



Health anxiety – An indicator of higher interoceptive sensitivity?



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ARTICLE INFO

Article history:

Received 3 September 2013

Received in revised form

27 January 2014

Accepted 4 February 2014

Keywords:

Health anxiety

Interoception

Heartbeat perception

Nonspecific skin conductance fluctuations

ABSTRACT

Background and objectives: According to cognitive-behavioral models, health anxiety arises from the misattribution of normal bodily sensations as signs of a severe illness. Consequently, higher levels of interoceptive accuracy might be critically involved in the development of health anxiety.

Methods: To test this central assumption of cognitive behavioral models of health anxiety, we assessed interoceptive accuracy in a sample of college students ($N = 100$). Two interoceptive tasks (detection of one's own heartbeat using the Schandry paradigm and detection of nonspecific skin conductance fluctuations, NSCFs) were used.

Results: We found no indication for a positive association between facets of health anxiety and a higher interoceptive accuracy in the two tasks. In fact, worse heartbeat perception was associated with higher health anxiety as measured by two questionnaires whereas perception of NSCFs was not significantly related to any facet of health anxiety. In addition, we found a bias to overestimate NSCFs in people with heightened health anxiety.

Limitations: Because a sample of college students served as participants, the generalization of the findings is limited and further studies in patients with the diagnosis of hypochondriasis are necessary.

Conclusions: The findings of both interoceptive paradigms suggest that health anxiety is not associated with better but rather with less accurate and biased interoceptive sensitivity. Probably, not a heightened interoceptive sensitivity but rather the bias in overestimating harmless somatic cues is more relevant for the maintenance of health anxiety. Our results are in line with recent research in other somatoform disorders.

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Introduction

Health anxiety is defined by fears and worries concerning a severe illness while people are objectively healthy (APA, 1994). Health anxiety has been theoretically and empirically conceptualized as a multidimensional construct including an affective component (i.e., worrying about health), a behavioral facet (i.e., reassurance seeking), a perceptual aspect (i.e., hypervigilance to bodily sensations), and the cognitive component of beliefs that health concerns are not taken seriously enough by others (Longley, Watson, & Noyes, 2005). Following a categorical diagnostic approach, the international classification systems ICD-10 and DSM-

IV define hypochondriasis as a mental disorder characterized by intensive fear of having a serious illness. Despite (or perhaps because of) repeated medical examinations without clinically relevant findings, most patients are excessively searching for reassurance by consulting physicians and body checking. According to epidemiologic studies, the prevalence rate of hypochondriasis is nearly 1% (Bleichhardt & Hiller, 2007; Martin & Jacobi, 2006), while subclinical forms may have a prevalence rate of up to 14% (Creed & Barsky, 2004). Subclinical forms of health anxiety already lead to a reduced quality of life as well as more medical examinations and consequently raised costs for the health care system (Martin & Jacobi, 2006). Therefore, it appears reasonable not only to examine clinical extreme groups of patients suffering from full-blown hypochondriasis, but also people with subclinical health anxiety. Such a dimensional approach to health anxiety is also empirically justified by two independent taxometric analyses: Accordingly, there is strong evidence that health anxiety follows a continuum (Ferguson, 2009; Longley et al., 2010), beginning with

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people having small concerns about some unusual bodily perceptions and reaching a peak with people who are “fearful of bodily symptoms so that much of their thought and activity is centered around illness” (Salkovskis & Warwick, 1986, pp. 597). People at the extreme high endpoint on this continuum of health anxiety typically fulfill the diagnostic criteria for hypochondriasis.

According to Garfinkel and Critchley (2013), interoception is defined as “sensitivity to stimuli originating from within the body”. Cognitive behavioral models of health anxiety and hypochondriasis assume a preoccupation with bodily sensations that might stem from a more accurate interoception as a relevant process for the maintenance of the condition. Higher interoceptive accuracy in health anxiety and hypochondriasis may either be the result of stronger internal body signals (e.g., as implied by the filter model of Rief & Barsky, 2005) or the result of stronger allocation of attentional resources to bodily sensations. For example, cognitive schemas concerning body, illness, and health may lead to increased attention to body processes and thus to higher awareness and more accurate interoception (Salkovskis & Warwick, 1986). Additionally, a positive feedback loop is assumed between interoceptive sensations as a result of arousal, health anxiety, and an increased attentional focus on interoceptive sensations. Furthermore, the perception of internal sensations and the following (mis-)interpretation of these sensations as dangerous should maintain and even fuel health anxiety and its associated cognitive, affective, and behavioral consequences. Barsky (1998) termed this assumed mechanism “somatosensory amplification”.

Although cognitive behavioral models suggest a high awareness concerning bodily processes, commonly no explicit presumption is made about accuracy in perceiving bodily processes. In contrast to accuracy, awareness is poorly defined and can hardly be measured. Previous literature often used different labeling of interoception (e.g., interoceptive awareness/ability/accuracy/sensibility) interchangeable. Conversely, Garfinkel and Critchley (2013) plausibly suggest that “a focus on internal bodily sensations” (interoceptive sensibility), the “accurate detection of bodily sensations” (interoceptive sensitivity) and being aware of “perceiving these bodily sensations accurately” are distinguishable processes (see also Ceunen, Van Diest, & Vlaeyen, 2012 on this issue). Taking into account this distinction,¹ our study rather focuses on the more basic construct of interoceptive accuracy compared to the higher order construct of interoceptive awareness (Garfinkel & Critchley, 2013).

The assumptions of cognitive behavioral models of health anxiety and hypochondriasis, especially regarding interoceptive accuracy, have rarely been studied and results are, so far, inconclusive. Questionnaire data generally support such a relation between somatosensory amplification and health anxiety (Barsky & Wyshak, 1990; Barsky, Wyshak, & Klerman, 1990; Marcus, Gurley, Marchi, & Bauer, 2007; Noyes, Happel, & Yagla, 1999). However, empirical support based on evidence other than self-report (e.g., physiological experimental data) is largely missing. Merely two studies focused on interoceptive sensitivity (respectively heartbeat perception) of patients with health anxiety. Firstly, Tyrer, Lee, and Alexander (1980) found a better perception of one’s own heartbeat in patients with “hypochondriacal and anxiety neurosis” in comparison to patients with “phobic anxiety”. Secondly, Barsky, Brener, Coeytaux, and Cleary (1995) failed to detect differences in the ability of assessing one’s own heartbeat between people with and without hypochondriasis. Moreover, we cannot profit from neighboring research. The actual nosologic debate about hypochondriasis and health anxiety discusses if hypochondriasis belongs to somatoform disorders or to anxiety disorders. In the area of

anxiety disorders, results show evidence for higher interoceptive accuracy (Domschke, Stevens, Pfeleiderer, & Gerlach, 2010; Ehlers, 1993; Ehlers & Breuer, 1992; Stevens et al., 2011; Zoellner & Craske, 1999). In contrast, current models on symptom perception in somatoform disorders suggest that symptom perception might be the consequence of less efficient interoceptive accuracy or “biased” interoceptive sensitivity (Pollatos et al., 2011; Schaefer, Egloff, & Witthöft, 2012). In consequence, the aim of the present study is to test associations between health anxiety and interoceptive accuracy.

Because previous studies solely relied on heartbeat perception as a proxy for interoceptive accuracy, we decided to use two different paradigms to measure interoceptive accuracy. The widely used “mental tracking task” (Schandry, 1981) assesses the ability to perceive one’s own heartbeat. Schandry (1981) concluded that the “occurrence of heartbeats” is the body process which is most easily assessed with regard to interoceptive sensitivity. To go beyond existing research on interoceptive sensitivity, we included a second interoceptive task which is an innovative signal detection task assessing the ability to perceive nonspecific skin conductance fluctuations (NSCFs). NSCFs are an indicator of phasic autonomic arousal directly linked to activity of the sympathetic nervous system (Andor, Gerlach, & Rist, 2008). According to Pennebaker and Skelton (1981), the evaluation of one’s physiological condition is less based on the intensity of physiological symptoms than by the mere perception of physiological changes. In addition, it is notable that there are substantial interindividual differences in detecting phasic changes in psychophysiological system (Pennebaker, 1982). Thus, individual differences in the perception of phasic physiological changes may partially be able to explain differences in the extent of somatosensory amplification.

In summary, in order to increase our knowledge regarding possible alterations in interoceptive sensitivity associated with health anxiety, the primary aim of the present study was to test whether health anxiety (as a multidimensional construct) is associated with characteristic alterations regarding interoceptive sensitivity in two different experimental paradigms (i.e., heartbeat tracking and NSCF detection). According to previous research and theoretical considerations, better as well as impaired or biased interoceptive accuracy could be inferred. A second aim of our study was to test, whether the two different interoceptive tasks share significant amounts of communality.

Method

Participants

A total of 116 college students (115 psychology students) from the Johannes Gutenberg University Mainz were recruited via flyer and email. Exclusion criteria were severe diseases (e.g., cardiovascular disease), which could lead to disturbances of the interoceptive tasks, insufficient knowledge of German language, which could lead to misunderstandings, and the presence of mental disorders, which was asked on the basis of screening questions according to the SKID interview. No participant fulfilled any of these criteria. Technical problems with the recording of the ECG signal led to exclusion of one participant. Fifteen other participants had to be excluded because they had less than five NSCFs or less than 5 electrodermally stable phases (explanation follows). The final sample comprised 100 participants (*M* age = 23.7). Seventy-nine percent were female (see Table 1). Demographic and psychophysiological information is shown in Table 1. The study was approved by the local Ethics Committee of the Department of Psychology of the University of Mainz.

¹ We thank an anonymous reviewer for pointing us to this important distinction.

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