



## The implicit health-related self-concept in somatoform disorders



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### ARTICLE INFO

#### Article history:

Received 29 May 2012

Received in revised form

27 December 2012

Accepted 13 February 2013

#### Keywords:

IAT

Implicit

Medically unexplained symptoms

Self-concept

Somatization

Somatoform disorders

### ABSTRACT

**Background and objective:** Dual-process theories stress the importance of explicit as well as implicit cognitive processes for the development of somatoform disorders (SFDs).<sup>1</sup> In particular, the self-concept has been demonstrated to be a key factor in SFD. Yet, the self-concept in SFDs has been studied only on an explicit but not on an implicit level.

**Methods:** The present study empirically examined the implicit health-related self-concept in SFDs by using the Implicit Association Test (IAT). Twenty-two patients with SFDs (according to DSM-IV) and 27 healthy control participants (CG) completed an IAT to assess associations of the self with illness- versus health-related words.

**Results:** (a) Patients with an SFD associated themselves more with illness-related words than patients in the CG, (b) this implicit self-concept was connected to self-reported bodily weakness in the SFD group, and (c) both the explicit and implicit health-related self-concepts were significantly related to the number and severity of bodily symptoms. However, the implicit measure had no incremental predictive value for symptom reports over the explicit self-concept measure.

**Limitations:** Due to the small sample size and the failure to match the SFD group and CG on education, further confirming evidence including other clinical control groups is needed.

**Conclusion:** These findings are consistent with existing dual-process models of SFDs and could be of clinical relevance as they bring into focus implicit cognitive processes that may be targeted more directly for an effective treatment of SFDs.

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### 1. Introduction

Somatoform disorders (SFDs) are one of the major problems in public health today (Hanel et al., 2009; Toft et al., 2005). People with SFDs suffer from various symptoms for which no adequate organic basis can be found and seek repeated consultation and investigation, which not only produces distress and disability for the patients but also healthcare costs that are twice those of an average patient (Barsky, Orav, & Bates, 2005). Despite this pivotal role of unexplained physical symptoms, the realm of SFDs has stimulated much less research compared to affective or anxiety disorders (Witthöft & Hiller, 2010). Specifically, the mechanisms that underlie somatization have yet to be identified.

Brown (2004) made an attempt to explain the mechanisms responsible for the experience of compelling symptoms in the

absence of an underlying physical pathology, as well as the processes and risk factors that underlie the development and maintenance of unexplained somatic symptoms. In Brown's integrative conceptual model of medically unexplained symptoms, preexisting schemata in memory and attentional mechanisms in the cognitive system play a crucial role in the process of symptom formation.

The importance of specific cognitive aspects of SFD has also been emphasized by Rief, Hiller, and Margraf (1998). Besides a highly focused attention to bodily processes and catastrophizing interpretations of minor bodily misconceptions, they found that patients with somatization syndrome tend to hold overexclusive beliefs about good health and communicate a self-concept of being weak and intolerant of stress. Hiller and Fichter (2004) reported that the strongest differences in SFD patients with medically unexplained symptoms that distinguish between high and average utilizers of healthcare systems were found on scales measuring illness behavior, psychosocial disabilities, and the self-perception of being bodily weak, whereas this last cognitive variable was the only one differentiating between high (healthcare costs  $\geq$  € 2500 during the past 2 years) and extreme utilizers (healthcare costs  $\geq$  € 5000 during the past 2 years). Thus, having a self-concept reflecting

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<sup>1</sup> Abbreviations used: SFD = somatoform disorder; IAT = Implicit Association Test; CG = control group.

physical weakness is one of the most important factors that distinguishes a problematic SFD subgroup, which is characterized by frequent doctor visits and increased disability, from an unproblematic subgroup of people with SFDs who cope better with somatic symptoms (Rief, Mewes, Martin, Glaesmer, & Braehler, 2010).

In essence, the model proposed by Brown (2004) and previous cognitive-behavioral models of SFD (e.g., Kirmayer & Taillefer, 1997; Looper & Kirmayer, 2002; Rief et al., 1998) stress the importance of specific memory structures (forming a specific illness-related self-concept) that bias perceptual and attentional processes in dysfunctional (i.e., catastrophic and symptom focused) ways. However, no study has yet investigated the existence of these hypothesized illness-related self-concepts with objective experimental methods in patients with SFDs.

In line with dual-process theories (e.g., Feldmann-Barrett, Tugade, & Engle, 2004) and according to the previously described integrative conceptual model (Brown, 2004), the relevant self-concept in patients with SFDs is most likely represented in both an explicit and in an implicit manner. Explicit representations of the self are a result of processing information in a controlled and reflective way, whereas implicit representations are a result of processing information in an automatic and impulsive way. Both explicit and implicit representations can influence behavior in a synergistic or an antagonistic way and can be more or less correlated with each other.

According to the behavioral process model of personality (Back, Schmukle, & Egloff, 2009), which is a personality-oriented dual-process model, self-perception can be conceptualized in a reflective and an impulsive automatic way. Whereas the explicit self-concept can be assessed by direct measures (e.g., questionnaires), implicit representations of the self are less accessible through introspection and have to be obtained through implicit measures. Although there is strong support for the notion that in some clinical contexts, implicit measures even outperform explicit measures in predicting behavior (e.g., Egloff & Schmukle, 2002; Huijding & de Jong, 2006) and that the prediction of behavior can be enhanced by including implicit measures of personality (Back et al., 2009), no attempts have been made to measure the implicit health-related self-concept in people with SFDs.

Currently the most prominent paradigm for the assessment of implicit beliefs about the self is the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT is a computerized reaction-time task that measures the strength of an association between two contrasted target concepts (in our case: *me* and *others*) and two attribute concepts (here: *healthiness* versus *discomfort*). A target concept and an attribute concept are paired on one side of the screen and the opposite concepts are paired on the other. The labels are visible in the upper left- and right-hand corners during the entire task. Words from all four categories are presented in the middle of the screen in a random order, and participants are instructed to indicate the side of the screen each stimulus belongs to by using a left or right response key. The premise here is that the more the attribute concepts are associated with the self, the quicker the response will be if the matching attribute category is paired with the target concept *me* and the slower it will be if associations with the self are mismatched. Thus, if self and healthiness share the same key, a person who sees himself/herself as being in good health should be quicker to respond than a person who thinks of herself as weak, sickly, and suffering from many medical conditions.

The first aim of the present study was therefore to clarify whether the self-concept of being weak, as measured with existing questionnaires, which seems to be one of the most specific cognitive attributes of people with SFDs, would also become apparent in implicit measures. Therefore, we used the IAT to compare the

implicit health-related self-concepts of patients with SFDs and healthy control participants (CG). The second aim of the study was to test whether explicit and implicit health-related self-concepts would be associated with each other. Finally, we attempted to determine whether the severity of SFDs would be associated with the strength of the explicit and implicit health-related self-concept.

## 2. Methods

### 2.1. Participants

Based on an a priori power analysis ( $1 - \beta = .80$ ;  $\alpha = .05$ ), we determined that a sample size of  $n = 26$  participants would be necessary to detect a large ( $d = .80$ ) between-group effect (Cohen, 1992). Thus, 26 participants with an SFD (16 female) were recruited through newspaper and print ads as well as flyers that were distributed in medical practices. All participants who showed interest in the study were screened over the phone to evaluate whether they would likely meet the criteria for an SFD and to verify that they had not yet received psychotherapy.

General exclusion criteria were a clinical diagnosis of an acute severe depressive episode, psychotic or anxiety disorders, hypochondriasis, dementia, substance abuse, and chronic illnesses causing a sensory disturbance. The presence of an SFD including somatization disorder, pain disorder, and undifferentiated somatoform disorder according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000) was established with the Structured Clinical Interview for DSM-IV (SCID; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). As we focused on polysymptomatic somatoform disorders (Rief & Hiller, 1999), patients were included in the SFD group if they suffered from at least three current somatoform symptoms for more than 6 months, and if these symptoms could not be sufficiently explained by an organic disease or mental disorder.

Based on these criteria, three people were excluded because they did not fulfill the criteria of a current SFD ( $n = 1$ ) or the requirement of a minimum of three somatoform symptoms ( $n = 2$ ), respectively. Thus, 23 patients with SFDs were compared to a control group (CG) of 27 healthy participants. The control group was recruited through flyers that were posted around the campus. Participants in the CG did not fulfill the criteria for any current mental disorder according to the SCID interview. Participants in the SFD group and the CG did not differ significantly in age and gender, but significant differences were observed for education (see Table 1). All participants provided written informed consent and received payment for taking part in the study, which was approved by the local Ethics Committee of the Psychological Department of the University of Mainz.

### 2.2. Procedure

Upon arrival at the laboratory, participants were given written information about the experiment and completed a screening

**Table 1**  
Sociodemographic information for the two participant groups.

	Control group ( $n = 27$ )	SFD group ( $n = 23$ )	Test statistics ( $t$ or $\chi^2$ )	Effect size ( $d$ or $w^2$ )
Female $n$ (%)	16 (59)	16 (70)	.42	.008
Age $M$ ( $SD$ )	41.74 (12.52)	45.26 (13.57)	.95	.28
Years of formal education $M$ ( $SD$ )	14.56 (3.40)	12.18 (3.57)	-2.38*	.70

Note.  $t$  tests were calculated for continuous variables ( $df = 48$ ), with Cohen's  $d$  as an effect size estimate, and the chi-square procedure ( $df = 1$ ) was applied for dichotomous variables, reporting  $w^2$  as an effect size estimate.

\* $p < .05$ .

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