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## Unnoticed intrusions: Dissociations of meta-consciousness in thought suppression



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### ABSTRACT

The current research investigates the interaction between thought suppression and individuals' explicit awareness of their thoughts. Participants in three experiments attempted to suppress thoughts of a prior romantic relationship and their success at doing so was measured using a combination of self-catching and experience-sampling. In addition to thoughts that individuals spontaneously noticed, individuals were frequently caught engaging in thoughts of their previous partner at experience-sampling probes. Furthermore, probe-caught thoughts were: (i) associated with stronger decoupling of attention from the environment, (ii) more likely to occur under cognitive load, (iii) more frequent for individuals with a desire to reconcile, and (iv) associated with individual differences in the tendency to suppress thoughts. Together, these data suggest that individuals can lack meta-awareness that they have begun to think about a topic they are attempting to suppress, providing novel insight into the cognitive processes that are involved in attempting to control undesired mental states.

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## 1. Introduction

From stressful upcoming events to past loves, there are often things that people would prefer to avoid thinking about. Although it would certainly be nice if it were possible to be able to promptly forget anything one wished to not think about, the conscious attempt to suppress or avoid certain thoughts is difficult and can even backfire, in some cases leading to suppression-induced obsession (see Wegner, 1992). This “ironic” return of unwanted thoughts was first shown experimentally in a study in which individuals asked not to think about a white bear for a period of time later reported thoughts of a white bear more frequently than those not given this instruction (Wegner et al., 1987). Other studies on suppression have found similar results, showing that attempts to suppress a thought often lead to an increase in its occurrence, either immediately or after the suppression has ended (for reviews see Wegner (1994) and Wenzlaff and Wegner (2000)).

Research on thought suppression has generally assumed that the difficulty people have in suppressing unwanted thoughts results from some interplay between unconscious and conscious thought. In an influential theory, Wegner (1992, 1994, 1997) has argued that the recurrence of unwanted thoughts is due to a two-stage process in which an automatic monitor searches preconsciousness for thoughts that require suppression, followed by a cognitively-demanding (and conscious) process of actually suppressing the thought. As Wegner (1997) states, “because the monitor searches for potential

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mental contents that signal failure of mental control, it increases the accessibility of these contents to consciousness” (p. 299). While considerable research supports this theory (e.g., Wegner, 1994; Wenzlaff & Wegner, 2000), research in other domains (in particular in the related area of mind-wandering), suggests that the challenges surrounding attempts at thought control may in addition occur at the conscious level. Specifically, recent investigations of mind-wandering have documented the value of a distinction between two different levels of conscious thought: *experiential consciousness* – thoughts that occur without explicit self-reflection, and *meta-awareness* – thoughts that are accompanied by the explicit awareness of having the thought (e.g., Schooler, 2002; Schooler, Mrazek, Baird, & Winkelman, in press; Schooler et al., 2011).

In order to assess mental lapses that occur with versus without meta-awareness, research on mind-wandering has employed two self-report measures: (i) *self-catching*, in which individuals are asked to press a response key every time they notice that they have been engaging in unrelated thoughts and (ii) *experience sampling*, in which individuals are periodically interrupted by a prompt which asks them about the content of their current conscious experience (e.g., Reichle, Reineberg, & Schooler, 2010; Sayette, Reichle, & Schooler, 2009; Sayette, Schooler, & Reichle, 2010; Schooler, 2002; Schooler et al., 2011; Smallwood & Schooler, 2006). For example, Schooler, Reichle, and Halpern (2005) asked participants to self-report whenever their minds wandered while reading, and intermittently probed participants to report on whether they were mind-wandering at that moment. Despite the fact that readers were asked to self-report an episode of mind-wandering as soon as it occurred, they were nonetheless sometimes “caught” engaging in off-topic thoughts at the experience-sampling probes. Furthermore, the frequency of probe-caught episodes of mind-wandering was associated with worse comprehension on a post-reading test, but those episodes that were self-caught were not, suggesting that reading comprehension is particularly disrupted by mind-wandering episodes that evade detection.

Building on the hypothesis that the capacity to notice off-task thoughts is crucial to the effective regulation of behavior, subsequent research has shown that when participants describe their mind-wandering at probes as lacking explicit meta-awareness, this is associated with greater propensity for error (Smallwood, McSpadden, & Schooler, 2007, 2008), worse reading comprehension (Smallwood et al., 2008) and more careless responding in a go/no-go task (Smallwood, McSpadden, & Schooler, 2007). Moreover, manipulating external focus through alcohol (Sayette et al., 2009) or craving (Sayette et al., 2010) has been shown to increase reports of mind-wandering at probes while reducing the proportion of these lapses that are explicitly noticed. Together these data highlight the importance of the distinction between the occurrence of specific thoughts and the explicit recognition (i.e., meta-awareness) of what one is thinking about (for recent reviews see Schooler et al., 2011, in press).

The distinction between thoughts that occur with versus without meta-awareness could provide novel insight into the cognitive processes that are involved in attempting to suppress thoughts for several reasons. First, previous studies examining self-reports of failures of thought suppression have largely relied on a self-catching methodology. This leaves open the possibility that individuals may experience conscious thoughts regarding the content they are trying to avoid but fail to self-catch those experiences due to dissociations of meta-awareness (Schooler, 2002; Schooler et al., 2011, in press). Given prior demonstrations of qualitative differences between thoughts that occur with versus without meta-awareness, the fact that previous investigations have relied exclusively on self-catching raises the possibility that processes and characteristics previously ascribed to suppressed thoughts might only apply to those thoughts that reach meta-awareness. Second, recognition that one’s mind has drifted back to the topic one wishes to avoid is potentially a necessary first step in the process by which control can be initiated. Understanding failures of thought suppression can therefore be advanced by understanding the circumstances in which the monitoring of such thought is compromised. As research on mind-wandering has shown, effective metacognitive monitoring of thought may be hindered when the mental resources required to monitor thought are dampened (Sayette et al., 2009, 2010) and thus unable to engage in effective top-down control.

Most fundamentally, the distinction between consciousness and meta-awareness introduces another level at which the monitoring of suppressed thoughts could take place. As noted above, in prior theoretical discussions of thought suppression, Wegner (1994) has reviewed considerable evidence indicating that thought suppression involves the interplay of two juxtaposed processes: a control process that attempts to think about anything but the undesired thought, and an automatic process that searches for failures of the control process. For example, when executive resources are available (thereby enabling the control process that avoids unwanted thoughts) participants are generally quite effective at minimizing such thoughts (Wegner & Erber, 1992). However, when resources are limited (thereby undermining the control process), suppressed thoughts “rebound” in frequency. This latter finding suggests that in the absence of the control process, the automatic monitor primes and then finds the very thoughts the individual is seeking to avoid. Although considerable research has amassed in support of this ironic process model, one question has gone largely unaddressed, namely: What exactly is the automatic monitor monitoring? Wegner (1997) suggests that the automatic monitor searches the contents of preconsciousness. Although such a speculation is certainly plausible, it raises the question of why the monitor would search the contents of preconsciousness when such thoughts might otherwise never reach consciousness. While it may be of questionable value to dredge up suppressed thoughts that are outside of consciousness, there can be little question that one would want to know when an unwanted thought is currently in consciousness. In short, the fact that consciousness and meta-awareness can become dissociated suggests an additional potential locus for monitoring suppressed thoughts: namely, monitoring the contents of consciousness in order to alert the mind when it is currently engaging in the very thought it is intending to avoid.

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