



Implicit affective evaluation bias in hypochondriasis: Findings from the Affect Misattribution Procedure



Franziska Schreiber^a, Julia M.B. Neng^a, Christiane Heimlich^a,
Michael Witthöft^b, Florian Weck^{a,*}

^a Department of Clinical Psychology and Psychotherapy, Goethe-University, Frankfurt am Main, Germany

^b Department of Clinical Psychology and Psychotherapy, Johannes Gutenberg University of Mainz, Mainz, Germany

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ABSTRACT

Cognitive theories of hypochondriasis (HYP) suggest that catastrophic misinterpretations of benign body sensations are a core feature for the maintenance of the disorder. There is tentative support from an analog sample that the interpretation of illness-related information also involves an implicit affective component. This is the first study to examine this negative affective evaluation bias implicitly in patients with HYP. An adapted version of the Affect Misattribution Procedure (AMP) with illness, symptom and neutral primes was used in 80 patients with HYP, and compared to 83 patients with an anxiety disorder (AD), as well as 90 healthy controls (CG). The HYP group showed significantly more negative affective reactions in illness prime trials, compared to both control groups, as well as more negative implicit evaluations on symptom prime trials, compared to the CG. Significant inverse relationships were observed only between the implicit evaluations of illness words and health anxiety questionnaires. Thus, an implicit negative affective evaluation bias of serious illnesses rather than symptoms is a unique feature of HYP.

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1. Introduction

According to cognitive models of hypochondriasis and health anxiety (e.g., [Rachman, 2012](#); [Warwick & Salkovskis, 1990](#)), a central component is the misinterpretation of essentially harmless body sensations as indicating a severe physical illness. However, the majority of empirical support for this assumption stems from analog samples with elevated levels of health anxiety, while few studies have examined this theoretical aspect in patients with hypochondriasis (for a review see [Marcus, Gurley, Marchi, & Bauer, 2007](#)). Furthermore, only a minority of studies used appropriate control groups, such as samples suffering from an anxiety disorder, in order to determine whether the misinterpretation of bodily sensations is a unique feature of hypochondriasis ([Weck, Neng, Richtberg, & Stangier, 2012b](#)). The most important clinical control groups for hypochondriasis are anxiety disorders, because both of these disorders share many phenomenological

similarities ([Noyes, 1999](#)). For instance, [Rief, Hiller, and Margraf \(1998\)](#) showed that patients with hypochondriasis report significantly more dysfunctional interpretations of bodily signs in responding to a specific questionnaire, compared to a control group suffering from other psychological disorders (mainly depressive disorders). [Weck et al. \(2012b\)](#) particularly emphasize the comparison of patients with hypochondriasis with those suffering from anxiety disorders regarding both symptom and illness-related misinterpretations, in order to confirm their specificity to hypochondriasis. In their study using the Health Norms Sorting Task (HNST, [Barsky, Coeytaux, Sarnie, & Cleary, 1993](#)), patients suffering from hypochondriasis classified more bodily symptoms as incompatible with good health, than patients with anxiety disorders, as well as healthy controls. However, this result was only found if the evaluation referred to one's own symptoms lasting for one week; bodily symptoms in general were not found to differentiate between the three groups. Further evidence supporting the specificity of dysfunctional beliefs about illnesses was provided by [Weck, Neng, Richtberg, and Stangier \(2012a\)](#) as well as [Neng and Weck \(2013\)](#). Both studies analyzed a subsample of the current study of patients with hypochondriasis. The hypochondriasis sample only differed from the anxiety disorder and healthy sample in the evaluation of bodily symptoms as indicating a severe

* Corresponding author at: Clinical Psychology and Psychotherapy, Goethe-University, Varrentrappstr. 40-42, 60486 Frankfurt am Main, Germany. Tel.: +49 69 798 23250; fax: +49 69 798 28110.

E-mail address: weck@psych.uni-frankfurt.de (F. Weck).

illness, but not regarding the judgment of symptoms as indicating a mild illness (Weck et al., 2012a). Interestingly, the anxiety disorder group took a middle position regarding their evaluation. In line with these results, Neng and Weck (2013) showed that patients with hypochondriasis also tend to misattribute ambiguous bodily symptoms more frequently as specific indicators of a severe illness, in comparison to patients with anxiety disorders and healthy volunteers. These earlier findings reveal that it is not the misinterpretation of bodily symptoms in general, but rather their misinterpretation with regard to severe illnesses that constitutes a specific characteristic of hypochondriasis.

A major drawback of the summarized studies is the lack of empirical evidence on cognitive processes incorporating experimental assessments at an implicit level. The additional use of an implicit paradigm could provide a more comprehensive picture of dysfunctional information processes, apart from using explicit measures such as questionnaires, since the latter are susceptible to biased reporting (Paulhus, 2002) and more importantly, do not assess uncontrollable, automatic processes (Greenwald & Farnham, 2000).

However, previous studies on implicit information processing investigating a sufficiently large number of patients with hypochondriasis are sparse (Gropalis, Bleichhardt, Hiller, & Witthöft, 2013), since most studies have been conducted with analog as well as rather small samples. Furthermore, the commonly used implicit measures were based on reaction times, which might impede an unambiguous interpretation of the underlying cognitive processes (Payne, Govorun, & Arbuckle, 2008; Witthöft, 2011). For instance, paradigms such as the emotional Stroop task or the dot probe task have been used to confirm biased information processing in terms of preferred attention allocation toward health-threatening stimuli, as well as memory bias in samples with elevated health anxiety (e.g., Jasper & Witthöft, 2011; Lecci & Cohen, 2002; Witthöft, Rist, & Bailer, 2008) and hypochondriasis (e.g., Brown, Kosslyn, Delamater, Fama, & Barsky, 1999; Gropalis et al., 2013; Pauli & Alpers, 2002; Van den Heuvel et al., 2005). Related to the finding of biased implicit memory processes, the associative strengths of object evaluation hypothesis from Ferguson, Moghaddam, and Bibby (2007) proposes that health anxiety is related to a deeper emotional evaluation of illness-related words which in turn leads to a better recall of illness-associated content. However, only two studies tested this hypothesis using implicit measures. Schmidt, Witthöft, Kornadt, Rist, and Bailer (2013) investigated the existence of a negative automatic evaluation bias of symptom words in an analog health-anxiety sample compared to dysphoric as well as non-dysphoric controls, using the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998). Their expectation was that participants with elevated health anxiety would reveal stronger negative implicit associations toward bodily symptoms in terms of extended reaction times, compared to non-anxious controls. However, their hypothesis was only partially supported since no differences emerged on the D-measure of the IAT or for comparisons of latencies in the incongruent condition between the three groups, while the health-anxious group made significantly more mistakes on the IAT. However, doubts regarding the validity of other outcome measures on the IAT, such as analyzing accuracy instead of the well validated D-measure, have been raised (De Houwer, 2002). Thus, Schmidt et al.'s results remain inconclusive.

Recent support for an automatically elicited negative affective reaction in health anxiety stems from Jasper and Witthöft (2013), using a fairly new implicit paradigm, the Affect Misattribution Procedure (AMP; Payne, Cheng, Govorun, & Stewart, 2005) in a student sample with elevated health anxiety. They found that the AMP, with health threat pictures, was significantly associated with the sum score of the Multidimensional Inventory of Hypochondriacal

Traits (MIHT; Longley, Watson, & Noyes, 2005), as well as with two (the cognitive and behavioral) of the four subscales of the MIHT. However, no significant relationship was detected for the AMP and another health anxiety questionnaire (Whitely-Index; Hiller & Rief, 2004).

The AMP is intended to measure intuitive affect-driven judgments, which makes it very suitable for the implicit assessment of catastrophic misattributions of illness signs according to cognitive theories of health anxiety. In the original AMP (Payne et al., 2005), participants are exposed supraliminally to positive or negative picture primes, followed immediately by an ambiguous target (a Chinese character). Participants are asked to ignore the prime, but instead to evaluate the pleasantness of the Chinese pictograph, while they are warned not to let the primes influence the target evaluation. The rationale behind the task is that subjects will unintentionally misattribute their affective reaction from the prime (e.g., an illness word "tumor") to the Chinese pictograph, despite the initial ignorance warning (De Houwer & Tucker Smith, 2013; Gawronski & Ye, 2013; Oikawa, Aarts, & Oikawa, 2011; Payne et al., 2013, 2005). Thus, the mean pleasantness rating of the pictographs regarding each prime type condition serves as a measure of automatically activated affective attitudes toward this prime category. The AMP proved to be a highly reliable, easily administrable and valid implicit paradigm, compared to other implicit measures that rely on reaction times (Cameron, Brown-Iannuzzi, & Payne, 2012; Payne et al., 2005). Also, the AMP is widely used for measuring implicit attitudes in psychopathology (e.g., Jasper & Witthöft, 2013; Payne, Burkley, & Stokes, 2008; Payne et al., 2007; Schreiber, Bohn, Aderka, Stangier, & Steil, 2012; Witthöft, Basfeld, Steinhoff, & Gerlach, 2012).

This present study is the first to compare a large clinical sample with a primary diagnosis of hypochondriasis, with a clinical sample of patients suffering from an anxiety disorder, as well as a healthy control group, using an adapted version of the AMP with words as primes. The aim of the current study was to investigate and compare implicit affective reactions in response to relatively mild symptom words (e.g., nausea), as well as illness words (e.g., tumor) between the three groups. The decision to use symptom words, as well as illness words, relates to the empirical evidence that the two categories seem to embody different facets of health anxiety (e.g., Lefaivre, Watt, Stewart, & Wright, 2006; Witthöft et al., 2013, 2008). In line with the evidence from studies using explicit measures, our central hypothesis was that patients with hypochondriasis would yield more negative implicit affective reactions to illness words, compared to the two control groups. Furthermore, due to the ambiguous results from the IAT study of Schmidt, Witthöft, Kornadt, Rist, and Bailer (2013), as well as findings with explicit assessment, we intended to explore the implicit responses of the three groups regarding symptom words. Finally, we expected the reactions on the AMP to correlate significantly with explicit measures of health anxiety (convergent validity), in line with Jasper and Witthöft (2013), whereas no significant associations with measures of general psychopathology would be expected in terms of the discriminant validity.

2. Method

2.1. Participants

2.1.1. Hypochondriasis group (HYP)

Eighty patients suffering from hypochondriasis according to DSM-IV-TR (American Psychiatric Association, 2000), were recruited in our specialized outpatient center, from an ongoing randomized controlled trial comparing the efficacy of cognitive therapy and exposure therapy in the treatment of

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