

Comparable performance of patients with obsessive–compulsive disorder (OCD) and healthy controls for verbal and nonverbal memory accuracy and confidence: Time to forget the forgetfulness hypothesis of OCD?

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Received 9 August 2007; received in revised form 1 November 2007; accepted 11 February 2008

Abstract

The memory deficit or forgetfulness hypothesis of obsessive–compulsive disorder (OCD) has received considerable attention and empirical effort over the past decades. The present study aimed to provide a fair test of its various formulations: (1) memory dysfunction in OCD is ubiquitous, that is, manifests irrespective of modality and material; (2) memory dysfunction is found for nonverbal but not verbal material, (3) memory dysfunction is secondary to executive impairment; and (4) memory dysfunction affects meta-memory rather than memory accuracy. Participants comprised 43 OCD patients and 46 healthy controls who were tested on the Picture Word Memory Test (PWMT), which provides several unconfounded parameters for nonverbal and verbal memory accuracy and confidence measures across different time-points. In addition, the Trail-Making Test B was administered to test assumption number 3. Replicating earlier work of our group, samples displayed similar performance on all indices. None of the different formulations of the memory deficit hypothesis were supported. In view of waning evidence for a global memory deficit in OCD, neuropsychological research on OCD should more thoroughly investigate moderators and triggers of occasional instances of impaired performance, particularly cognitive biases such as perfectionism and an inflated sense of responsibility.

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Keywords: Obsessive–compulsive disorder; Memory; Meta-memory; Executive functioning

1. Introduction

Despite a number of empirical set-backs and theoretical caveats, the hypothesis of underlying memory dysfunction in obsessive–compulsive disorder (OCD) or

one of its subtypes has remained strong in the literature and is picked up in several recent reviews (Kuelz et al., 2004; Muller and Roberts, 2005; Olley et al., 2007). The last two decades have witnessed various formulations of this hypothesis which can broadly be separated into 4 major positions in the order of their evolvment: (1) presupposition of a generalized memory deficit (advocated for example by Sher et al., 1983), (2) memory deficits for nonverbal but not verbal memory (see review by Muller and Roberts, 2005), (3) memory deficit

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secondary to executive impairment (see review by Kuelz et al., 2004), and most recently (4) meta-memory dysfunctions (see review by Olley et al., 2007), specifically an impairment of memory vividness and/or memory confidence.

In view of mostly uncompromised verbal memory function in OCD, a global formulation of the memory deficit hypothesis (hypothesis 1) has early been refuted (Tallis, 1997). Positions 2 and 3 have gathered equivocal evidence with replications somewhat outnumbering falsifications (for reviews see Kuelz et al., 2004; Muller and Roberts, 2005; Olley et al., 2007). Recent reviews enthusiastically embrace the fourth account (meta-memory). Early studies (MacDonald et al., 1997; McNally and Kohlbeck, 1993; Zitterl et al., 2001) have indeed provided encouraging results suggesting that OCD patients are generally less confident in their memories and lack memory vividness. According to this view, rituals and performance repetitions serve the purpose to “enrich” a memory episode (i.e., make an episode more distinctive and thus easier to remember) and to enhance subjective confidence to the degree that sufficient conviction is achieved. An emerging literature confirms that such strategies are counter-productive since repeated checking causes memory distrust instead of reducing it (Boschen and Vuksanovic, 2007; van den Hout and Kindt, 2003). In a recent study investigating source memory and memory confidence, we were unable to detect problems with memory accuracy, source memory, memory confidence, and vividness in patients with OCD, thus challenging claims 1, 2, and 4 (Moritz et al., 2006a,b). Likewise, other studies have not detected group differences on memory confidence (Cabrera et al., 2001; Tekcan et al., 2007) or solely in OCD-relevant (Radomsky et al., 2001; Tekcan et al., 2007; Tolin et al., 2001) or responsibility-laden contexts (Boschen and Vuksanovic, 2007; Cogle et al., 2007; Moritz et al., 2007).

Our group (Moritz et al., 2001, 2003, 2006a,b) and others (Basso et al., 2001) have noted that many prior studies on OCD have insufficiently controlled for depression, which could have caused or aggravated cognitive deficits in OCD (for the effects of anxiety on meta-cognition, see also Tolin et al., 2001). In line with this, we have repeatedly found memory as well as other neurocognitive deficits to be confined to OCD patients with enhanced comorbid depressive symptoms, especially core features such as decreased mood. Other influences, such as medication and slowing, have been highlighted by Kuelz et al. (2004) in their review.

The present study was designed to provide a fair test of the aforementioned four claims on memory dysfunc-

tion in OCD. To meet this purpose, we developed a new task in resemblance to the Auditory Verbal Learning Test (AVLT; for a description, see Lezak, 1995). This task, termed the Picture Word Memory Task (PWMT, for task description, also see Jelinek et al., 2006), assesses verbal and nonverbal memory across different time-points and response types (accuracy, confidence). In contrast to standard memory paradigms, we compiled items specific to material type (e.g., items in the AVLT and the Logical Memory subtest of the Wechsler Memory Scale can be easily visualized; whereas nonverbal items of, for example, the Rivermead Behavioral Memory Task are easy to verbalize): We selected verbal stimuli difficult to visualize and nonverbal stimuli difficult to verbalize, respectively, according to prior careful standardization. Ten stimuli of each category (verbal/nonverbal) were presented three times in alternating order with the participant being requested to draw/write down these stimuli subsequent to each list presentation. Twenty minutes after the third trial, a delayed recall was requested, followed by a recognition task (old and new items) including confidence ratings.

In line with prior studies (Moritz et al., 2006a,b; Tekcan et al., 2007), we did not expect any group differences regarding memory confidence, either with regard to time-point (immediate, delayed) or material (verbal, nonverbal). If group differences emerged for accuracy, these were expected to be accommodated by comorbid depression but not OCD symptoms. To test whether memory problems are due to executive impairment, we co-administered the Trail-Making Test B, a common test of executive dysfunction, specifically set-shifting (see Section 4). Since the null hypothesis was favored, raising problems with power, we recruited a sizable sample and carefully examined effect sizes.

2. Methods

2.1. Participants

Forty-three inpatients and outpatients, diagnosed with obsessive–compulsive disorder (OCD) according to the Neuropsychiatric Interview (MINI, Sheehan et al., 1998), were recruited from the Department of Psychiatry and Psychotherapy of the University Medical Center Hamburg-Eppendorf (11 males/32 females; age: 32.74 [S.D.=9.96]; years of education: 11.30 [S.D.=1.67]). Forty-six healthy participants were recruited by word-of-mouth and advertisements (15 males/31 females; age: 31.72 [S.D.=9.58]; years of education: 11.60 [S.D.=1.63]).

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