positive family history during the first screening but not the second), leaving 44 persons with eligible at-risk status (see Procedure section for screening criteria). Fifty persons reporting no family history of panic disorder and who were roughly matched on the demographic characteristics of the at-risk group served as a comparison group; Fifty, rather than 44 control participants, were recruited to ensure an adequate comparison group sample size in case of no shows or missing data.

The final sample of participants consisted of 31 individuals (16 female and 15 male; $M = 19.3$ yr age, $SD = 1.6$; 90% Caucasian, 5% African American, 3% Asian American, and 2% other) who reported a positive family history of panic disorder and 40 individuals (20 female and 20 male; $M = 19.1$ yr age, $SD = 2.1$; 83% Caucasian, 5% African American, 4% Asian American, and 8% other) who reported no family history of the disorder. Seven additional participants were excluded (three from the at-risk group and four from the control group) because of incomplete questionnaire data. Students received course credit for their participation.

Measures

The screening measure gathered demographic information and listed DSM-IV symptom criteria for panic attacks, panic disorder, and

agoraphobia. To facilitate categorizing of first-degree family members, a brief explanation of each condition accompanied the symptom criteria.* Based on this information, participants were asked to indicate whether any of their biological first-degree relatives have ever met criteria for the listed conditions. We defined biological first-degree relatives for participants as biological parents and full siblings and specifically noted that adoptive relatives, step-parents, and step siblings should not be included. Participants who indicated that they had a first-degree relative who met criteria for both panic attacks and panic disorder were considered to have a positive family history of the disorder. Participants who indicated a first-degree relative had agoraphobia were selected only if the same relative was also reported to meet criteria for panic attacks and panic disorder. Although there are no psychometric data for our screening instrument, other researchers have employed similar methodology to screen for panic and panic disorder (Brown and Cash, 1989).

The Body Sensations Questionnaire (Chambless *et al.*, 1984) is a 17-item self-report measure designed to assess fear of bodily sensations associated with bodily arousal (e.g., heart palpitations) on a 1-5 scale (1 = not frightened to 5 = extremely frightened). Participants are asked to rate the degree to which they fear particular physical sensations associated with heightened somatic activity. Higher scores indicate greater fear of bodily sensations. The BSQ is internally consistent ($\alpha = 0.87$) and has good test-retest reliability (Chambless and Gracely, 1989).

The Health Hardiness Index (Wallston, 1992) is a 31-item self-report measure that measures the construct of health hardiness. The control subscale of the measure assesses how much control an individual has in regard to their health behavior. Participants are asked to rate on five-point scale (1 = completely disagree to 5 = completely agree) how much they agree or disagree with a particular statement of health behavior. This investigation utilized the control subscale to assess the degree of perceived control over health status (e.g., "I have little influence over my health"). Total scores for the control subscale range from 0 to 1, with lower scores indicating less perceived control. The internal consistency of the control subscale of the Health

*The diagnostic criteria and the brief explanation of each condition are available upon request.

Hardiness Index in our sample of participants was good ($\alpha = 0.70$). Additionally, the scale showed a moderate positive correlation with the Symptom Checklist-90-R anxiety subscale ($r = 0.17$), supporting the scales construct validity.

The Symptom Checklist-90-R (Derogatis, 1977) is a 90-item self-report measure designed to gather information regarding the symptom presentation of psychiatric disorders. Individuals rate on a five-point scale how much a particular item describes their behavior in the past week (0 = not at all to 4 = extremely). The Anxiety, Phobic Anxiety, Somatization, and Depression subscales of the Symptom Checklist-90-R were utilized in this investigation to assess frequency of anxiety symptoms and related emotional states.

The Panic Attack Questionnaire (Norton *et al.*, 1986) provides a brief description of panic attacks based on DSM-III-R criteria, followed by items concerning the frequency and intensity of panic symptoms. The Panic Attack Questionnaire was administered in this study to index whether participants had experienced a panic attack. We assessed both full and limited symptom panic attacks. Participants who reported a panic attack in the past 12 months that included at least 4 out of the 13 DSM-III-R panic symptoms, and who rated the intensity of the symptoms endorsed greater than 2 (moderate), were classified as having a panic attack. Participants who reported having a panic attack in the past 12 months that included 3 or less of the 13 DSM-III-R panic symptoms, and who rated the intensity of the endorsed symptoms greater than 2 (moderate), were classified as having a limited symptom panic attack. Participants not meeting either of these criteria were classified as not having had a panic attack.

In an effort to facilitate differential self-diagnosis of panic attacks from other anxiety-related states such as generalized anxiety, the Panic Attack Questionnaire was modified (as listed below) from the original definition to include panic attacks that are not triggered by identifiable environmental cues. Although this modification produces a non-standardized version of the instrument, it is recommended because it helps ascertain the type of panic attacks most common to panic disorder (Brown, 1994).

Panic attacks are sudden, unexpected feelings of anxiety (fear) that arise quickly and without warning (e.g., "out of the blue"). Panic

attacks are characterized by both physiological sensations, such as increased heart rate, dizziness, and breathlessness, and psychological feelings, such as fears of going crazy, dying, and/or losing control.

Procedure

The screening session took place in a mass testing of introductory psychology classes. Participants were asked to consult directly with the listed criteria when completing the screening measure. The principal investigator was available throughout the session to clarify questions concerning DSM-IV criteria.

Participants were contacted by phone. Upon arrival, participants completed a written consent and the questionnaires (randomly ordered), including a second administration of the family history screening measure. The second administration of the screening measure was included to detect participants who were responding inconsistently to the family history questions. Although participants could be inconsistent in their responding for many reasons (e.g., misinterpreted anxiety-related states), participants were dropped from data analysis for inconsistent responding regardless of the reason. An experimenter, who was blind to each participant's family history of panic disorder, was available throughout the testing sessions to answer questions. Following completion of the questionnaires, all participants were debriefed.

RESULTS

One-tailed *t*-tests were used to assess differences between groups for the self-report instruments. Where appropriate, reported α levels were adjusted using the Bonferroni procedure to control for family-wise error rate. Table I lists the means and standard deviations for the self-report comparisons. As hypothesized, persons with a positive family history of panic disorder reported significantly less perceived control over their health status compared to participants without such a family history [$t(69) = -3.1, p < 0.001, \eta^2 = 0.2$]. Also as expected, the positive family history group reported significantly more fear of fear compared to their counterparts [$t(69) = -1.6, p < 0.05, \eta^2 = 0.05$].

TABLE I Between group comparisons for panic-related measures

Variable	Family history of panic disorder	No family history of panic disorder	t value	p
BSQ	2.27 (0.70)	1.97 (0.60)	1.6	< 0.05
HHI-control	0.67 (0.15)	0.80 (0.18)	3.1	< 0.01
SCL-90-R				
Anxiety	49.32 (9.62)	48.38 (9.61)	0.59	> 0.10
Phobic anxiety	43.09 (7.58)	42.12 (6.94)	0.56	> 0.10
Somatization	48.48 (12.59)	45.83 (11.04)	0.38	> 0.10
Depression	54.29 (9.57)	51.90 (8.84)	0.25	> 0.10

Note: Means are listed with standard deviations appearing in parentheses. BSQ: Body Sensations Questionnaire. HHI-control: Health Hardiness Index-control subscale. SCL-90-R: Symptom Checklist-90-Revised.

No significant between group differences were noted for the selected scales from the Symptom Checklist-90-R [all t 's < 1.0; all p 's > 0.1].

Eleven (39%) persons with a reported family history of panic disorder and 3 (8%) without a reported family history of panic disorder reported experiencing at least one panic attack that met full symptom criteria. Three persons from the positive family history group (9%) met limited symptom panic attack criteria whereas none in the persons in the group that did not report a family history did. There was a significant difference between the positive family history group compared to the control group, regardless of whether persons reporting limited symptom panic attacks were removed from data analyses [χ^2 (1, $N = 68$) = 25.1, $p < 0.001$]. Because the selection criteria were designed to assess panic disorder and agoraphobia symptom criteria, it would be highly unlikely that individuals in either group had panic disorder with or without agoraphobia.

Given the possibility that the observed differences for control and fear of fear were a function of personal history of panic in the group reporting a positive family history of panic disorder, supplementary analyses were computed by parceling the positive family history group into two separate groups. The first group was comprised of participants who never had a panic attack ($n = 17$) and the other consisted of persons who met full and limited symptom panic attack criteria ($n = 14$); we collapsed across panic attack criteria given that separating the group by a personal history of panic did not affect the overall results. A significant difference between groups was apparent for perceptions of control [$F(68) = 5.5$, $p > 0.01$] but not fear of fear

[$F(68) = 1.6, p > 0.1$]. Tukey-b post hoc tests revealed that both the positive family history group that met panic attack criteria ($M = 0.64$) and the group with a positive family history without panic attacks ($M = 0.69$) significantly differed from the group reporting no family history of panic disorder ($M = 0.80$) at the $p < 0.05$ level.

DISCUSSION

Our findings suggest specific psychological characteristics associated with panic disorder exist at elevated levels in individuals who report a family history of panic disorder. Specifically, persons reporting a positive family history of panic disorder report significantly less perceived control over their health status, greater fear of bodily sensations, and more unexpected panic attacks compared to persons reporting no family history of the disorder. The groups, however, did not differ on measures of negative emotional states, including frequency of anxiety symptoms. After controlling for personal panic attack experience, group differences were apparent only for control over health status. Taken together, these findings suggest persons with a reported family history of panic disorder can be discriminated from persons reporting no family history of panic disorder on the basis of perceptions of control over health status, while fear of bodily sensations appears to be associated with self-reported personal history of panic in addition to family history of panic disorder.

A longitudinal study of persons with the hypothesized risk factors would be necessary to confirm whether the specified psychological factors increase the risk for developing panic disorder. The self-classification of first-degree panic disorder status implemented in the present study, for example, may shed light more on the perception of first-degree relatives rather than specifying particular family factors *per se*. Further, while our findings are consistent with the risk factors hypothesis, the specific source of variance for this elevation is not clear (e.g., psychological and/or genetic). Nonetheless, given our results, researchers could explore whether other cognitive-based panicogenic factors - suffocation-related fears (Klein, 1993), attentional biases for threat-related information (Ehlers *et al.*, 1988), and interpretative biases (McNally and Foa, 1987) - also discriminate first-degree family

members of persons with panic disorder from persons without such a family history.

A limitation of the present study is that family risk of panic disorder was determined solely by a questionnaire administered to each subject and diagnosis of family members was not independently verified by interview. Using such questionnaires may either overestimate or underestimate the actual history, therefore producing groups that are less pure (Brown, 1994). Andreasen *et al.*, (1977), for example, found that questionnaires tend to underestimate family psychopathology in general, while Brown and Cash (1989) found that rates of panic attacks may be overestimated because of misinterpretations of anxiety-related experiences. We tried to minimize the possibility of such effects by removing participants who were inconsistent in their report of family history and providing detailed descriptions of the phenomena of panic, panic disorder, and agoraphobia to guide participants' reports. A direct interview of family members and/or direct assessment of family history would have helped to further minimize this potential problem (cf. Brown and Deagle, 1992). It seems unlikely, however, that problems in the questionnaire assessment of family history account for the current findings since errors in classifying the participants would have reduced the purity of the groups and therefore attenuated the observed findings. Nevertheless, given that this study did not verify diagnosis in family members, the results presented should be viewed as pilot data that suggest that this may be a fruitful area for additional study.

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