



Mediation and interaction effects of doubt, dysfunctional beliefs and memory confidence on the compulsion to check

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ABSTRACT

According to an integrative model of checking compulsions, experiences with prospective memory failures diminish confidence in the ability to reliably execute tasks and lead to intrusive doubts that previous tasks were not properly completed. These intrusive doubts trigger attempts to recall performing the task in question, however, diminished confidence in retrospective memory combines with dysfunctional beliefs to produce urges to check. The act of checking then has the paradoxical effects of further diminishing memory confidence and increasing perceived responsibility leading to the repetitive nature of checking compulsions (Cuttler & Taylor, 2012). Previous research has demonstrated that checking compulsions are associated with dysfunctional beliefs, diminished confidence in retrospective memory and failures of prospective memory. The present study was conducted to examine the mediation and interaction effects proposed in this model. In line with the model we find that everyday life prospective memory failures are correlated with intrusive doubts and that these doubts mediate the relationship between prospective memory failures and checking compulsions. Moreover, the results of a series of hierarchical regression analyses indicate that doubt interacts with dysfunctional beliefs and dysfunctional beliefs further interact with diminished confidence in memory to produce checking compulsions.

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1. Introduction

Epidemiological and factor analytic studies show that Obsessive-Compulsive Disorder (OCD) is a symptomatically heterogeneous condition (McKay et al., 2004). The most common symptom is checking compulsions (Henderson & Pollard, 1988; Stein, Forde, Anderson, & Walker, 1997), with over 50% of individuals with OCD exhibiting these compulsions (Henderson & Pollard, 1988; Rasmussen & Eisen, 1988; Stein et al., 1997), and an additional 15% of the general population demonstrating sub-clinical checking compulsions (Stein et al., 1997). Individuals with these compulsions have intrusive doubts that they failed to perform a task or failed to perform it properly, and they subsequently feel compelled to check repeatedly that the task was performed properly (Rachman, 2002).

Contemporary cognitive models of checking compulsions typically focus either on the role of dysfunctional beliefs and appraisals or cognitive functioning, and few attempts have been

made to integrate the two types of models (Taylor, Abramowitz, & McKay, 2007). However, Cuttler and Taylor (2012) recently proposed an integrative model that implicates prospective memory (the ability to remember to execute tasks at a later moment), retrospective memory (the ability to remember whether or not tasks were executed previously) and dysfunctional beliefs (e.g., inflated sense of responsibility and threat, intolerance of uncertainty). According to their model, frequent experiences with prospective memory failures may contribute to intrusive doubts that previous tasks were not properly completed (e.g., a door was not locked). These intrusive doubts trigger attempts to recall performing the task in question. However, diminished confidence in retrospective memory combines with dysfunctional beliefs to produce urges to check. The act of checking then has the paradoxical effects of further diminishing memory confidence and increasing perceived responsibility, leading to the repetitive nature of checking compulsions.

Previous research has provided support for each of the various components of this model. Specifically, as described below, checking compulsions have been shown to be associated with dysfunctional beliefs, diminished confidence in retrospective memory and problems with prospective memory. However, little work has been done to examine how these variables combine to produce checking compulsions. Thus, the goal of the present study was to

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test the mediation and interaction effects proposed in Cuttler and Taylor's (2012) integrative model.

Building on the work of Salkovskis, Rachman, and others, the Obsessive-Compulsive Cognitions Working Group (OCCWG, 1997) has identified three sets of dysfunctional beliefs associated with OCD: (a) inflated sense of responsibility and over-estimation of threat, (b) intolerance of uncertainty and perfectionism, and (c) importance of and control over thoughts (OCCWG, 2005). The role of dysfunctional beliefs in OCD has been demonstrated by research showing that directly targeting these beliefs using cognitive-behavioral therapy is beneficial in the treatment of patients with OCD (Abramowitz, Taylor, & McKay, 2005; O'Connor et al., 2005; Wilhelm et al., 2005) and is associated with fewer dropouts than treatments that do not target these beliefs (Abramowitz, et al., 2005).

Subsequent investigations by the OCCWG and others have focused on examining whether particular dysfunctional beliefs or patterns of beliefs are associated with the different symptoms of OCD. The results of research pertaining to checking compulsions suggest that all three sets of dysfunctional beliefs are associated with these compulsions (Taylor, Abramowitz, & McKay, 2005; Taylor et al., 2010; Wu & Carter, 2008), even after controlling for genetic factors that influence compulsions and dysfunctional beliefs (Taylor & Jang, 2011). Moreover experimental manipulations of beliefs pertaining to responsibility show that checking is more frequent under conditions of increased responsibility and that the act of checking can further increase perceived personal responsibility (Lopatka & Rachman, 1995).

A growing body of research shows that checking compulsions are also associated with diminished confidence in memory. For instance, using hierarchical regression, Nedeljkovic and Kyrios (2007) demonstrated that decreased confidence in memory predicted OCD symptoms over-and-above dysfunctional beliefs, depression and anxiety. Confidence in memory was found to be particularly predictive of checking compulsions. Moreover, Alcolado and Radomsky (2011) recently provided the first experimental demonstration that diminished confidence in memory causes increased urges to check. Participants in their experiment received false positive or false negative feedback about their performance on a battery of tests of retrospective memory. They then completed additional tasks, and rated their urges to check the proper completion of those tasks. Participants who were led to believe that their retrospective memory was poor reported greater urges to check, compared to those led to believe their memory was good.

Intriguing experimental research has further demonstrated that repeated checking has a paradoxical effect—while it is initiated in an attempt to increase certainty that a task was performed, it decreases memory confidence, vividness and detail (Coles, Radomsky, & Horng, 2006; Radomsky, Gilchrist, & Dussault, 2006; van den Hout & Kindt, 2003, 2004). Moreover, the use of behavioral experiments illustrating this phenomenon has been shown to be a promising intervention in the treatment of these compulsions (Radomsky, Shafran, Coughtrey, & Rachman, 2010).

Traditionally the focus of research linking memory with checking compulsions has been on retrospective memory, broadly defined as the ability to remember previous experiences and events. This focus stems from the assumption that diminished confidence in one's memory of performing a task (e.g., locking a door) justifies the compulsion to check (Freud, 1909/1955; Janet, 1903; Sher, Frost, & Otto, 1983). However, a relatively new line of research suggests that other forms of memory problems, particularly problems with prospective memory, may play an important role in checking. Once again prospective memory refers to the ability to remember to execute tasks at a later moment (Meacham

& Dumitru, 1976). Everyday life examples include remembering to lock the door upon leaving the house and to turn the stove off after use. The focus on prospective memory is based on the assumption that experiences with prospective memory failures diminish confidence in the ability to reliably execute prospective memory tasks. This diminished confidence in prospective memory contributes to the intrusive doubts that tasks were not completed (e.g., the door was not locked) that subsequently fuel the compulsion to check (Cuttler & Graf, 2009a; Cuttler & Taylor, 2012). In other words, if one has diminished confidence in his/her ability to remember to perform tasks, s/he may begin to have intrusive doubts concerning the proper execution of tasks and these doubts ultimately contribute to the compulsion to check.

In support of this notion, several studies have shown that prospective memory failures are correlated with checking (Cuttler & Graf, 2007, 2008, 2009a, 2009b; Harris, Vaccaro, Jones, & Boots, 2010) and one study has shown that these failures are associated with the types of intrusive doubts that tend to instigate checking (Cuttler & Taylor, 2012). These relationships have been shown to be independent of the elevations in depression commonly associated with checking compulsions (Cuttler & Graf, 2008, 2009b; Cuttler & Taylor, 2012). Moreover, a recent experiment has extended the findings of Alcolado and Radomsky (2011) to prospective memory, demonstrating that manipulating confidence in prospective memory using false negative feedback causes increased doubts and urges to check (Cuttler, Sirois-Delisle, Alcolado, Radomsky, & Taylor, in press).

1.1. Objective one—to examine whether doubt mediates the relationship between prospective memory failures and checking

In the present study, we first sought to test the hypothesis that everyday life prospective memory failures ultimately lead to checking compulsions by increasing doubts that tasks were not completed. While it has been proposed that the mechanism by which prospective memory failures ultimately lead to checking compulsions is through increasing doubt that previous tasks were not completed (e.g., Cuttler & Graf, 2009a; Cuttler & Taylor, 2012), only one study has examined whether doubt mediates the relationship between prospective memory and checking. The findings indicated that doubt mediates the relationships between checking and failures on objective prospective memory tests and confidence in prospective memory (Cuttler & Taylor, 2012). However, the question of whether doubt mediates the relationship between checking and self-reported failures of prospective memory in everyday life could not be examined because of a failure to replicate previous research showing correlations between checking and self-reported problems with prospective memory. To fill this gap in the literature, our first objective was to examine whether doubt mediates the relationship between everyday life prospective memory failures and checking compulsions. Once again we hypothesized that doubt would mediate this relationship.

1.2. Objective two—to examine whether interactions between doubt, memory confidence and dysfunctional beliefs predict checking

Our remaining hypotheses pertained to the presence of interactions between doubt, memory confidence and dysfunctional beliefs. While previous research has established links between checking compulsions, diminished confidence in retrospective memory and dysfunctional beliefs, to our knowledge this is the first study to examine whether interactions among these variables also predict checking compulsions.

Specifically, our second hypothesis was that doubt would interact with dysfunctional beliefs to predict checking compulsions. That

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