J. Behav. Ther. & Exp. Psychiat. 53 (2016) 75–83

Contents lists available at ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: www.elsevier.com/locate/jbtep

A novel cognitive intervention for compulsive checking: Targeting maladaptive beliefs about memory

Gillian M. Alcolado, Adam S. Radomsky*

Concordia University, Department of Psychology, 7141 Sherbrooke St. West, Montreal, Quebec, H4B 1R6, Canada

ARTICLE INFO

Article history:
Received 28 May 2014
Received in revised form
18 November 2014
Accepted 20 February 2015
Available online 3 March 2015

Keywords:
Compulsive checking
Beliefs about memory
Meta-memory
Memory
OCD
Cognitive-behaviour therapy

ABSTRACT

Background and objectives: Compulsive checking is one of the most common symptoms of obsessive-compulsive disorder (OCD). Recently it has been proposed that those who check compulsively may *believe* their memory is poor, rather than having an actual memory impairment. The current study sought to develop and assess a brief cognitive intervention focused on improving maladaptive beliefs about memory, as they pertain to both checking symptoms and memory performance.
Methods: Participants ($N = 24$) with a diagnosis of OCD and clinical levels of checking symptomatology were randomly assigned either to receive two weekly 1-hour therapy sessions or to self-monitor during a similar waitlist period. Time spent checking, checking symptoms, maladaptive beliefs about memory, and visuospatial memory were assessed both pre- and post-treatment/waitlist.
Results: Results showed that compared to the waitlist condition, individuals in the treatment condition displayed significant decreases in their maladaptive beliefs about memory and checking symptoms from pre- to post-intervention. They also exhibited increased recall performance on a measure of visuospatial memory. Changes in beliefs about memory were predictors of reduced post-intervention checking, but were not predictive of increased post-intervention memory scores.
Limitations: The lack of long term follow-up data and use of a waitlist control leave questions about the stability and specificity of the intervention.
Conclusions: Findings provide preliminary evidence that strategies targeting beliefs about memory may be worthy of inclusion in cognitive-behavioural approaches to treating compulsive checking.

Checking is one of the most frequently reported compulsions in obsessive-compulsive disorder (OCD; Rachman & Hodgson, 1980; Ruscio, Stein, Chiu, & Kessler, 2010), and is associated with profound doubt and uncertainty (Rachman, 2002). A major advance in understanding the nature of checking behaviour came from a series of experiments by van den Hout and Kindt (2003a,b; 2004). The authors proposed that checking causes less detailed and vivid encoding of one's memory for the check, which in turn causes less confidence when one tries to precisely recall what has occurred. They posited that these decrements in meta-memory occur because the more one checks, the more familiar the event becomes. This probably-universal phenomenon was proposed to be particularly problematic in the context of OCD, wherein individuals may have higher standards for certainty and likely prefer to rely on an exact, precise recall of events, rather than a general sense of knowing, in order to be sure they have checked properly (van den Hout & Kindt, 2003b).

Support for the paradoxical nature of repeated checking, whereby checking erodes, rather than increases aspects of meta-memory was first demonstrated using a virtual checking paradigm (van den Hout & Kindt, 2003a). Non-clinical participants provided ratings of their memory confidence, vividness, and detail about virtual stove checking pre and post a series of repeated checking trials. During these repetitions, half of the participants checked virtual stove burners 20 times (relevant checking), while half checked virtual light bulbs 20 times (irrelevant checking). Only those who engaged in relevant checking reported decreases in memory confidence, vividness, and detail, from pre- to post-repeated checking. Importantly, participants in the relevant checking condition were just as accurate as individuals completing irrelevant checking at reporting which stove burners they had operated. Those in the relevant checking condition also demonstrated a shift from relying on "remembering" to "knowing" (Tulving, 1985; van den Hout & Kindt, 2003b; 2004). Declines in meta-memory

* Corresponding author. Tel.: +1 514 848 2424.
E-mail address: adam.radomsky@concordia.ca (A.S. Radomsky).

http://dx.doi.org/10.1016/j.jbtep.2015.02.009
0005-7916/

following repeated checking are robust, and have been replicated using real working appliances (Coles, Radomsky, & Horng, 2006; Radomsky, Gilchrist, & Dussault, 2006), during mental checking (Radomsky & Alcolado, 2010) and with clinical samples (Boschen & Vuksanovic, 2007; Radomsky, Dugas, Alcolado, & Lavoie, 2014).

Declines in aspects of meta-memory following repeated checking are consistent with the cognitive theory of compulsive checking (Rachman, 2002). A key component of this theory is a "self-perpetuating mechanism" (p. 629) wherein checking is perpetuated in part because although individuals may check to reduce initial uncertainty, the act of checking paradoxically increases uncertainty. This increased uncertainty propels the individual to continue to check.

A potential consequence of the decrements in meta-memory caused by checking is that over time, following attempts to retrieve memories that are by nature lacking in detail and vividness, individuals may come to believe that they possess a poor memory. Indeed, low confidence in memory has been shown, psychometrically, to predict checking over and above known OCD-relevant belief domains (Nedeljkovic & Kyrios, 2007). This body of work led us to question whether manipulating beliefs about memory ability could impact checking phenomenology (Alcolado & Radomsky, 2011). Undergraduate students completed a battery of memory tests and were then randomly assigned to receive either positive or negative false feedback about their performance. Those individuals who were told they had a very poor memory had significantly greater urges to check their performance on a series of subsequent tasks, as compared to those who were told they had an excellent memory. This finding has now been replicated in the context of prospective memory (Cuttler, Sirois-Delisle, Alcolado, Radomsky, & Taylor, 2013). As such, maladaptive beliefs about memory may be a hitherto neglected belief domain pertinent to compulsive checking (Alcolado & Radomsky, 2011).

A number of other belief domains have been proposed to be central to OCD. Building upon Paul Salkovskis' (1985) earlier work positing inflated responsibility as central in maintaining OCD symptoms, the Obsessive-Compulsive Cognitions Working Group (OCCWG; 1997) set out to determine the beliefs most relevant to OCD. The group ultimately found six belief domains within three categories: 1) inflated responsibility/threat overestimation; 2) importance of/control over thoughts, and 3) perfectionism/intolerance of uncertainty (OCCWG, 2005). Importantly, beliefs about memory were removed from consideration at the first phase of their investigations (OCCWG, 1997), and as such, in our view, have not received sufficient attention in the literature on maladaptive beliefs in OCD.

As beliefs about memory may be implicated in checking and memory performance, perhaps targeting them in treatment would alleviate checking-related symptomatology. van den Hout and Kindt (2004) suggested, based on their findings, that treatment for OCD include learning to tolerate decreased meta-memory. Beyond increasing tolerance, therapeutic psychoeducation and behavioural experiments could perhaps additionally increase positive beliefs about memory ability, countering decreased meta-memory. Indeed, a new cognitive-behavioural therapy (CBT) protocol for compulsive checking which includes these elements has been proposed (Radomsky, Shafran, Coughtrey, & Rachman, 2010), although a clinical investigation is still underway.

Examining the impact of beliefs about memory on checking symptomatology also provides an ideal opportunity to assess the degree to which such beliefs are related to memory performance. Compulsive checking has previously been proposed to be associated with a deficit in memory, particularly in non-verbal recall (e.g., Tallis, 1997); but this view remains controversial, as others have suggested that any deficits observed may be secondary to the disorder. In particular, these deficits are not specific to checkers (Cuttler & Graf, 2009), and providing threat-relevant information can negate the 'memory deficit' (Marsh et al., 2009). Moreover, individuals with OCD have been found to have *superior* memory for stimuli that are personally significant (Constans, Foa, Franklin, & Mathews, 1995; Radomsky & Rachman, 1999; Radomsky, Rachman, & Hammond, 2001; Tolin et al., 2001), especially under ecologically valid conditions (Coles & Heimberg, 2002). To explain these seemingly opposing results, it has been suggested that negative beliefs about one's memory ability may undermine memory performance (Cougle, Salkovskis, & Wahl, 2007; Radomsky & Alcolado, 2010; Radomsky & Rachman, 1999; Radomsky et al., 2001). Indeed, a study by Nedeljkovic (2006) found that after controlling for meta-cognitions (including confidence in memory, decision making, attention, concentration, and perfectionistic standards for memory) impaired neuropsychological performance did not significantly predict OCD symptoms in a sample of clinical checkers.

As the ability of an intervention designed specifically to target beliefs about memory to impact checking and memory performance has not yet been conducted, this was the primary goal of the current pilot study. It was hypothesized that a two-session cognitive intervention focused on beliefs about memory would a) decrease maladaptive beliefs about memory, b) decrease checking behaviour, and c) increase memory performance in individuals receiving treatment, as compared to those in a waitlist condition. In addition to measuring visuospatial recall, processing speed was also assessed as a cognitive control task that was expected to remain stable across time. Finally, it was expected that changes in maladaptive beliefs about memory would be predictive of lower checking symptoms, and of enhanced memory performance.

1. Method

1.1. Participants

Participants ($N = 24$) were individuals with a diagnosis of OCD who reported significant checking and/or doubting symptoms. Doubt and checking compulsions were required to cause significant distress and/or interference and to be evident for at least one hour per day. Exclusion criteria were the presence of current substance dependence, bipolar disorder, or psychosis. Participants were recruited from a registry of individuals with OCD interested in research studies, via campus flyers, classroom recruitment, and through advertisements placed online. Participants were compensated financially for the assessment visits (see below), but not for the treatment. See Table 1 for demographic information.

The majority of the sample had a primary diagnosis of OCD (66.67%). Other primary diagnoses included Generalized Anxiety Disorder (16.67%), Social Anxiety Disorder (12.50%), and Major Depressive Disorder (4.17%). A minority of participants presented solely with OCD (16.67%), and the mean number of co-morbid diagnoses in the remainder of the sample was 3.25 ($SD = 1.65$). There were no differences between the treatment and waitlist conditions with respect to primary diagnosis, $\chi^2(4) = 3.93$, $p = .42$. There were also no condition differences with respect to mean number of co-morbid diagnoses, $t(1,22) = 1.39$, $p = .18$, $d = .56$ (treatment $M = 3.58$, $SD = 1.83$, waitlist $M = 2.67$, $SD = 1.37$). See Table 1 for clinical severity ratings.

1.2. Measures

1.2.1. Beliefs About Memory Inventory (BAMI; Alcolado & Radomsky, 2012)

The BAMI self-report questionnaire comprises twenty items that assess individuals' beliefs about their memory. It contains two