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Too little, too much, or just right? Does the amount of distraction make a difference during contamination-related exposure?

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ABSTRACT

Background and objectives: The extant literature has shown mixed results regarding the impact of distraction use on exposure outcome; however, a wide variety of distraction tasks have been utilized across studies. In order to better understand these discrepant findings, we aimed to evaluate the impact of differing levels of distraction on exposure outcome. Additionally, treatment acceptability and changes in self-efficacy were assessed to evaluate how these may differ as a function of distraction use.

Methods: In Experiment 1 ($N = 176$ participants tested), distraction tasks were experimentally validated through assessing changes in reaction time when completing concurrent tasks. Based on Experiment 1, distraction tasks were selected for use in Experiment 2, in which contamination-fearful participants were randomly assigned to one of four conditions: no, low, moderate, or high distraction during an exposure session. Participants ($N = 124$) completed a behavioural approach test and self-efficacy measure pre- and post-exposure and at one-week follow-up. Treatment acceptability was assessed immediately following the exposure session.

Results: There were no significant differences between conditions for changes in behavioural approach pre-to post-exposure or at one-week follow-up. However, increases in self-efficacy pre-to post-exposure were greatest for moderate distraction, and treatment acceptability was highest with moderate and high distraction.

Limitations: Participants were not assessed for clinical severity, were not treatment-seeking, and only one specific type of fear was investigated.

Conclusions: Distraction (at any level) did not appear to negatively impact exposure outcome (all conditions improved pre-to post-exposure and at follow-up), but utilizing moderate to high amounts of distraction increased treatment acceptability.

1. Introduction

When faced with anxiety-provoking situations, individuals often attempt to reduce their distress through the use of distraction strategies that distance oneself from a feared situation through reduced visual or cognitive attention. Although it has been suggested that distraction during exposure therapy for anxiety interferes with emotional processing (e.g., Foa & Kozak, 1986; Rachman, 1980) and with extinction (e.g., Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014) by reducing attentional focus (e.g., Barlow, 1988), others have asserted that fear reduction can occur through other means (see Rachman, 2015). For example, Bandura (1977, 1988) proposed that fear reduction can occur following mastery over a situation, resulting in increased self-confidence, self-efficacy, and perceived ability to conquer tasks and tolerate distress. Individuals often use emotional arousal as a measure of coping ability, and the use of distraction may aid in reducing arousal, thereby increasing feelings of accomplishment. It has thus been argued that increased self-efficacy may relate to fear reduction (e.g., Bandura, 1977, 1988), and importantly that distraction does not necessarily impede (and may in fact aid in) this process. Furthermore, cognitive accounts of fear reduction during exposure postulate that belief disconfirmation (e.g., non-occurrence of feared outcomes, new understanding of core concept) plays a central role in exposure outcome. Salkovskis (1991) suggested that the use of strategies that aim solely to decrease anxiety in a situation will not interfere with belief disconfirmation, as helping manage anxiety symptoms does not inherently block the ability to obtain disconfirmatory evidence. Although these (and other) theories do not predict a negative impact associated with distraction use, it remains important to understand when, how, and for whom the use of distraction may be appropriate. Furthermore, given a recent focus on treatment acceptability (e.g., Milosevic, Levy, Alcolado, & Radomsky, 2015) with the hypothesis that enhanced acceptability may result in reduced treatment refusal and drop-out (e.g., Rachman, Radomsky, & Shafran, 2008), it may be useful to investigate

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whether distraction may increase acceptability.

Although many studies have investigated the impact of distraction during exposure, results are inconsistent. While some studies show no difference in treatment outcome when distraction is used versus when it is not (e.g., Antony, McCabe, Leeuw, Sano, & Swinson, 2001; Rose & McGlynn, 1997), others show that distraction impedes fear reduction within (e.g., Kamphuis & Telch, 2000; Rodriguez & Craske, 1995) and between sessions (e.g., Craske, Street, & Barlow, 1989; Kamphuis & Telch, 2000), while others show that distraction can aid in fear reduction within (e.g., Craske, Street, Jayaraman, & Barlow, 1991; Grayson, Foa, & Steketee, 1986; Penfold & Page, 1999) and between sessions (e.g., Johnstone & Page, 2004; Oliver & Page, 2003, 2008). Given these discrepant results, it is important to investigate specific factors that may influence outcome. Although several aspects may be relevant, one potentially important factor relates to the level of difficulty (i.e., cognitive load) of the distraction tasks (e.g., Kamphuis & Telch, 2000; Podină, Koster, Philippot, Dethier, & David, 2013; Rodriguez & Craske, 1993, 1995; Telch et al., 2004).

Studies investigating distraction use during exposure have employed a wide variety of tasks with differing levels of complexity. For example, these have included reading words aloud (e.g., Haw & Dickerson, 1998), viewing images (e.g., Rodriguez & Craske, 1995), playing video games (e.g., Grayson, Foa, & Steketee, 1982, 1986), conversational tasks (e.g., Oliver & Page, 2003), and completing mathematical tasks (e.g., Kamphuis & Telch, 2000). Careful consideration of task-related differences may be central to understanding the role of distraction during exposure, given that varied levels and forms of distraction may lead to diverse outcomes. Specifically, the amount of cognitive resources necessary to engage in distraction (i.e., cognitive load or working memory taxation) will inherently differ based on task complexity. Working memory refers to the memorial system responsible for holding, manipulating, and processing information (see Baddeley, 1992); when working memory is taxed, resources are being utilized at close to their capacity. When a task involves greater cognitive load, fewer cognitive resources are available to process other aspects of one's environment and experience. It is possible that if distraction tasks involve differing levels of working memory taxation or cognitive load, variable levels of resources would remain available to process the exposure.

The effect of cognitive load on exposure outcome has been established as a likely mechanism underlying the effects of eye movement desensitization and reprocessing (EMDR), a treatment for posttraumatic stress disorder (PTSD; e.g., Bisson et al., 2007). EMDR involves the visualization of past traumatic experiences (i.e., imaginal exposure) while focusing on the therapist's finger moving back and forth (Shapiro, 1995). While some have reported that exposure is the active ingredient in EMDR (for a review see Cahill, Carrigan, & Frueh, 1999), a more parsimonious conceptualization of EMDR includes the theorized treatment enhancing role of eye movements. Specifically, Shapiro (1989) argued that exposure alone was insufficient, and that eye movements appeared to be a helpful component in fear reduction. In a study by Lee, Taylor, and Drummond (2006), qualitative coding of the content of imaginal exposure alone or with eye movements indicated that when individuals processed trauma in a detached fashion they showed greater improvement; detachment was identified as a specific consequence of EMDR. Importantly, more recent studies have established that the efficacy of EMDR may relate to the eye movements taxing working memory or increasing cognitive load (Engelhard, van den Hout, Janssen, & van der Beek, 2010; Engelhard et al., 2011; van den Hout & Engelhard, 2012; van den Hout et al., 2010).

It is proposed that given the limited capacity of working memory (Miller, 1956), engaging in a task that utilizes a portion of this capacity while concurrently imagining distressing memories will result in less resource allocation to the distressing memory, thus reducing vividness and emotionality during recoding. In support of this hypothesis, variable tasks that tax working memory (using methods other than eye movements) have been investigated and exhibit similar results to eye movements, including counting tasks (van den Hout et al., 2010), auditory shadowing (Gunter & Bodner, 2008), and drawing a complex figure (Gunter & Bodner, 2008). Tasks that appear to utilize few working memory resources (e.g., finger tapping) do not enhance treatment outcome, performing at a similar level to imaginal exposure without eye movements (van den Hout, Muris, Salemink, & Kindt, 2001). Furthermore, it has been theorized that the dose-response curve related to working memory taxation may exhibit an inverted U-shape, with too little or too much taxation not aiding in reductions of vividness or emotionality. For example, when working memory is highly taxed, insufficient resources are available to successfully hold the distressing memory in one's mind (Engelhard et al., 2010); thus, reductions in vividness and emotionality no longer result.

If working memory is taxed during an anxiety-provoking experience (e.g., an exposure session), the emotionality of the experience may be less intense and less vivid, thus leading to encoding the event as less distressing. Theoretically, this suggests that differing levels of cognitive load during exposure may lead to altered levels of processing of treatment components. In order to investigate this theory, the two experiments presented below were designed to determine the impact of varying cognitive load in distraction tasks on exposure outcome. The first experiment aimed to assess the level of cognitive load of a number of tasks in order to select appropriate distraction tasks for the second study, which investigated the effect of differing levels of distraction on exposure outcome in a contamination-fearful sample; this sample was selected to address a further goal of exploring the role of distraction in problems other than specific phobia. It was hypothesized that moderate levels of distraction during exposure would enhance fear reduction compared to a no distraction control, and that high levels of distraction would interfere with fear reduction.

Another important question was whether the use of distraction would be associated with higher levels of treatment acceptability. To our knowledge, the acceptability of treatment with or without the use of distraction has yet to be investigated; however, distraction is often construed as a type of covert safety behaviour, and recent work has begun to focus on the potential acceptability-enhancing role of the use of safety behaviour in treatment. Specifically, preliminary studies have established that the use of safety behaviour may increase treatment acceptability, both experimentally in a student sample (Levy & Radomsky, 2014), and via treatment vignettes rated by both student (Levy, Senn, & Radomsky, 2014; Milosevic & Radomsky, 2013a) and clinical (Milosevic & Radomsky, 2013a) samples. Therefore, we also assessed treatment acceptability following an exposure session with or without distraction (Experiment 2), and hypothesized that treatment acceptability would be rated highest in conditions using moderate and high levels of distraction.

2. Experiment 1

This study aimed to establish the level of cognitive load associated with five different distraction tasks to determine which would best represent three differing levels of cognitive load: low, moderate, and high. We predicted that seemingly more complex tasks would lead to higher levels of cognitive load. Cognitive load was assessed by measuring change in reaction time on a computer task when completing concurrent tasks, with greater reaction times indicating greater cognitive load. We also predicted that subjective cognitive load (i.e., self-reported task difficulty) would correlate with objective cognitive load (i.e., changes in reaction time).

2.1. Method

2.1.1. Participants

Participants were (N = 180) undergraduate students who completed the study in exchange for course credit. Following the exclusion