



Research—Basic Technical Research

## Modelling the direct and indirect effects of thought suppression on personal choice

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### ABSTRACT

The current study sought to provide an empirical model of the direct and indirect effects of thought suppression on personal choice. In Experiment 1 (direct effect) participants were required to make a preference on a dichotomous choice task. After making their choice they were instructed to repeat the selection task while suppressing all thoughts of a target word which was programmed to appear each time they selected their originally preferred item. Results showed that participants gradually changed their original preference to avoid coming into contact with the target unwanted thought. Experiment 2 (indirect effect) extended Experiment 1 by examining whether a similar effect might be seen via trained and derived relations respectively and by comparing possible effects seen in original target, trained and derived conditions with patterns seen in a control condition. In Experiment 2 participants in each of four groups (target, trained, derived and control) were first trained and tested for the formation of three derived equivalence relations using a match-to-sample procedure. They then received exposure to suppression and choice phases similar to the protocol employed in Experiment 1. However this protocol differed in terms of the presence or absence of a stimulus that might function to depress value congruent choice and it differed also in terms of the nature of the stimulus (i.e., target, trained or derived). Findings showed that participants in each of the three experimental conditions demonstrated depressed values choice in comparison with the control condition. Implications and future research directions are discussed.

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### 1. Introduction

There is an increasing amount of empirical evidence suggesting that valuing plays a key role in psychological health and well-being. For example, values affirmation and goal setting have been linked with longitudinal well-being (Sheldon & Elliot, 1999), reduced rumination after failure (Sherman, Nelson, & Steele, 2000), reduction in stress and perceived threat (Creswell, Welch, Taylor, Sherman, Gruenewald, & Mann, 2005) and greater well-being among cancer sufferers (Ciarrochi, Fisher, & Lane, 2011), while increased values pursuit has been related to increased happiness (Sheldon & Houser-Marko, 2001).

In the project of further advancing our understanding of psychological processes such as values, one key strand of empirical work is the modelling of these processes at a basic level. This research, which allows us to examine and manipulate these

processes under relatively well-controlled conditions enables us to explore and understand their interaction in ways that more field-oriented research cannot. There is already a considerable amount of basic contextual behavioural work on certain important processes including, for example, avoidance (e.g., Dymond et al., 2011). There is arguably less work on other processes, including values. Considering the central role of values in healthy human functioning, it is important that we provide more avenues of basic exploration with respect to this phenomenon. The aim of the current study was to contribute in this regard.

According to Acceptance Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) a value is the highest point in a hierarchical relational network that is ultimately founded on personal preferences for particular experiences. For example, one important foundation for a person's value of 'family' might be their preference for interacting with other people rather than spending time alone. From this point of view, the key to successful living is to continue to choose in accordance with such personal preferences and act congruent with those choices as often as possible throughout one's life (Plumb, Stewart, Dahl, &

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Lundgren, 2009; Wilson & DuFrene, 2009). However, attempts to control negative internal experiences, referred to as experiential avoidance, can sometimes interfere with this process, thus undermining psychological health (see e.g., Barlow, Allen, & Choate, 2004; Vowles & McCracken, 2008; Hayes, Orsillo, & Roemer, 2010). From the ACT perspective, making healthy choices will almost invariably involve automatic reactions, some of which may be aversive (e.g., feeling anxiety in the context of a decision to get married). If an individual chooses to avoid such reactions then they must also avoid making particular choices; however the greater the extent to which they engage in such avoidance, the less healthy and fulfilling their life (Hayes, 2002). The aim of this study was to provide a basic model of this process.

More specifically, the aim of this study was to model how thought suppression might affect choice responding. Thought suppression is one of the most commonly employed forms of experiential avoidance (Rachman and de Silva, 1978) and hence examining the extent to which thought suppression might affect choice could provide useful insight into a relatively common way in which valuing may be negatively affected. A series of experiments was designed that drew on empirical modelling of thought suppression by Wegner et al. One of Wegner's (1989) major contributions on thought suppression is the 'Environmental Cueing Hypothesis' (ECH) which seeks to explain why thought suppression is counterproductive. This mechanistic cognitive model describes two processes that are purported to occur when a person is asked to suppress an unwanted thought, namely, the 'automatic target search' and 'controlled distracter search'. The former is an unconscious and automatic process which searches in order to determine whether the unconscious thought (the target) is present, while the latter is a conscious and deliberate process that involves seeking out distracting information with which to replace the target. According to ECH the suppression attempt fails due to the fact that evidence of the unwanted thought is found more quickly than the controlled distracter search can generate distracters. In addition to this, associations are made between the unwanted thought and the generated distracters leading to a heightened accessibility of the unwanted thought.

The theoretical constructs employed by ECH are less helpful from a contextual behavioural perspective than alternative functional analytic descriptions of the phenomena involved might be. However the data are readily reinterpreted in functional analytic terms and the protocols employed are potentially useful means of exploring thought suppression as a covert behaviour. By this point, the predictions of ECH are reasonably well empirically supported (Wegner, Schneider, Knutson, & McMahon, 1991; Wegner & Erber, 1992; Najmi & Wegner, 2008). Furthermore, the basic protocol has been used by at least one recent study that approached the phenomena involved from a functional contextualist perspective. This study used this alternative perspective on the events involved to extend the work in potentially important respects. Recent research by Hooper, Saunders, and McHugh (2010) suggested that ECH in fact underestimates the counterproductive nature of thought suppression because it only considers the impact of stimuli associated directly with the unwanted stimulus. Hooper et al. provided evidence that it is not only stimuli directly associated with an unwanted thought that can interfere with attempted suppression; stimuli in indirect or derived relations with it can also do so.

The current paper reports on two studies that have drawn on and extended this empirical work on thought suppression to model a process in which thought suppression can interfere with personal choice. Experiment 1 provides a model of this phenomenon that draws on the basic paradigm utilised in ECH research while Experiment 2 extends this work to demonstrate values suppression interference via derived relations.

## 2. Experiment 1

In Experiment 1, participants were required to make a preference on a dichotomous selection task. After making their preference they were instructed to repeat the selection task while suppressing all thoughts of a target word which was programmed to appear each time they selected their originally preferred stimulus. It was predicted that participants would change their original choice to avoid coming into contact with the target unwanted thought.

### 2.1. Method

#### 2.1.1. Participants

Twenty-seven undergraduate student participants ranging in age from 18 to 35 years (mean=24.5; SD=4.12) were recruited from the Swansea University subject pool system and received credit for their participation. Participant data could be excluded if no selection preference was made in the first part of the selection task. The data from five of the participants was excluded on this basis.

#### 2.1.2. Design

The study involved a within-subjects experimental design involving 1 factor (block) operationalised at 6 levels (i.e., each of the ten trial blocks across parts 1 [Block 1] and 2 [Blocks 2–6] of the selection task). The dependent variable was number of preferred selections made per trial block.

#### 2.1.3. Materials and apparatus

Presentation of instructions and stimuli and recording of responses was conducted using a Dell XPS 420 desktop PC with 550 MHz processor with a 14-inch colour monitor screen and a standard computer mouse as interface. Two separate customised experimental protocols programmed using Visual Basic™ were used in the current experiment. The 'suppression induction' protocol presented instructions and recorded 'thought intrusion' space bar press responses. The protocol for the 'selection task' phase presented instructions and selection tasks stimuli and recorded button press responses.

#### 2.1.4. Procedure

On arrival at the experimental cubicle, each participant was greeted by the researcher and was asked to complete a consent form. The general procedure consisted of 3 phases: (1) Suppression induction; (2) Concurrent task; (3) Selection task.

**2.1.4.1. Suppression induction.** For this phase, participants were instructed to suppress all thoughts of the word 'Bear' for a five-minute period. Each time they thought of the word 'Bear' they were required to press the space bar on the keyboard. The purpose of this phase, which was adopted from Wegner and Erber (1992), was to familiarise participants with the suppression task.

**2.1.4.2. Concurrent task.** In the second phase, participants were assigned a concurrent ('cognitive load') task. The provision of such a task is a relatively standard feature of work on thought suppression since it has been shown to increase thought suppression interference (e.g., Wegner & Erber, 1992). In this experiment participants were given a sheet of paper with a six-digit number on it and were told that they had 25 s to memorise this number and that they would have to reproduce it at the end of the experiment.

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