



An experimental test of the role of control in spider fear



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ABSTRACT

It is well established that uncontrollable adverse experiences lead to increased distress, but the role of client control during psychological interventions such as exposure is less clear. Earlier studies reported inconsistent findings, most likely owing to variations in the way client control was manipulated, degree of exposure, the outcome variables chosen and the follow-up periods used. Importantly, studies to date had suggested to participants that approaching their fears was beneficial thereby biasing their choices and these studies had not measured change beyond the laboratory. We recruited 96 spider-fearful student participants (mean age = 22; SD = 5.9; Range = 18–45; 86 female). The experimental design allowed full choice over their degree of exposure, and manipulated the degree of control as the extent to which their movement of a joystick influenced their virtual distance from a moving spider image. Those with high control were yoked with a low control counterpart to ensure equal amounts of exposure. Measures were elicited at baseline, post-exposure, and at follow-up. As predicted, compared to low control participants, those with high control over exposure approached closer toward a spider post-exposure and reported less spider avoidance after an average of 17 days. No group differences were found in physiological or subjective distress during the task, nor in distress and dysfunction.

One of the most common and clinically effective interventions for people with emotional disorders involves increasing exposure to a feared object or situation (Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014; Marks, 1979; Mowrer, 1939). Many of the specific mechanisms that underlie therapeutic change and effective behavioral therapy are well researched and these include a mix of biological factors such as habituation (Watts, 1979), factors based on learning theory i.e. extinction (Eysenck, 1987), counter conditioning (Wolpe, 1968), learning new information that is contrary to prior expectations (Foa & Kozak, 1986) and inhibitory learning (Craske et al., 2014). Despite the evidence for these mechanisms, the role of client control during therapy is vital to understand because it determines the manner in which therapy is delivered to the individual and the nature of the therapeutic interactions during the therapy (Carey, Kelly, Mansell, & Tai, 2012). This is particularly important during exposure therapy because the client is expected to engage with an experience that they find unpleasant or frightening and they tend to avoid when given the choice. A number of theoretical perspectives have suggested that exposure is more effective when client control over the process is high (Carey, 2011; Lohr, Olatunji, & Sawchuk, 2007; Mineka & Thomas, 1999). However, the evidence for this prediction to date is mixed, as we will briefly review here.

In order to evaluate the evidence, it is important to first operatio-

nalize what is meant by 'control'. A helpful definition comes from a longstanding theory of control known as perceptual control theory (Powers, 1973). According to Powers, control is defined as achieving or maintaining a pre-specified state of a perceived aspect of the environment through varying action to counteract the effects of disturbances in the environment (Powers, 1973). In other words, people have desired states of their environment (e.g. a person with spider phobia may have a desired distance of a spider to be at least two metres away) and they engage in any action from moment to moment required to keep the environment in that state. If the spider moves closer, then the person may back off or push the spider away with a stick, but if the spider moves away, the person can ease off these attempts and may even approach a little nearer. A person with limited control over this experience might be in a room in which the spider happens to block the exit, or in which they have no implements to tackle it. The question remains – which of these individuals is having a more therapeutic experience – the one who can exert control to feel safer at will, or the one who is no longer able to control the situation using their usual safety strategies?

In support of the beneficial effects of control, it is well established within the field of psychosomatic medicine that control over aversive experiences mitigates against distress (Maier & Watkins, 2005; Seligman & Beagley, 1975). However, other relevant areas of research

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are less clear-cut. For example, it is noted that most studies of control in the field of social and clinical psychology study the effects of 'perceived control', rather than an objective measure of control. In a comprehensive review of perceived control, it was found that while there was a consistent relationship between perceived control and improved well-being, there were many instances in which greater perceived control can entail negative consequences, such as negative affect and poor performance (Burger, 1989). Within the clinical field, some studies have supported the view that greater perceived control is related to reduced distress in an exposure task (Armfield, 2007, 2008). However, the issue is somewhat muddled by a number of other findings. For example, several studies have manipulated whether the client is exposed to what they fear via therapist instruction or via self-exposure manual (Emmelkamp & Kraanen, 1977; Öst et al., 1991). The findings of these studies have been mixed, with the self-exposure manual generally entailing worse outcomes. It is typically assumed that the self-exposure manual provides the client with greater control than therapist guidance. Yet, within the studies comparing therapist with self-exposure manual, the manual provides directions for the client to follow. This means that the client cannot fully control their own exposure unless they ignore the instructions. Within either therapist-directed or manual-directed models of therapy, there is often still an implicit assumption that the client possesses similar goals to the therapist (e.g. 'to get over their fear'). Little appreciation is given to the fact that clients may have equally important conflicting goals driving them to avoid what they fear e.g. "I must be safe"; i.e. that the client is ambivalent about approaching what they fear. Further, the idea of therapist control being beneficial contradicts with findings that when the therapist takes full control by terminating the session early, this can prevent between-session habituation (Rachman & Lopatka, 1988; Rachman et al., 1987). Another set of mixed findings come from studies that allow clients to control their fear-provoking situation through implementing safety-seeking behaviors. Depending on the way that the behaviors are framed to the client, they seem to both facilitate (Rachman, Shafran, Radomsky, & Zysk, 2011) and reduce (Salkovskis, Clark, Hackmann, Wells, & Gelder, 1999) the effects of exposure.

Our question may therefore be better answered through experimental studies in which control over the fear provoking entity itself is directly manipulated as it occurs in real time, during the moment. A methodological advance has therefore involved studying control as a dynamic process using a yoked design (Craske, Bunt, Rapee, & Barlow, 1991; McGlynn, Rose, & Jacobson, 1995; McGlynn, Rose & Lazarte, 1994; Rose, McGlynn, & Lazarte, 1995; Uijen, Hout &, Engelhard, 2015). A yoked design has its origins in research in animal models of psychopathology, for example in the seminal work on learned helplessness (Seligman, 1975; Seligman & Beagley, 1975; Seligman & Maier, 1967). These studies typically paired participants either side of a partition, with one participant was able to control their distance from a feared stimuli (snake or spider) on a conveyer, while their 'no control' counterpart was exposed to the results of their movements. Thus, yoking ensures identical exposure in two groups whilst manipulating the level of control. Across these studies, results are inconsistent. An early study found no effect of control manipulation on fear levels (Craske et al., 1991) and two later studies also found no difference in physiological arousal, self-reported distress or on the behavioral approach post-task (McGlynn et al., 1994; Uijen et al., 2015). In contrast, two studies discovered an increase in physiological arousal when a participant was given greater control (McGlynn et al., 1994; Rose et al., 1995). The latter also found higher levels of self-reported distress. It was suggested in these studies that the paradoxical increase in physiological arousal when given control may be due to higher task demands and sense of responsibility for the other participant, rather than the manipulation of control itself. To understand this potential confound, authors suggested that future studies should use a different approach when manipulating exposure, and they also specified that further understanding of participants' reasons for approach and avoid-

ing spiders (their conflicting goals) was needed (Uijen et al., 2015).

Given these mixed findings we designed a study to try to address them. In particular, we also considered the role of goal conflict. According to perceptual control theory (PCT), conflict provides both an explanation for why fears are distressing – because they conflict with important life goals, and it suggests that goal conflict outside awareness (ambivalence) can maintain lack of control (Mansell, 2005; Powers, 1973). For example, an individual with spider phobia may have a goal to be safe from harm that leads them to adjust their actions so that the spider remains a minimum distance away. However, suppose the same individual possesses an equally as important goal to be 'a capable person' which entails that they also want to get close to the spider. In this example, there is a high degree of conflict between their spider fear and their higher order goals. From this perspective, if this conflict were not to be resolved, their distress would be maintained.

A PCT approach indicates that client control is beneficial because having control is the normal state of affairs for healthy human beings, and so ultimately the client needs to find a way to exert control when therapy has finished. Therefore, interventions based on PCT involve clients taking the lead from the start (Carey, 2008). These are steps that have a clear parallel to talking therapies based on a PCT approach (Carey, 2006; Carey, 2008; Mansell, Carey & Tai, 2012). Optimal exposure from a PCT perspective would require raising awareness of goals that relate to the phobia prior to exposure. In particular, these would include life goals with which the phobia interferes and also other conflicting goals that account for the client's ambivalence regarding exposure. This would entail the potential for the client to re-evaluate (reorganise) their goals prior to the exposure task and to willingly exert control in a manner that helps them regain overall control in their lives.

Given the above account, the current study included an exercise to raise awareness of goal conflict prior to exposure. We then assessed control over distance from a fear provoking entity (spider image) in a dynamic, computerised task that did not confound yoking with a sense of responsibility, as may have occurred in McGlynn et al. (1994) and Uijen et al. (2015). We managed this by taking computer recordings of the dynamic distances from the images from the participant who had high levels of control over exposure, and presenting them during a separate test session to a participant who had low levels of control over exposure, so that neither participant could be aware that yoking had occurred. Galvanic skin response during exposure was assessed. In addition a two-week follow-up period was introduced as an advance on earlier studies. Formal measures of spider phobia, its impact in terms of distress and dysfunction and a 'real world' test of avoidance (Behavioral Approach Task; BAT) were used in similar fashion to therapeutic studies (Rosen, Glasgow & Barrera 1976; Emmelkamp & Kraanen 1977; Öst, Salkovskis & Hellstrom 1991).

In the design of the current study, we have assumed that most clients will use the opportunity of having complete control over their exposure to get closer to the spiders that they fear in order to be in a better position in the future to achieve important goals in their lives (e.g. to sleep better in a room that may have a spider; to be a capable person). We therefore hypothesised that participants with high control during exposure would get closer to a spider immediately after exposure compared to those with low control, and at follow up, rate themselves as less avoidant of spiders and lower on spider fear distress and dysfunction. However, it is also possible that some individuals may either not achieve sufficient awareness of their goal conflict to do so, or they may judge that keeping further away from spiders ultimately gives them more control in their lives. We will report these individual differences in a separate article.

2. Method

2.1. Design

An a priori power calculation using G power was conducted using

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