



## Heart-focused and general illness fears in relation to parental medical history and separation experiences

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**Summary**—Disease fears, such as excessive heart-focused anxiety (HFA), are quite common, and yet their origin is only poorly understood. Explanatory models of HFA have emphasized observational learning, parental cardiac disease, and the effects of separation experiences as key ethological factors. The purpose of this study was: (a) to provide descriptive information on the prevalence of HFA in an unselect sample of younger adults; and (b) to investigate the relation of HFA and general illness fears to parental medical history and different types of separation experiences. 421 undergraduate students completed the Cardiac Anxiety Questionnaire (CAQ), Illness Attitude Scales, Parental Medical History Questionnaire, and Separation Anxiety and Experiences Questionnaire. Approximately 2–3% of our sample reported excessive HFA, and both illness attitudes and parental cardiac disease predicted 23% of total CAQ variance. Subjects with high CAQ scores reported more parental cardiac and other medical problems than low HFA subjects. Although high and low HFA subjects did not differ in terms of number of personal intimate relationships that ended in separation, subjects with separated parents reported more HFA than persons with nonseparated parents. We discuss the relevance of these findings for our understanding of HFA. Copyright © 1996 Elsevier Science Ltd

### INTRODUCTION

Excessive illness fear in the absence of physical pathology is a common problem in the general population. In a large-scale representative survey of the general population, Agras, Sylvester and Oliveau (1969) found that 16.5% of respondents suffered from illness-related fears and 3.1% met criteria for an illness phobia. Moreover, a significant portion of patients present to general practitioners with physical complaints but no demonstrable physical pathology. For instance, a study by Pilowsky, Smith and Katsikitis (1986) found that of 95 unselected patients visiting a general practitioner and presenting with somatic complaints, 41% were found to have no somatic pathology. Although many of these patients will be satisfied with negative medical examination results, and some reassurance to that effect, a significant subgroup will anxiously continue to ruminate about the possibility of suffering from a yet undiagnosed physical disease. They are likely to demand more physical examinations, specialist referrals, undergo costly laboratory tests, and in some cases, even surgical examinations and procedures (Warwick & Salkovskis, 1990).

One such patient group are persons with excessive heart-focused anxiety (HFA). It has been estimated that at least 20% of patients presenting to emergency rooms and cardiology units do not suffer from coronary artery disease but from anxiety-related symptoms at an annual cost of \$315 million to the health care system (Raymond, 1989). Although some of these patients are ultimately diagnosed with panic disorder (Beitman, Basha, Flaker, DeRosear, Mukerji, Trombka & Katon, 1987), others appear to suffer from a more specific disease phobia with cardio-respiratory manifestations (Bass, 1990) or 'cardiophobia' (Eifert, 1991, 1992). These patients typically report chest pain and/or heart palpitations accompanied by fears of having a heart attack, undue worry about heart-related sensations, and avoid activities believed to elicit 'cardiac' symptoms (cf. Eifert, Hodson, Tracey, Seville & Gunawardane, 1996). Despite numerous negative medical test results, patients frequently continue to believe they suffer from a heart problem, consult physicians for their symptoms, and experience chronic levels of functional incapacity and long-term unemployment (Ockene, Shay, Alpert, Weiner & Dalen, 1980; Potts & Bass, 1993).

Despite the high prevalence and problems caused by excessive disease fears, persons experiencing anxiety problems that present primarily with physical symptoms and concern for their health have received only minimal research attention. As a consequence, an adequate understanding of such fears and their origin is still lacking. Eifert (1992) presented a model for the understanding of excessive HFA that incorporates a number of psychological and physiological vulnerability factors (e.g. hyperventilatory breathing, chest wall muscle tension). One group of psychological factors deals with the effects of experiences of separation, and loss of parents and close partners. For instance, Gittelman-Klein and Klein (1984) have related childhood separation experiences to adult anxiety disorders and postulate that separation anxiety has a biological function as an innate alarm mechanism that can activate panic in children, and later in adults, upon separation from closely attached others. Results from our previous study (Eifert *et al.*, 1996) indicate that experiences of separation, loss, and abandonment were more frequently reported by persons with HFA than by cardiac inpatients and normal controls. It is important to note that this relation was found when we combined the effects of different types of separation rather than focusing on the more narrowly defined problem of childhood separation anxiety disorder—as is mostly done in this field of study (e.g. Lipsitz, Martin, Mannuzza, Chapman, Liebowitz, Klein & Fyer, 1994).

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Our previous study (Eifert *et al.*, 1996) also found that direct exposure to heart disease (and its fatal effects) and modeling of heart-focused illness behavior was more prominent in healthy cardiophobic persons than in cardiac inpatients and normal controls. Moreover, we observed that cardiophobic persons were considerably younger than patients with heart disease (cf. Katon, Hall, Russo, Cormier, Hollifield, Vitaliano & Beitman, 1988). Yet we have no knowledge about the prevalence of such fears in younger adults.

In sum, the purpose of this study was: (a) to provide descriptive information on the prevalence of HFA and general (hypochondriacal) illness fears in younger adults; (b) to determine the relation between specific HFA and more general illness fears; and (c) to investigate the relation of heart-focused and general illness concerns to parental medical history and different types of separation experiences.

## METHOD

### *Subjects*

Our sample comprised 421 undergraduate students (215 females, 207 males; age  $M = 19.6$ ,  $SD = 2.0$ ) who were enrolled in introductory psychology courses at West Virginia University and who volunteered to participate for course credit.

### *Measures*

The Cardiac Anxiety Questionnaire (CAQ; Eifert, Seville, Brown, Anthony & Barlow, 1992) is a 16-item scale designed to assess key features of HFA (Eifert, 1992). Subjects indicate for each item on a 5-point Likert scale how frequently the behavior typically occurs (0 = never to 4 = always). The 4-factor analytically derived subscales of the CAQ were used in the present study: (a) Cardiac Disease Conviction/Heart Awareness (e.g. belief that one has heart disease and awareness of heart functioning); (b) Cardioprotective Behavior (e.g. avoidance of physical exertion and overexcitement); (c) Medical Help Seeking (e.g. consulting physicians and taking medication); and (d) Hyperarousal (e.g. difficulty relaxing, tension). An average item score is obtained for each factor by summing across items and dividing by the number of items endorsed for each factor. In addition, a total average score is calculated by summing across all items and dividing by 16. The scales have been shown to have adequate internal consistency (Cronbach alphas of 0.87, 0.79, 0.84, and 0.73 respectively; cf. Eifert *et al.*, 1992).

The Illness Attitude Scales (IAS; Kellner, 1981; Kellner, Abbott, Winslow & Pathak, 1987) is a 9-scale measure of a variety of abnormal illness fears, behaviors, and beliefs. Each scale consists of 3 items, which Ss rate on a 5-point Likert scale with response anchors ranging from no to most of the time. The Parental Medical History Questionnaire was constructed for this study and requires Ss to indicate whether their mother and/or father had any of the following medical disorders: asthma, angina, diabetes, hypertension, heart attack, coronary artery disease, arteriosclerosis, kidney disease (other than kidney stones), irregular heart beat, migraine headaches, and stroke. The Separation Anxiety and Experiences Questionnaire consists of 9 items and was specifically designed for the purpose of this study. Subjects are asked to report how many and what type of separations from partners and parents they have experienced. Subjects also rate their subjective level of distress (SUDS) associated with each separation experience on a 100 mm line anchored from not at all distressed to extremely distressed.

## RESULTS

### *Gender differences and descriptive information*

Means and standard deviations of responses to the CAQ and IAS are presented in Table 1. Although ANOVAs revealed no differences between responses of males and females on the CAQ,  $F(3,418) = 0.08$ , NS, significant gender differences emerged showing greater illness concerns reported by females compared with males on the following IAS subscales: worry about illness,  $F(1,419) = 13.2$ ,  $P < 0.0003$ ; concern about pain,  $F(1,419) = 5.3$ ,  $P < 0.02$ ; thanatophobia,  $F(1,420) = 19.6$ ,  $P < 0.001$ ; treatment experience,  $F(1,418) = 24.2$ ,  $P < 0.0001$ ; effects of symptoms,  $F(1,420) = 10.3$ ,  $P < 0.001$ ; and health habits,  $F(1,420) = 3.7$ ,  $P < 0.051$ .

In terms of key features of HFA (cf. Eifert, 1992; Eifert *et al.*, 1996), we found that 2.3% of Ss 'often' worried they have heart disease or a heart condition (although they had never been diagnosed with cardiac disease). Moreover, 5.7% of Ss often wondered whether they have a heart problem when they notice chest pain or heart pounding, and 6.6% often thought their pulse was too fast.

In addition, 2.8% of Ss reported often being frightened by chest pain or heart pounding, 2.7% reported experiencing fear when they notice chest pain or heart pounding, and 1.9% reported specific fear of having a heart attack when they notice their heart pounding. In regard to general illness fears, we found on the IAS that 26.5% of Ss worried about their health 'often' or 'most of the time' and 17.3% worried that they may get a serious illness in the future.

### *Relations of heart-focused and general illness fears to parental medical problems*

Correlations between HFA (CAQ) and general illness beliefs and behaviors (IAS) are presented in Table 1. Although all correlations between CAQ Total and IAS scores are positive and statistically significant, they are only of moderate magnitude. Table 1 also shows that reports of parental cardiac disease were positively correlated with CAQ Total scores and two CAQ subscales (disease conviction and hyperarousal) but not with any of the IAS subscales. Reports of total number of parental illnesses were also positively correlated with the same CAQ scales and with IAS worry about illness but not with any of the other IAS subscales.

To ascertain whether CAQ Total scores can be predicted by IAS scores and reports of parental cardiac disease, we conducted a stepwise multiple regression analysis using IAS subscale scores and reports of parental cardiac disease as predictors. We required that a variable lead to an increase in variance accounted for ( $R^2$ ) of 1% or greater and be significant at  $P = 0.001$ . The final equation contained 5 variables and yielded a multiple  $R$  of 0.48 [ $F(5,410) = 24.80$ ,  $P < 0.0001$ ] accounting for 23.3% of CAQ Total variance. Specifically, IAS worry about symptoms accounted for 11.7% of variance with IAS effects of symptoms adding 5.6%, parental cardiac disease adding 3.2%, IAS health habits adding 1.8%, and

Table 1. Means (and standard deviations) of Cardiac Anxiety Questionnaire (CAQ) and Illness Attitude Scales (IAS) scores and correlations between CAQ and IAS scores and parental illness history

	M	(SD)	CAQ Total	CAQ-DC	CAQ-CB	CAQ-MHS	Correlations			Parental total illness
							CAQ-HA	Parental cardiac illness	Parental cardiac illness	
<i>CAQ Total (0-4)</i>	1.1	(0.5)	—	—	—	—	—	—	—	<b>0.18</b>
Disease conviction (DC)	1.2	(0.6)	—	—	—	—	—	—	—	<b>0.17</b>
Cardioprotective behavior (CB)	1.4	(0.7)	—	—	—	—	—	—	—	0.02
Medical help seeking (MHS)	0.3	(0.7)	—	—	—	—	—	—	—	0.07
Hyperarousal/tension (HA)	1.3	(0.9)	—	—	—	—	—	—	—	<b>0.19</b>
<i>IAS Subscales</i>										
Worry about illness	5.7	(2.6)	<b>0.35</b>	<b>0.30</b>	0.11	0.14	<b>0.24</b>	0.10	0.10	<b>0.18</b>
Health habits	5.9	(2.7)	<b>0.21</b>	0.10	<b>0.26</b>	0.10	0.07	0.02	0.02	0.04
Health concern	4.3	(2.5)	<b>0.29</b>	<b>0.21</b>	<b>0.17</b>	<b>0.18</b>	0.15	0.06	0.06	0.08
Thanatophobia	3.5	(2.9)	<b>0.18</b>	0.15	0.02	0.05	<b>0.20</b>	0.08	0.08	0.10
Treatment experiences	3.9	(2.1)	<b>0.18</b>	0.05	0.04	<b>0.25</b>	<b>0.18</b>	0.08	0.08	0.10
Bodily preoccupation	2.4	(2.0)	<b>0.32</b>	<b>0.26</b>	0.09	0.15	<b>0.26</b>	0.07	0.07	0.07
Effects of symptoms	2.2	(2.5)	<b>0.34</b>	<b>0.19</b>	<b>0.17</b>	0.16	<b>0.31</b>	0.03	0.03	-0.06
Disease phobia	1.4	(1.9)	<b>0.22</b>	<b>0.24</b>	0.00	0.08	<b>0.19</b>	0.12	0.12	0.11
Hypochondriacal beliefs	1.1	(1.9)	<b>0.20</b>	0.16	0.00	0.15	<b>0.17</b>	0.01	0.01	0.01

Note: Significant correlations ( $P < 0.001$ ; Bonferroni corrected) are shown in bold.

IAS bodily preoccupation adding 1.0% of variance accounted for. To examine further whether Ss whose parents had more cardiac problems report higher levels of HFA, we also divided Ss at the median into high HFA responders (CAQ total  $\geq 1.1$ ) and low HFA (CAQ total  $< 1.1$ ) responders. We found that high HFA Ss reported significantly more cardiac problems in their parents ( $M = 0.8$ ,  $SD = 1.1$ ) than low HFA Ss ( $M = 0.4$ ,  $SD = 0.8$ ),  $t(420) = 3.7$ ,  $P < 0.001$ .

#### *Relation between illness fears and separation experiences*

Using the derived CAQ groupings, no differences emerged in terms of total number of personal intimate relationships that ended in separation [ $F(1,262) = 0.08$ , NS] and SUDS ratings of distress in response to those separation experiences,  $F(1,268) = 0.3$ , NS. Of this sample, 72% reported that both parents were married and living together, whereas 28% reported that their parents were either separated, divorced, or one or both parents were deceased. A comparison of CAQ scores of Ss with separated and nonseparated parents showed that Ss with separated parents reported significantly greater HFA as evidenced by higher CAQ total scores [ $t(420) = -2.1$ ,  $P < 0.04$ ] and higher scores on the CAQ disease conviction/heart awareness factor [ $t(420) = -2.8$ ,  $P < 0.01$ ]. Similar comparisons between the other CAQ factors and IAS subscales were not significant.

## DISCUSSION

There are currently no data on the prevalence of HFA in the general population. The current findings provide a preliminary anchor indicating that between 2 and 3% of our sample reported significant concern about several features that are crucial to the clinical presentation of excessive HFA. Although females consistently reported more illness concerns than males, we found no differences between males and females on HFA. This is in accord with findings from clinical samples (e.g. Eifert *et al.*, 1996; Katon *et al.*, 1988) that have also found no, or much less pronounced, gender distribution differences for persons with cardiophobia compared to other anxiety disorders (e.g. panic disorder), which have consistently shown a 2:1 female/male ratio (Fredrikson, Annas, Fischer & Wik, 1996; Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen & Kendler, 1994).

Persons with greater HFA endorsed significantly more illness beliefs and behaviors than persons with low CAQ scores. Our multiple regression data show that the best predictors of HFA, of the variables examined in this study, are worry about symptoms, effects of symptoms, total number of parental illnesses, health habits, and bodily preoccupation. These variables accounted for a significant portion of CAQ total variance. Other physiological and psychological variables (e.g. hyperventilation, reinforcement of 'sick role' behavior; cf. Eifert, 1992) that are likely to be involved in the development and maintenance of HFA were not examined in this study and will be examined in subsequent research.

Persons with high CAQ scores reported significantly more cardiac and other medical problems in their parents than persons with low levels of HFA. These findings, in association with the correlation and regression results, support the notion that exposure to parental illness is significantly related to a person's degree of anxiety and worry about illness (Flor, Birbaumer & Turk, 1990). In addition, these findings lend some support to the notion that exposure to a particular disease in parents (e.g. heart disease) may make such individuals more vulnerable to developing fears of that disease. Although the mode of this learning was not examined in this study, evidence presented by Flor *et al.* (1990) suggests a crucial role of observational learning and vicarious conditioning in this learning process.

Participants with separated parents reported significantly greater cardiac anxiety than persons with nonseparated parents although they were not generally more concerned about their health. On the other hand, there were no differences between persons with high and low levels of HFA in terms of total number of personal intimate relationships that ended in separation and ratings of distress associated with those separation experiences. The relation between separation experiences and anxiety disorders has been the subject of lively debate, and our findings lend some support to the existence of this relation. Yet, much of the research data have been inconclusive and the potential mechanisms underlying the relation are not well understood (cf. Barlow, 1988). For instance, Lynch (1985) presented data showing that interruptions of human contact have a powerful effect on the cardiovascular system. Yet, the precise mechanisms underlying the link between separation, cardiovascular stress, and anxiety remained unclear. According to a thoughtful analysis of the literature by van der Molen, van den Hout, van Dieren and Griez (1989), and recent data presented by Lipsitz *et al.* (1994), it is probable that separation experiences represent a general risk factor for multiple anxiety syndromes rather than a specific vulnerability for a specific type of anxiety such as panic or HFA.

Finally, the current data are entirely based on self-report and required participants to give retrospective accounts. We recognize the limitations of such data and any interpretations and conclusions must be made with caution. Yet, our large sample revealed some interesting relations between heart-focused and general illness fear, parental disease patterns, and separation experiences that warrant further study using different methods such as corroborating reports by relatives and friends, behavioral observation, and psychophysiological assessments.

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