



## Voluntary involuntariness: Thought suppression and the regulation of the experience of will

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### Abstract

Participants were asked to carry out a series of simple tasks while following mental control instructions. In advance of each task, they either suppressed thoughts of their intention to perform the task, concentrated on such thoughts, or monitored their thoughts without trying to change them. Suppression resulted in reduced reports of intentionality as compared to monitoring, and as compared to concentration. There was a weak trend for suppression to enhance reported intentionality for a repetition of the action carried out after suppression instructions had been discontinued.

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### 1. Introduction

Can we intend not to intend? Try not to try? Voluntarily behave involuntarily? At first blush, these possibilities sound paradoxical if not absurd, more like philosophers' puzzles than questions of relevance to scientific psychology. However, it is possible to frame these questions in a way that does make sense, and further, in a way that promises to explain some previously puzzling phenomena. The capacity of the will to *cancel itself* may underlie phenomena in which people experience involuntariness for actions despite external indications that the action has arisen voluntarily. To test this possibility, the present study examined whether trying not to think about one's intention can induce an experience of involuntariness for the intended action.

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### 1.1. Experienced involuntariness

The feeling that an action is “happening” rather than that one is “doing it” can occur under a variety of conditions. People can experience such involuntariness when they are performing complicated, lengthy, goal-directed actions, and even when they are fully able to report the conscious goal of the action. Experiences of involuntariness occur regularly in hypnosis (Gorassini & Perlini, 1988; Kihlstrom, 1985; Kirsch & Lynn, 1999), for example, and have been considered a signal characteristic of the hypnotic state (Lynn, Rhue, & Weekes, 1990). Hypnosis may not always prompt the occurrence of a suggested behavior (e.g., the person’s arm rising), but it regularly yields experiences of involuntariness when such behavior occurs (i.e., the person feels the arm rising without conscious will).

Involuntariness is also characteristic of several unusual phenomena classed as *automatisms*. People report reduced or absent experiences of conscious will in trance channeling (Brown, 1997), spirit possession (Boddy, 1994), automatic writing (Koutstaal, 1992; Zusne & Jones, 1989), table-turning (Carpenter, 1875), water dowsing (Vogt & Hyman, 1959), and other automatisms such as Ouija-board spelling and pendulum divining (Ansfield & Wegner, 1996; Spitz, 1997). There are also circumstances leading people to experience enhanced conscious will for events or actions over which they have no demonstrable control (Langer, 1975; Thompson, Armstrong, & Thomas, 1998; Wegner & Wheatley, 1999). Such circumstantial variation in experienced voluntariness, both its reduction and its enhancement, suggests that the experience of conscious will is not an infallible indicator of the conscious causation of the action. Rather, experiences of involuntariness or voluntariness may be better understood as the outputs of a mental process that estimates degrees of *apparent* mental causation.

What then drives these estimates? The early insight of Hume in *A Treatise on Human Nature* (Hume, 1888) was that the “constant union” and “inference of the mind” that underlies the perception of causality between physical events must also give rise to perceived causality in “actions of the mind.” Drawing on this idea, the theory of *apparent mental causation* (Wegner, 2002; Wegner & Wheatley, 1999) suggests that the experience we have of causing our own actions arises whenever we draw a causal inference linking our thought to our action. When thought seems to cause action, we experience will. Principles guiding such inferences can be drawn from principles of attribution and inference that govern cause perception more generally (Gilbert, 1995; Heider, 1958; Kelley, 1972; Michotte, 1963).

According to this theory, when a thought appears in consciousness just prior to an action, is consistent with the action, and is not accompanied by salient alternative causes of the action, we experience conscious will and ascribe authorship to ourselves for the action. In contrast, when thoughts do not arise with such *priority*, *consistency*, and *exclusivity*, we experience the ensuing actions as less willed or voluntary. In essence, this theory suggests that voluntariness is experienced primarily when thought about action is the primary candidate for having caused the action that is observed.

In commonplace actions, we often do have thoughts of action that are consistent, prior, and exclusive. We may think of going into the bedroom before we do so, for example, so when we indeed go, we quickly conclude that we did it. If we were not thinking of going into that room but nonetheless found ourselves standing there looking at the bed, the lack of consistency between our thought and action would undermine our feeling of conscious will for the action. If we thought of

going to the room only *after* the action, in turn, we would have the requisite consistent thought—but its lack of appropriate priority would yield little sense of will for the action. And of course, if we were conveyed into the room by someone else (say, a pushy lover), even if we had thought of going and had been quite happy with the idea, we might find our experience of will undermined because the thought was not an exclusive cause.

The application of these principles of inference suggests that experiences of voluntariness or involuntariness are guided by perceptions of mental causation, not by actual mental causation. There is considerable evidence suggesting that the manipulation of access to information about consistency, priority, and exclusivity is indeed what underlies the experience of involuntariness in hypnosis and in many of the automatisms (Wegner, 2002). When thoughts are made to *seem* inconsistent with an action, when the order of thought and action is somehow obscured, or when plausible causes of action other than thought are introduced to the person's awareness, experiences of involuntariness ensue. These distortions can be created through interpretive sets (e.g., Lynn et al., 1990; Spanos & Katsanis, 1989) and through direct manipulations of information availability (e.g., Wegner, Fuller, & Sparrow, 2003).

This insight suggests, then, how it might be that a person could experience voluntary involuntariness. If the person actively attempted to control the circumstances surrounding an action to influence own perception of the action's causal origins, the experience of will might thus be influenced by active, voluntary processes. The idea of “voluntary involuntariness,” then, turns on two different definitions of *voluntary*. The exertion of mental control that occurs when a person attempts to influence the availability of thoughts about action may be voluntary in the sense that it is goal-directed. This goal-directed activity could potentially undermine the person's *experience* of voluntariness during subsequent action. To the extent that a person might be able to inhibit awareness of the elements underlying the inference of conscious will—awareness of the thought, the action, or their interrelation—the person might voluntarily create a sense of involuntariness.

### 1.2. *Suppression of intention*

The idea that people could attempt to influence their own experience of actions has surfaced before in the literature on involuntariness. Hilgard (1986) proposed that “selective inattention” might be active in producing the experience of involuntariness in hypnosis, and several other analyses of hypnosis have drawn on the idea that people might be actively involved in interpreting their behavior as unwilling (Comey & Kirsch, 1999; Gorassini & Perlini, 1988; Kirsch & Lynn, 1999; Lynn, 1997; Ruehle & Zamansky, 1997). The role of active interpretation of cues to involuntariness has also been noted in commentaries on spirit possession and mediumistic trance (Halperin, 1995; Hughes, 1991). How could people control their minds in this way?

Perhaps the most direct form of mental control is thought suppression—trying not to think about something. When people suppress a simple thought, they are able to do so in some ways but not in others. People who are instructed to suppress the thought of a white bear while reporting their stream of consciousness aloud tend to mention white bears about once per minute (Wegner, Schneider, Carter, & White, 1987)—which is, of course, more than they would do so

without any such instruction. There is evidence that intentional suppression ironically enhances the accessibility of the unwanted thought by a variety of measures, and is particularly likely to do this when the person is under mental load (Wegner, 1994; Wegner & Erber, 1992; Wegner, Erber, & Zanakos, 1993). This effect is not as clear, however, when it comes to consciously reported thinking (Wegner & Smart, 1997). Suppression instructions actually reduce self-reported thinking as compared to instructions to concentrate on a thought, and they can also reduce thinking as compared to instructions to monitor the thought (see reviews by Abramowitz, Tolin, & Street, 2000; Wegner, 1992; Wenzlaff & Wegner, 2000). Perhaps people who try to suppress thoughts of an intended action might reduce those thoughts below normal levels (even while not eradicating them completely).

There is a further possibility raised by the literature on thought suppression. A frequent finding in this research is that thoughts once suppressed tend to rebound after suppression is discontinued (Wegner et al., 1987). It may be that the suppression of an intention could result in the rebound of intention-related thoughts when suppression is no longer in mind. Such a rebound could function, then, to *enhance* the experience of will for any occurrences of the associated action during this post-suppression period. The voluntary suppression of thought could reduce experienced voluntariness for action initially, then, but perhaps increase the sense of voluntariness for subsequent instances of the action. The present study examined the influence of suppression of intention on the experience of will for a current action, and on this experience for an action undertaken when suppression was discontinued.

Previous research on thoughts of action has not examined how such thoughts impinge on the experience of will. The general finding in this area is simply that intentions are difficult to put out of mind once they are formed. This phenomenon, known in the history of psychology as the Zeigarnik effect, involves a tendency for interrupted or uncompleted actions to engender a strong motivation to complete the action (Ovsiankina, 1928; Zeigarnik, 1927). In addition, current research on prospective memory shows that intentions may have a privileged status in memory by being stored at heightened levels of activation. This intention superiority effect (Goschke & Kuhl, 1993; Marsh, Hicks, & Bink, 1998) provides further evidence that intentions may be hard to suppress. It is an open question, then, whether people can suppress thoughts of actions as they perform them, so as to influence their experience of will. This experiment was designed as a first step in addressing this question.

## 2. Method

### 2.1. Overview and design

Participants were asked to carry out a series of simple tasks while following mental control instructions. They were asked in advance of each task either to *suppress* thoughts of their intention to perform the task, to *concentrate* on such thoughts, or to *monitor* their thoughts without trying to change them. Following each task, participants rated their experience of will for the action (on a scale from “it just happened” to “I did it on purpose, intentionally”). They subsequently were led to perform the actions again without instructions, again reporting experienced will.

## 2.2. Participants

Harvard University undergraduates (16 female and 8 male) volunteered to participate in return for course credit or \$6. All participants completed the experiment correctly and no one was excluded from the sample.

## 2.3. Tasks

Ten tasks were used, one for practice and nine for the experiment. The tasks were adapted from studies in the Zeigarnik effect literature (Lewis & Franklin, 1944; Reeve, Cole, & Olson, 1986; Rickers-Ovsiankina, 1935) and involved relatively simple actions. The practice task was copying a shopping list, and the experimental tasks included: copying a geometric figure; circling the vowels in a short paragraph; completing a wooden puzzle for children; lifting a brick to a height of 10 in. and setting it down again; alphabetizing 10 letters on index cards; spiraling a pipe cleaner around a pencil and taking it off; rolling an elongated piece of clay into a ball; winding loose thread on to a spool; and completing a set of five simple anagrams. Participants performed these tasks in one of three possible fixed orders.

## 2.4. Procedure

All participants were tested individually. At the beginning of the experiment each participant was informed that the aim of the study was to find out how thinking about tasks affects perceptions of one's role in performing these tasks. The experimenter explained that the main dimension of interest was how some tasks feel more intentional than others, and then went on to say: "Some everyday tasks feel fully intentional, like writing a difficult essay (one *does* these things), whereas others feel as if they just *happen* or "run off" with little feeling of intentionality (e.g., driving or brushing one's teeth)." To make sure participants understood the distinction they were asked to rate four simple everyday actions in terms of how intentional they usually feel on a 9-point scale with 1 = *it felt like it just happened*, and 9 = *it felt like I did it on purpose, intentionally*. The four actions they rated were: eating popcorn at the cinema, walking down stairs, watering the plants, and dreaming (cf. Malle & Knobe, 1997). The rating scale for these items was the same scale used to rate the intentionality of the subsequent experimental tasks, and was based on measures used to assess involuntariness in hypnosis (e.g., Lynn, Nash, Rhue, Frauman, & Sweeney, 1984) and the experience of intention and conscious will in automatism and everyday actions (e.g., Malle & Knobe, 1997; Wegner & Wheatley, 1999).

If at this juncture it was clear that participants understood the distinction, they were invited to proceed with the practice task (copying a shopping list). After completing the practice task they were given the intentionality scale and asked to rate their experience. Participants were then introduced to the main experimental manipulation as follows:

In the tasks we will begin in a moment I will be asking you to either monitor your thoughts before and during the task or to suppress or to concentrate on the intention to perform the act. You will have 10 seconds before each task to practice the mental task. If I ask you to suppress the intention to perform the action it is vital that you try to suppress this thought during the few seconds before the act but also during performance of the action. Equally, if I ask you to concentrate on the intention to perform the action it is vital that you try to keep this thought in mind during the few seconds before the act but also during

performance of the action. For monitoring, you only have to monitor your thoughts and notice what you are thinking without trying to change them at all.

In addition to these general instructions, specific instructions were given to participants just before each action. Three tasks were performed with suppression instructions, three with concentration instructions, and three with monitoring instructions. For suppression, the instructions were:

During performance of the next action I would like you to try not to think about your intention to perform the action while doing it. Thus, your task is to suppress any thoughts about the intended behavior while performing it.

For concentration, the instructions were:

During performance of the next action I would like you to try to think about your intention to perform the action while doing it. Thus your task is to concentrate on thoughts about the intended behavior while performing it.

For monitoring, the instructions were:

During performance of the next action I would like you to monitor your thoughts without trying to change them. Just notice what you are thinking about while performing the behavior, whatever this may be.

Following each instruction, the experimenter said: “You will have a few seconds to settle into this task, at the end of which I will press this buzzer telling you to carry out the action.” When approximately 10 s had elapsed, the experimenter pressed a buzzer. All participants did successfully perform all assigned tasks.

Participants then completed the nine experimental tasks in one of three fixed orders. The order of the thought instructions was fully counterbalanced such that, across participants, each of the nine tasks was suppressed, expressed, and monitored an equal number of times across the three task orders. After each task, participants were asked to rate their experienced intentionality for the task on the rating scale. They were asked a further question which depended on the thought instructions they had received for that task. If they had been suppressing thoughts of the intention they were asked to rate “How hard were you trying to suppress the thought given to you?” on a scale from 1 (not very hard) to 9 (extremely hard). If they had been concentrating on thoughts of the intention, they were asked to rate “How hard were you trying to express/ concentrate on the thought given to you?” Finally, if they had been monitoring their thoughts, they were asked to rate “What were you thinking about before and during enactment of the task?” on a scale from 1 (thinking exclusively about something other than the task) to 9 (thinking exclusively about the task).

After all of the tasks had been completed with the respective thought instructions, the experimenter reset all of the tasks to their original states. Participants were then asked to run through all of the tasks again, this time with no thought instructions so they could think what they wanted. Participants were told they could complete the tasks in any order providing eventually they had done them all. After each task participants again rated the intentionality of their action.

### **3. Results**

Initial analyses showed that participants took their instructions seriously. Participants indicated trying fairly hard to concentrate on the thought in concentration trials ( $M = 6.14$  on the 9-point scale), and also trying fairly hard to suppress the thought in suppression trials ( $M = 6.63$ ). They reported thinking primarily about the action rather than other things on the monitoring

trials ( $M = 6.26$ ). These thought manipulations did not influence action per se, however, as all participants carried out all tasks. Participants' initial level of intentionality on the practice task was near the scale midpoint of 5 ( $M = 5.67$ ) and the means for all the tasks across conditions were near this value. Initial analyses also indicated, however, that one of the experimental tasks (anagrams) elicited high intentionality ratings overall, so further analyses were conducted with this task excluded.

Mean intentionality pooled across tasks was examined in a 3 (order of tasks)  $\times$  3 (instruction: concentration, monitoring, or suppression)  $\times$  2 (action: target action vs. later action) analysis of variance (ANOVA) with repeated measures on the latter two variables. Although there were significant main effects of action and instruction, and also significant interactions of order with each of these variables, these are best interpreted in light of the significant interaction of instruction and action,  $F(2, 42) = 8.46$ ,  $p < .001$ ,  $\eta^2 = .29$ . Task order did not qualify this effect, so the influence of order will not be examined further. The means are shown in Fig. 1.

The influence of thought instructions on intentionality of the target action was examined by simple main effects and contrast analysis. Suppression instructions reduced intentionality for the target action ( $M = 5.03$ ) below the level prompted only by monitoring ( $M = 5.83$ ),  $F(1, 21) = 4.63$ ,  $p < .05$ , and also below the level yielded by concentration ( $M = 6.28$ ),  $F(1, 21) = 13.07$ ,  $p < .002$ . Intentionality levels for the target action during monitoring and concentration did not differ significantly.

The influence of thought instructions can also be seen in comparisons between intentionality experienced for the target action, and intentionality for that action performed later without instructions. Concentration yielded greater intentionality for the target action ( $M = 6.28$ ) than the later action ( $M = 4.95$ ),  $F(1, 21) = 20.54$ ,  $p < .001$ , and monitoring also yielded greater intentionality for the target action ( $M = 5.83$ ) than the later action ( $M = 4.93$ ),  $F(1, 21) = 9.66$ ,  $p < .005$ . However, suppression did not have such an effect, and even produced a tendency in the opposite direction. Intentionality for the target action during suppression ( $M = 5.03$ ) was

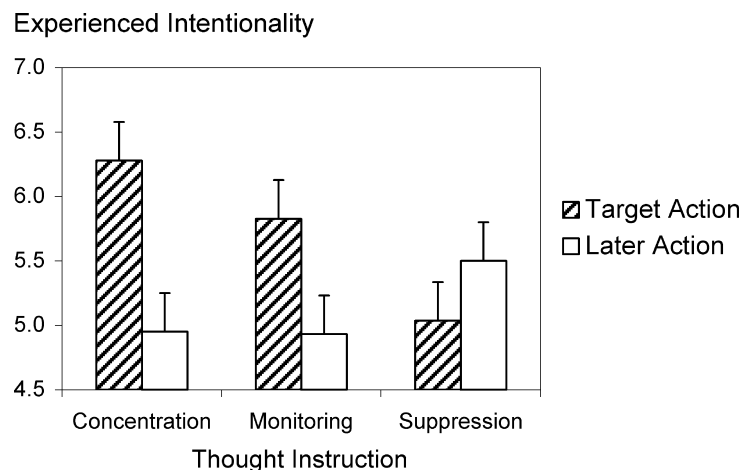


Fig. 1. Mean intentionality experienced for actions performed during or after each of three thought instructions (concentrate on thought of intention, monitor thoughts, or suppress thought of intention). Error bars are standard errors.

nominally lower than intentionality for the same action following suppression ( $M = 5.50$ ),  $F(1, 21) = 1.82$ ,  $p < .18$ .

Contrasts between intentionality levels experienced for the later action did not yield any reliable effects. However, it is noteworthy that intentionality of the later action after suppression tended to be greater ( $M = 5.50$ ) than the combined mean intentionality of the later action after monitoring and concentration ( $M = 4.94$ ),  $F(1, 21) = 2.50$ ,  $p < .13$ .

Finally, correlations were computed to examine relations between the thought reports during the various task instructions and experienced intentionality. The most telling finding was that thought during the monitored actions was strongly related to feelings of intentionality during enactment,  $r(24) = .75$ ,  $p < .01$ . Reports of how hard people concentrated were similarly related to the experience of intentionality during concentration,  $r(24) = .79$ ,  $p < .01$ . Reports of trying hard to suppress, however, were not related to intentionality during suppression,  $r(24) = .22$ , *ns*. This correlation might be expected to be negative, in that motivation to suppress might enhance suppression success and thus undermine apparent mental causation. However, trying hard to suppress does not guarantee successful suppression (Wegner & Zanakos, 1994), and the lack of a link from motivation to reported intentionality may be understood in this light.

#### 4. Discussion

People in this study who were asked not to think about their intention before they performed an action described the action as seeming less intentional as a result. Suppressed thought of intentions yielded reduced reports of intentionality as compared to concentration on intentions, and as compared to simple monitoring of thoughts as well. There was a weak trend for suppression during an initial action to enhance experienced intentionality during a subsequent repetition of that action once suppression instructions had been discontinued. So, although it is possible to produce “voluntary involuntariness” through thought suppression, such suppression did not have an effect over time, and may yield a rebounding sense of intentionality for actions that were previously put out of mind.

As with any study of the influence of instructional sets, these results must be considered in light of the potentially powerful role of experimental demand. Certainly, participants in this experiment were exposed to clear demands to control their own thinking. Moreover, the repeated-measures design of the study guaranteed that participants were also made aware of the different instructional sets and the comparisons the experimenter was likely to draw among them. Participants were specifically *not* alerted to any experimental hypothesis relating the thought instructions to possible influences on experiences of intentionality for the actions, but it is reasonable to suggest that such influences were not difficult for them to infer. One might expect that, on being asked not to think of one’s intention to act, for example, one’s level of intentionality might be expected to decrease. Similarly, participants could have inferred that an instruction to concentrate on their intention might be expected to enhance their experience of intentionality. The influence of mental control instructions could thus be understood as an effect of demand characteristics of this experiment.

The role of demand in the results should be appreciated, however, in terms of two key observations. First, it is important to recognize that the processes labeled as “demand” in



psychology experiments may mirror in many respects the essential processes underlying the social manipulation of experiences of will in natural contexts. Experiences of involuntariness are often precipitated in real-world circumstances by influential figures who, like an experimenter, offer strong instructions and expectations designed to influence the person's exertion of mental control, and even to mold the person's interpretation of the effects of such control. Just as experiments have demanding experimenters, for instance, hypnosis has forceful hypnotists. In the case of the automatisms, in turn, channeling occurs at the urging of guides and coaches, dowsing and divining experiences happen at the behest of models and mentors, and Ouija-board spelling occurs in the presence of expectant audiences (Wegner, 2002). Social pressures in our experiment may well be critical in the production of voluntary involuntariness because just such pressures are present to promote the effect in most of its other manifestations. Participants in our study may have been motivated to suppress thoughts because of demand, and may, too, have been motivated to report reduced intentionality following suppression due to demand. There are several circumstances, of course, in which people engage in mental control spontaneously, exerting influence on their thoughts without external instigation (Wenzlaff & Wegner, 2000). Personal fears might prompt suppression, for example, or desires could yield concentration. It remains a question for future research whether suppression or concentration prompted spontaneously, without social pressure, and without any pressure to report consequent changes in voluntariness would have influences on voluntariness like those observed for instructed mental control in this experiment.

A second observation on the role of demand in this study centers on the apparent counter-demand effects of mental control on actions when mental control is rescinded. Although the observed effects were not strong, there was a tendency for suppressed intentions to rebound, yielding enhanced voluntariness for actions once the suppression instruction was no longer operative. This ironic effect (Wegner, 1994) cannot as easily be traced to demand, as it does not follow from the instructions participants were given, and even appears to oppose them. The possibility of such post-suppression ironic effects on intentionality deserves scrutiny in further research.

This study, in short, only begins to open the veil of mystery that has previously surrounded experiences of involuntariness. Many of the phenomena of involuntariness have historically been resistant to empirical analysis, relegated instead to catalogs of psychological anomalies (Spitz, 1997; Zusne & Jones, 1989). The present research opens these phenomena to new understanding through the idea that people might visit changes in intentionality upon themselves through the exercise of mental control. In a larger sense, these data also comprise significant evidence pertaining to the processes addressed by the theory of apparent mental causation (Wegner, 2002; Wegner & Wheatley, 1999). Mental control of thoughts about action can influence whether thoughts occur in mind relevant to the action, and so can create significant transformations in the experience of will.

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