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## Examination of emotional Stroop interference in obsessive–compulsive disorder

Steffen Moritz\*, Dirk Jacobsen, Martin Kloss, Susanne Fricke, Michael Rufer, Iver Hand

*Klinik für Psychiatrie und Psychotherapie, Universitätsklinikum Hamburg–Eppendorf, Martinistraße 52, D-20246 Hamburg, Germany*

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### Abstract

Previous research has produced conflicting findings on whether or not patients with subclinical or manifest obsessive–compulsive disorder (OCD) share an attentional bias for anxiety-related material. In the present study, 35 OCD patients were compared with 20 healthy controls on their performance in an emotional Stroop paradigm. Nine different stimulus conditions were compiled, including sets for depression-related and anxiety-related words as well as stimuli from two constructs with a potential relevance for the pathogenesis and maintenance of OCD symptomatology: responsibility and conscientiousness. Patients did not show enhanced interference for any of the conditions. Syndrome subtype and severity, avoidance and speed of information processing did not moderate results. The present study concurs with most prior research that OCD patients display no interference effect for *general threat* words. It deserves further consideration, that emotional interference effects in OCD as seen in other anxiety disorders occur when using idiosyncratic word material with a direct relation to the individual's primary concerns.

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*Keywords:* Obsessive–compulsive disorder; Emotional Stroop; Anxiety; Depression; Mood congruency

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\* Corresponding author. Tel.: +49-40-42803-6565; fax: +49-40-42803-2999.  
E-mail address: moritz@uke.uni-hamburg.de (S. Moritz).

## 1. Introduction

Within the last two decades, perhaps commencing with Bower's visionary article "Mood and memory" (1981), the investigation on the processing of emotional stimuli has received growing recognition in the cognitive literature. Broad evidence has been provided that subjects with clinical or sub-clinical depression and anxiety disorders share a processing bias for mood-congruent or concern-related material (Coles & Heimberg, 2002; McNally, 1997; Williams et al., 1996). Besides implicit and explicit memory tasks employing emotional words, this line of research has made extensive use of attention tasks such as the dot probe and the emotional Stroop paradigm. Unlike the conventional Stroop paradigm (see MacLeod, 1991, for a review), where the subject is instructed to name the ink color of incongruently typed color words (e.g., the word *blue* written in red ink), the core conditions in the emotional Stroop task comprise words with mood-associated or mood-evocative semantic content. For major depression and a wide range of anxiety disorders, it has been found that subjects exhibit prolonged naming latencies when presented with words characterizing (words such as *depressed*, *anxious*) or symbolizing (e.g., *dark*, *ghost*) the current mood/concerns of the subject (Williams et al., 1996). This effect is typically explained by an attentional bias of anxiety and depressed patients towards mood-relevant material, problems in disengaging from such material or distraction from the primary task (color naming) via post-lexical rumination.

The present study investigated emotional Stroop performance in patients diagnosed with obsessive-compulsive disorder (OCD). Along with words from three affective classes (depression, anxiety, positive), emotionally neutral words (color words written in an incongruent or congruent color; neutral words) and a non-lexical baseline condition, we presented words from two constructs with a putative relevance to obsessive-compulsive symptomatology: responsibility (see Salkovskis et al., 2000) and conscientiousness (e.g., Blais, 1997; Haigler & Widiger, 2001).

The studies published so far have provided conflicting findings. While the majority of investigations do not support the hypothesis that depression- and anxiety-related Stroop stimuli are processed differently in OCD (Kyrrios & Iob, 1998; McNally, Rieman, Louro, Lukach & Kim, 1992; McNally et al., 1994; McNeil, Tucker, Miranda, Lewin & Nordgren, 1999), Novara and Sanavio (2001) found enhanced reaction times for threatening words in normal subjects scoring high on a scale tapping compulsive checking. Similarly, Foa et al. (1993) found enhanced interference for general threat words in OCD patients without washing compulsions (some of them were checkers). In addition, in a study conducted by Lavy, van Oppen, and van den Hout (1994) OCD patients displayed greater Stroop interference for negative-valenced OCD-related stimuli. Although the latter study additionally reports enhanced interference in OCD for emotional words unrelated to obsessive-compulsive symptomatology, these results must be interpreted very cautiously, since greater interference in OCD patients was mainly due to faster reaction times in the baseline condition rather than slowed color naming in the emotional conditions.

The present study aimed at assessing the presence of emotional interference effects in a large sample of OCD subjects. In view of the inconsistencies in the literature (see Summerfeldt & Endler, 1998), the contribution of potential moderators to this divergence was investigated carefully. Apart from OCD subtype (especially checking and washing) and the severity of OCD and co-morbid psychopathological symptoms (depression, anxiety), we focused on the impact of

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