Research Article

HEALTH ANXIETY AND FEAR OF FEAR IN PANIC DISORDER AND AGORAPHOBIA VS. SOCIAL PHOBIA: A PROSPECTIVE LONGITUDINAL STUDY

Myriam Rudaz, Ph.D.,[1,2]* Michelle G. Craske, Ph.D.,[1] Eni S. Becker, Ph.D.,[3] Thomas Ledermann, Ph.D.,[1,2] and Jürgen Margraf, Ph.D.[4]

Background: *This study is aimed to evaluate the role of two vulnerability factors, health anxiety and fear of fear, in the prediction of the onset of panic disorder/agoraphobia (PDA) relative to a comparison anxiety disorder.* **Methods:** *Young women, aged between 18 and 24 years, were investigated at baseline and, 17 months later, using the Anxiety Disorders Interview Schedule-Lifetime and measures of health anxiety and fear of bodily sensations (subscale disease phobia of the Whiteley Index, and total score of the Body Sensations Questionnaire). First, 22 women with current PDA were compared to 81 women with current social phobia and 1,283 controls. Second, 24 women with an incidence of PDA were compared to 60 women with an incidence of social phobia and 1,036 controls.* **Results:** *Multiple logistic regression analyses adjusted for history of physical diseases, somatic symptoms, and other psychological disorders revealed that (a) fear of bodily sensations was elevated for women with PDA vs. controls as well as women with social phobia, and (b) health anxiety (and history of physical diseases) was elevated in women who developed PDA vs. controls and vs. women who developed social phobia.* **Conclusions:** *These results suggest that health anxiety, as well as history of physical diseases, may be specific vulnerability factors for the onset of PDA relative to social phobia. Whereas fear of bodily sensations was not found to be a risk factor for the onset of panic disorder/agoraphobia, it was a specific marker of existing PDA relative to social phobia. Depression and Anxiety 27:404–411, 2010.*

Key words: *health anxiety; fear of fear; panic disorder; agoraphobia; social phobia*

INTRODUCTION

Panic disorder and agoraphobia are severe and persistent psychological disorders that affect up to 4.7% and 1.4%, respectively, of the population at some point in life.[1] Studies have consistently shown that women are more often affected than men and that the disorders frequently emerge in adolescence or early

[1]Department of Psychology, University of California Los Angeles, Los Angeles, California
[2]Department of Psychology, University of Connecticut, Storrs, Connecticut
[3]Department of Psychology, Radboud University of Nijmegen, Nijmegen, Netherlands
[4]Department of Psychology, University of Basel, Basel, Switzerland

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*Correspondence to: Myriam Rudaz, Department of Psychology, University of Connecticut, 406 Babbidge Road, Unit 1020, Storrs, Connecticut 06269-1020. E-mail: myriam.rudaz@uconn.edu

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adulthood.[2,3] Although significant advances have been made in the conceptualization and treatment of panic disorder and agoraphobia, questions regarding etiology remain.

The *cognitive model of panic disorder*[4–6] posits that panic attacks result from the catastrophic misinterpretation of certain bodily and/or mental sensations. The sensations that are misinterpreted are mainly those involved in the normal anxiety responses (e.g., palpitations, dizziness), and also include other bodily or mental sensations (e.g., floaters in the visual field, mental blanks).[7–10] It is assumed that when sensations are perceived as "catastrophic," the subsequent anxiety produces an increase in bodily sensations, thereby resulting in a vicious cycle of sensations, anxiety, and catastrophic thoughts culminating in a panic attack.[11]

There is good evidence for catastrophic misinterpretations of bodily and/or mental sensations to be characteristic of individuals with panic disorder.[12,13] However, the cognitive model of panic disorder[4–6] does not explain why some individuals tend to associate harmless physical and mental sensations with threat, whereas others do not. One explanation offered for these individual differences is the trait-like cognitive characteristic of fear of fear[14] or anxiety sensitivity.[15,16] Fear of fear is a dispositional construct that describes a specific tendency to fearfully respond to one's own anxiety symptoms associated with panic (e.g., palpitations, dizziness) arising from beliefs that these sensations have harmful consequences (e.g., physical illness). Fear of fear is thought to have an important role in the etiology and maintenance of anxiety disorders in general and panic disorder in particular.[17]

In support of the role of fear of fear, a number of studies have demonstrated elevated scores on the Body Sensations Questionnaire (BSQ),[18] which measures fear of bodily sensations as an aspect of fear of fear, in individuals with agoraphobia with panic attacks relative to controls, and to persons with other anxiety disorders.[19] Also, scores on a highly related index, the Anxiety Sensitivity Index (ASI),[20] are elevated in persons with panic disorder and/or agoraphobia relative to healthy controls as well as persons with other anxiety disorders.[20,21] Furthermore, there is some evidence from prospective longitudinal studies for anxiety sensitivity to be a risk factor for the onset of panic attacks[22–25] and for anxiety disorders in general.[17,22,25] However, no studies to date have evaluated the role of fear of fear in predicting the onset of panic disorder/agoraphobia (PDA) compared to another anxiety disorder.

Clearly, the concept of fear of fear is very closely tied with the manifestation of panic disorder/agoraphobia. A broader vulnerability factor that may additionally explain why certain individuals tend to associate harmless physical and mental sensations with threat is a general fear of diseases, as described in the *cognitive model of health anxiety*.[26,27] Specifically, the model states that knowledge and past experiences of illness (in self or others) leads to the formation of specific assumptions about symptoms, disease, and health behaviors. Therefore, assumptions can lead the individual to selectively attend to information, which appears to confirm the idea of serious illness, such as hearing details of illness in a friend of a similar age or new information carried by the mass media. The model proposes that such beliefs may be a constant source of anxiety and/or may be activated by critical incidents (e.g., unfamiliar bodily sensations).

Indirect support for the role of health anxiety in PDA derives from a number of studies indicating heightened occurrence of medical illness (particularly, respiratory disturbance) in the histories of individuals with panic disorder/agoraphobia,[28–30] including reported elevations in parental modeling, and/or reinforcement, of sick role behaviors.[31–35] According to the cognitive model of health anxiety, such experiences would be likely to contribute to health anxiety. More direct evidence derives from several studies that have evaluated the Whiteley Index (WI),[36] a measure of hypochondriacal tendencies or disease phobia, somatic symptoms, and disease conviction. One study,[37] for example, found elevated WI scores in patients with panic disorder, similar to norms reported for patients with hypochondriasis.[38] Likewise, another study[39] reported that WI scores were elevated in both patients with panic disorder and patients with hypochondriasis, compared to nonhypochondriacal subjects from the general population.[40] Also, studies using the Illness Attitude Scale (IAS),[41] which relates to the WI, have consistently shown that patients with agoraphobia report elevated IAS scores comparable to those of patients with hypochondriasis.[42,43] To date, however, no studies have compared health anxiety in individuals diagnosed with PDA relative to other anxiety disorders.

Moreover, studies of health anxiety as a precursor to panic disorder are limited to retrospective reports. One study[44] used a semi-structured interview for eliciting prodromal symptoms,[45] and found that patients suffering from panic disorder with agoraphobia retrospectively reported "hypochondriacal fears and beliefs" before the first panic attack. Similarly, another study[46] conducted the Panic Disorder–Agoraphobia Interview[47] and found that 43.3% of patients with panic disorder with/without agoraphobia remembered that illness phobic symptoms were present prior to their first panic attack.

The purpose of this study was to examine the role of health anxiety and fear of fear in the manifestation of, and particularly the onset of, PDA in a prospective longitudinal data set. Evidence for specificity was sought by comparing the degree to which these two vulnerability factors predicted PDA relative to another phobia group, namely social phobia. Furthermore, the contribution of these vulnerability factors was evaluated above and beyond the influence of history of physical diseases, somatic symptoms, and other psychological disorders. For this purpose, cross-sectional

as well as longitudinal comparisons were made. The cross-sectional groups were women with PDA at baseline, women with social phobia at baseline, and control women without PDA or social phobia at baseline. The longitudinal groups were women with an incidence of PDA, women with an incidence of social phobia, and control women without an incidence of PDA or social phobia over a 17-month interval.

We hypothesized that health anxiety and fear of bodily sensations at baseline would add significant unique variance to the classification of baseline PDA relative to controls and to women with a baseline social phobia, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders. Second, we hypothesized that health anxiety and fear of bodily sensations at baseline would add significant unique variance to the classification of women with an incidence of PDA relative to controls and to women with an incidence of social phobia over a 17-month interval, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders.

METHOD

PARTICIPANTS

The sample was derived from a prospective epidemiological study, the Dresden Prediction Study (DPS),[48,49] designed to study mental disorders. Participants were 1,396 German women, aged between 18 and 24 years at the time of sampling, who completed a diagnostic interview and self-report questionnaires at baseline and follow-up approximately 17 months apart. The baseline interviews were conducted between July 1996 and September 1997, and the follow-up interviews between December 1997 and February 1999. Of the 9,000 addresses received from the registry office, 5,204 women were located and eligible for the study. Of these, a subsample of 1,877 was willing to take part in the diagnostic interview and to complete a package of self-report questionnaires at baseline and 1,396 at the follow-up survey. There were no significant differences in overall psychological disorders at baseline, as measured with the Anxiety Disorders Interview Schedule-Lifetime, between women with complete data at both measurement points and women with missing data at follow-up ($t(802) = -1.40$, $P = .161$).

PROCEDURE AND MEASURES

The women received a letter with detailed information about the DPS and a reply card to confirm participation. Interested women were invited for a diagnostic interview. In addition, a package of questionnaires was administered. Participants willing to join the second diagnostic interview were invited on average 17 months later by another interviewer who was blind to the outcome of the first interview. There were no financial reimbursements for participants.

Diagnostic assessment. The diagnostic assessments at baseline and follow-up were based on the Anxiety Disorders Interview Schedule-Lifetime (ADIS-IV-L),[50] German version (Diagnostisches Interview für Psychische Störungen-Forschungsversion/F-DIPS).[51] The ADIS-IV-L is a structured interview for diagnosing Axis I disorders according to DSM-IV.[52] In the baseline interview, questions were asked about psychological problems during the entire lifetime and during the last 7 days (lifetime and point-prevalence). The follow-up interviews referred to the psychological problems that had occurred since the baseline interview and during the last 7 days (period and point-prevalence). The interrater reliabilities of the F-DIPS (Yule's Y coefficient) in patient samples were 0.69, 0.82, and 1.00 for panic disorder without agoraphobia, panic disorder with agoraphobia, and panic disorder with/without agoraphobia; 0.74 and 0.99 for agoraphobia without panic disorder and 0.61 and 0.98 for social phobia, respectively ($n = 191$;[53] $n = 237$[54]). Retest reliabilities across groups of disorders were between 0.68 and 0.79 (K coefficient) and 0.67 and 1.0 (Yule's coefficient).[54,55] In addition, the interview has demonstrated high validity[56,57] as well as good acceptance in clinical practice and research settings.[58]

Interviewers, training procedure, and supervision. Interviewers were clinical psychologists, physicians, or advanced graduate students of clinical psychology. They underwent intensive 40-hour training on psychological disorders, their rating and the conduct of the interviews, and subsequently attended supervision meetings every 2 weeks. For every single interview, there was a filled in-protocol on paper. All those protocols were proofread by supervisors (i.e., it was checked if all answers were complete and if the answers, the criteria, and the diagnoses were matching). In the supervision, unclear cases were discussed, and if necessary a consensus diagnosis was given. Further, all interviews were taped, and some tapes were checked randomly by supervisors for a formal reliability check.

Whiteley Index. The WI[35,59] is a 14-item self-report questionnaire to measure hypochondriacal tendencies. Items were based on multiple descriptions given by the staff of a hospital for patients considered as hypochondriacal. The answer categories are dichotomous, "yes" or "no." The instrument consists of a total score and three subscales labeled "Disease Phobia" (5 items; e.g., "If a disease is brought to your attention [through radio, television, newspapers, or someone you know] do you worry about getting it yourself?"), "Somatic Symptoms" (4 items; e.g., "Are you bothered by many aches and pains?") and "Disease Conviction" (5 items; "Is it hard for you to believe the doctor when he tells you there is nothing for you to worry about?").[60] In the current sample, the Cronbach α reliabilities were 0.68 and 0.64 for the subscales "Disease Phobia" and "Somatic Symptoms." The subscale "Disease Conviction" showed unacceptable low reliability in the current sample ($\alpha = 0.41$). Thus, only the subscales "Disease Phobia" and "Somatic Symptoms" were used to measure fear of disease in general and the presence of somatic symptoms.

Body Sensations Questionnaire. The BSQ[18,61] is a 17-item self-report questionnaire to measure fear of physical sensations commonly associated with panic (an aspect of the concept fear of fear). Each item is rated on a 5-point scale, ranging from "not frightened or worried" to "extremely frightened," with higher scores indicating greater fear of physical sensations. In the current sample, the BSQ total score was highly internally consistent ($\alpha = 0.91$).

History of physical diseases. The history of physical diseases was assessed within the German version of the ADIS-IV-L.[50,51] At baseline, the interviewer read a list of 14 physical diseases (e.g., heart problems, asthma, and migraine) and asked if they had occurred in the past. The answer categories were "yes" or "no." In this study, a sum score was composed to measure the number of physical diseases.

DEFINITION OF THE GROUPS

The group classification was based on the diagnostic interview. The cross-sectional comparison groups were 22 women with a baseline PDA (B-PDA; based on 7-day point prevalence at baseline), 81 women with a baseline social phobia (B-SOP; based

on 7-day point prevalence at baseline), and 1,283 baseline control women without a baseline PDA or social phobia diagnosis (B-C; based on 7-day point prevalence at baseline). The longitudinal comparison groups were 24 women with an incidence of PDA (I-PDA; no 7-day point prevalence of any psychological disorder at baseline and period prevalence of PDA at follow-up), 60 women with an incidence of social phobia (I-SOP; no 7-day point prevalence of any psychological disorder at baseline and period prevalence of social phobia at follow-up), and 1,036 follow-up control women (I-C; no 7-day point prevalence of any psychological disorder at baseline and no period prevalence of PDA or social phobia at follow-up).

The women of the baseline and incidence phobia groups also could have psychological disorders other than PDA or social phobia. However, women with comorbid PDA and social phobia were excluded from analyses (10 for the cross-sectional and 4 for the longitudinal analyses). Women of the baseline and incidence control groups had either no psychological disorders or psychological disorders other than PDA and social phobia. The baseline and incidence PDA groups were relatively small (despite a large overall sample size). This may be because a community-based sample was used, and we excluded women with comorbid PDA and social phobia diagnoses.

Mean age at baseline was 21 years ($SD = 1.29$–1.93) for all six groups. There were no significant differences among the baseline groups in relationship status, education, or engagement in paid employment. Also, there were no significant differences among the incidence groups in education and engagement in paid employment. However, there were significant differences in relationship status (64.6% of the I-C group, 66.7% of the I-PDA group, and 45% of the I-SOP group were in a romantic relationship, $\chi^2(2) = 9.49$, $P = .009$).

STATISTICAL ANALYSES

The multiple hierarchical logistic regression frameworks was used to compare the groups (a) B-PDA to B-C and B-SOP, and (b) I-PDA to I-C and I-SOP (dependent variables). In order to compare the odds ratios, the predictor variables were z-standardized. In all regression models, the variables "history of physical diseases," WI somatic symptoms, and "other psychological disorders" were entered on the first step as control variables, and the WI disease phobia and the BSQ total were entered as predictors on the second step. The two predictor variables correlated only moderately with each other ($r = 0.34$).

RESULTS

PRELIMINARY ANALYSES

Among the 22 women of the B-PDA group, 14 (63.6%) were diagnosed with agoraphobia without panic, 3 (13.6%) were diagnosed with panic disorder without agoraphobia, and 5 (22.7%) were diagnosed with panic disorder with agoraphobia. Also, among the 24 women of I-PDA group, 13 (54.2%) were diagnosed with agoraphobia without panic, 8 (33.3%) were diagnosed with panic disorder without agoraphobia, and 3 (12.5%) were diagnosed with panic disorder with agoraphobia.

The co-occurring diagnoses for the baseline and incidence phobia groups, and the diagnoses for the baseline and incidence control groups are given in Table 1. There were significant differences among the three baseline groups in the frequency of other anxiety disorders ($\chi^2(2) = 20.90$, $P<.001$), specific phobia ($\chi^2(2) = 11.52$, $P = .003$), generalized anxiety disorder ($\chi^2(2) = 13.74$, $P = .001$), posttraumatic stress disorder ($\chi^2(2) = 10.66$, $P = .005$), affective disorders ($\chi^2(2) = 8.61$, $P = .013$), substance use disorders ($\chi^2(2) = 18.85$, $P<.001$), and eating disorders ($\chi^2(2) = 14.93$, $P = .001$). Also, there were significant differences among the three incidence groups in the frequency of other anxiety disorders ($\chi^2(2) = 32.23$, $P<.001$), specific phobia ($\chi^2(2) = 20.61$, $P<.001$), generalized anxiety disorder ($\chi^2(2) = 13.96$, $P = .001$), affective disorders ($\chi^2(2) = 50.67$, $P<.001$), and somatoform disorders ($\chi^2(2) = 39.61$, $P<.001$).

MAIN ANALYSES

The descriptive statistics and the results of the logistic regression models for the cross-sectional and longitudinal comparisons are given in Table 2.

Cross-sectional. Overall, the control variables and the two predictors explained 9.0% of the variance.

TABLE 1. Co-occurring psychological diagnoses in the baseline and incidence phobia groups and psychological diagnoses in the baseline and incidence control groups

	Baseline C ($n = 1,283$)		Baseline PDA ($n = 22$)		Baseline SOP ($n = 81$)		Incidence C ($n = 1,036$)		Incidence PDA ($n = 24$)		Incidence SOP ($n = 60$)	
Diagnoses	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Other anxiety disorders[a]	128	10.0	4	18.2	21	25.9	99	9.6	7	29.2	18	30.0
SPP	108	8.4	4	18.2	15	18.5	82	7.9	5	20.8	14	23.3
GAD	15	1.2	0	0.0	5	6.2	15	1.4	2	8.3	4	6.7
OCD	9	0.7	0	0.0	2	2.5	7	0.7	1	4.2	1	1.7
PTSD	3	0.2	0	0.0	2	2.5	3	0.3	0	0.0	0	0.0
Affective disorders	18	1.4	2	9.1	2	2.5	52	5.0	8	33.3	12	20.0
Somatoform disorders	13	1.0	0	0.0	0	0.0	11	1.1	4	16.7	2	3.3
Substance use disorders	7	0.5	0	0.0	4	4.9	12	1.2	1	4.2	0	0.0
Eating disorders	9	0.7	0	0.0	4	4.9	7	0.7	0	0.0	0	0.0

C, control (no panic disorder with/without agoraphobia, no agoraphobia without panic, no social phobia); PDA, panic disorder with/without agoraphobia or agoraphobia without panic; SOP, social phobia; SPP, specific phobia; GAD, generalized anxiety disorder; OCD, obsessive–compulsive disorder; PTSD, posttraumatic stress disorder.

[a]Include SPP, GAD, OCD, and PTSD.

TABLE 2. Multiple logistic regression analyses comparing the panic disorder/agoraphobia group to the control group and the social phobia group on the cross-sectional and longitudinal level

	Baseline C (n = 1,283)		Baseline PDA (n = 22)		Baseline SOP (n = 81)		Baseline PDA vs. Baseline C[a]		Baseline PDA vs. Baseline SOP[a]		
Cross-sectional	*M*	*SD*	*M*	*SD*	*M*	*SD*	OR	95% CI	OR	95% CI	R^2
Step 1											0.05
History of physical diseases	1.17	1.10	1.32	1.17	1.35	1.33	1.02	0.66–1.58	0.93	0.57–1.50	
WI somatic symptoms	0.25	0.67	0.53	1.07	0.21	0.54	0.98	0.71–1.35	1.23	0.81–1.87	
Other psychological disorders	0.12	0.33	0.27	0.46	0.36	0.48	1.28	0.91–1.80	0.80	0.55–1.16	
Step 2											0.09
WI disease phobia	0.99	1.25	2.06	1.42	1.19	1.46	1.54*	1.04–2.26	1.33	0.85–2.08	
BSQ total	30.71	10.38	40.64	11.90	32.15	10.86	1.90**	1.28–2.84	1.77*	1.12–2.78	
	Incidence C (n = 1,036)		Incidence PDA (n = 24)		Incidence SOP (n = 60)		Incidence PDA vs. Incidence C[a]		Incidence PDA vs. Incidence SOP[a]		
Longitudinal	*M*	*SD*	*M*	*SD*	*M*	*SD*	OR	95% CI	OR	95% CI	R^2
Step 1											0.12
History of physical diseases	1.11	1.09	1.83	1.43	1.14	1.17	1.48*	1.02–2.16	1.62*	1.04–2.55	
WI somatic symptoms	0.20	0.60	0.64	1.29	0.44	0.86	1.11	0.81–1.53	0.81	0.56–1.18	
Other psychological disorders	0.16	0.37	0.67	0.48	0.43	0.50	2.47***	1.69–3.63	1.33	0.86–2.06	
Step 2											0.13
WI disease phobia	0.92	1.20	1.92	1.64	1.00	1.19	1.55*	1.05–2.29	1.65*	1.03–2.66	
BSQ total	30.48	10.32	34.04	9.98	29.85	10.92	0.93	0.61–1.42	1.17	0.71–1.93	

C, control (no panic disorder with/without agoraphobia, no agoraphobia without panic, no social phobia); PDA, panic disorder with/without agoraphobia or agoraphobia without panic; SOP, social phobia. All predictors were z-transformed; WI, Whiteley Index; BSQ, Body Sensations Questionnaire. OR, odds ratio; CI, confidence interval. Possible ranges: History of physical diseases 0–14, WI somatic symptoms 0–4, Other psychological disorders 0–1, WI disease phobia 0–5, BSQ total 17–85. R^2, Pseudo R^2 of Negelkerke.
*P<.05; **P<.01; ***P<.001 (2-tailed).
[a]Reference group.

The first comparison between B-PDA and B-C women yielded significant effects for the variables WI disease phobia and BSQ total. Of these two variables, the BSQ total accounted for most of the variance. The results showed that women with a current PDA had more fear of disease and fear of bodily sensations than control women.

The second comparison between the two baseline phobia groups revealed a significant effect for the variable BSQ total. The result indicated that women with a current PDA had more fear of bodily sensations than women with a current social phobia.

The findings were partially supportive of our first hypothesis, showing that fear of disease and fear of bodily sensations added unique variance to the classification of B-PDA relative to controls, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders. However, only fear of bodily sensations added unique variance to the classification of B-PDA relative to baseline social phobia, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders.

Longitudinal. Overall, the control variables and the two predictors explained 13.0% of the variance. The first comparison between I-PDA and I-C women revealed significant effects for the variables history of physical diseases, other psychological disorders, and WI disease phobia. Of these three, the variable other psychological disorders accounted for most of the variance. The results showed that women who developed PDA during the study also developed more "other psychological disorders" during the study, and had more physical diseases in their history and more fear of disease at study entry compared to control women.

The second comparison between the two incidence phobia groups yielded significant effects for the variables history of physical diseases and WI disease phobia. The results indicated that women who developed PDA during the study had more physical diseases in their history and more fear of disease at study entry compared to women who developed social phobia during the study.

The results were partially supportive of our second hypothesis, showing that the vulnerability of health anxiety, namely fear of disease, added significant unique variance to the I-PDA relative to controls as well as relative to the incidence of social phobia, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders. In addition, the history of physical diseases

predicted the onset of PDA relative to controls as well as relative to social phobia.

ADDITIONAL ANALYSES

Because of the significant differences in relationship status between the incidence groups (see above), we entered the variable romantic partner (i.e., relationship status) as an additional covariate in the logistic regression models. This variable was not a significant predictor, and the variables history of physical diseases and WI disease phobia remained significant predictors for I-PDA relative to I-C, as well as relative to I-SOP.

In addition, the results remained the same when using healthy women as a control group for the cross-sectional and longitudinal analyses (Baseline Healthy: $n = 1{,}124$, Follow-up Healthy: $n = 870$). However, the difference between the I-PDA and the follow-up healthy group was even stronger for the WI disease phobia relative to the results of the model with the C group (OR = 1.69, 95% CI = 1.14–2.50, $P < .01$). Also, the results of the main analyses remained the same when excluding women with a subclinical PDA or social phobia (i.e., all diagnostic criteria were met except one) from the C group (Baseline C –58 subclinical cases, $n = 1{,}225$; and Incidence C –12 subclinical cases, $n = 1{,}024$).

Further, we controlled for individual categories of comorbid disorders (other anxiety disorders, affective disorders, somatoform disorders, substance use disorders, and eating disorders) that were significant on the basis of the χ^2 statistics (see Table 1). The results remained the same for the cross-sectional analyses. The results also remained the same for the longitudinal analyses with the exception of somatoform disorders. With those disorders as a covariate, which was not significant, the effect of WI disease phobia in predicting I-PDA vs. I-SOP changed from significant to marginally significant (OR = 1.59, 90% CI = 1.06–2.39, $P < .10$).

DISCUSSION

The current study aimed to evaluate cross-sectionally and prospectively the degree to which two vulnerability factors, health anxiety and fear of fear, predict the manifestation and onset of panic disorder/agoraphobia, and the extent to which these effects were specific to PDA relative to a comparison disorder of social phobia. Young women were followed over 17 months (baseline and follow-up) using a structured diagnostic interview and questionnaires. Based on the cognitive models,[4–6,26,27] it was hypothesized that both fear of disease (or health anxiety) and fear of bodily sensations linked to anxiety (an aspect of fear of fear) would add significant unique variance to the classification of PDA relative to controls and social phobia, beyond the variance attributable to history of physical diseases, somatic symptoms, and other psychological disorders.

Consistent with our hypothesis, women with a current PDA reported more fear of disease and more fear of bodily sensations linked to anxiety than controls. Also, the fear of bodily sensations differentiated women with a current PDA from women with a current social phobia, suggesting that, whereas fear of disease is a more general marker of present anxiety disorders, fear of bodily sensations is a more sensitive marker of PDA in particular. This finding is in line with earlier studies on fear of fear in panic disorder or agoraphobia vs. social phobia.[19–21] Even though fear of disease did not differentiate the two baseline phobia groups, it added unique variance to the classification of women who developed PDA relative to control women, as well as relative to women with an incidence of social phobia. This finding suggests that fear of disease, or health anxiety, may play a specific causal role in the onset of PDA. Furthermore, the history of physical diseases was another specific predictor of PDA relative to social phobia. In contrast to hypotheses, fear of bodily sensations did not contribute to the differentiation between those who developed PDA and either controls or those who developed social phobia.

Neither women's relationship status nor individual categories of comorbid disorders (with the exception of somatoform disorders) changed the pattern of results. Also, when conducting the analyses using two different control groups (healthy women, women without subclinical PDA, or social phobia diagnoses) the results of the main analyses did not change.

Hence, the longitudinal data are consistent with the cognitive model of health anxiety,[26,27] indicating that fear of disease acts as a contributor to the development of PDA. The current findings fail to support the role of fear of bodily sensations as a specific risk factor for PDA. However, our measure of fear of fear, BSQ, only measures fear of anxiety-related physical sensations; different results may be found using the ASI that is a broader measure, tapping psychological concerns (i.e., worry about going mad) and social concerns (i.e., worry about appearance) in addition to physical concerns. On the other hand, the amount of variance in panic attacks and anxiety disorders in general, which is explained by ASI in prior prospective studies, is relatively small.[22–25] The current pattern of results does imply that once PDA manifests, fear of bodily sensations linked to anxiety may be intensified and become central to the manifestation of PDA, at least relative to social anxiety. In summary, the present results suggest that elevated health anxiety or hypochondriacal tendencies,[37,38] as well as history of physical diseases,[28,29,30] contribute to the development of PDA relative to social phobia in women over a 17-month interval of time. Fear of bodily sensations is not a specific predictor of PDA but is a specific marker of PDA once manifest, relative to social phobia.

The generalization of these results must be qualified by several limitations. First, our baseline and incidence PDA groups combined those diagnosed with panic

disorder and agoraphobia. Specifically, most were diagnosed with agoraphobia without panic. It is conceivable that different cognitive patterns exist for panic disorder vs. agoraphobia. A recent study found that anxiety sensitivity and other anxiety-prone cognitive styles did not discriminate panic disorder with agoraphobia from panic disorder without agoraphobia,[62] although they did not compare panic disorder to agoraphobia without panic. Thus, further studies are needed to evaluate these subgroups separately. Second, this study analyzed cognitive predictors for the onset of PDA over the 17-month interval under investigation. It remains unclear, however, how important they are for the first onset of PDA because women may have had these disorders before baseline. Here again, further research with larger sample sizes is needed. Third, this study did not directly measure the misinterpretation of bodily and/or mental sensations as outlined in the cognitive model of panic disorder,[4–6] but rather assessed fear of bodily sensations. Thus, the specific role of catastrophic misappraisals warrants further investigation. Fourth, our sample was restricted to a community, nontreatment seeking sample of young women aged between 18 and 24 years only, all of whom lived in Germany, raising concerns about generalizability in other samples (e.g., men, other age groups, and cultures). Finally, the period diagnoses were based on retrospective recall, which may be biased.

In conclusion, our findings suggest that health anxiety, and history of physical diseases, may contribute to the onset of PDA relative to controls as well as relative to social phobia. Moreover, once PDA is present, fear of bodily sensations becomes an especially defining feature and may play a specific role in the manifestation of PDA compared to controls and social phobia. These findings may lead to a shift in the thinking of the etiology and pathogenesis of panic disorder and agoraphobia.

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