

Level of Construal, Mind Wandering and Repetitive Thought:
Response to ms 2009-0188 (Author's reference to be added)

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Abstract

In this Response to [authors reference to be supplied], I consider their argument concerning how Watkins's (2008) elaborated control theory informs their perspective on the role of executive control in mind wandering. I argue that whilst in a number of places, the elaborated control theory is consistent with [Authors reference to be supplied] perspective that mind wandering represents a failure of executive control, [authors reference to be supplied] account makes a number of claims that are not articulated in the elaborated control theory – most notably, the hypothesis that level-of-construal moderates entry of thoughts into awareness. Moreover, the relevant literature suggests that the relationship between level-of-construal and executive control may be more complex and multiply determined than that proposed in this executive-control failure account of mind wandering. Finally, the implications of this model of mind wandering for understanding repetitive thought in general are considered, and it is proposed that examining level of executive control as a further moderating variable within elaborated control theory may be of value.

In contrasting the evidence consistent and inconsistent with the account that mind wandering recruits executive processes (Smallwood & Schooler, 2006), and with the account that mind wandering represents a failure of executive control, the authors of this review [*named reference to be added*] have provided a valuable integration of the extant literature. Moreover, they make a plausible argument that mind wandering is best accounted for by the combination of failures in executive control coupled with thoughts generated automatically in response to environmental and mental cues. This proposed “executive-control failure” explanation of mind wandering builds considerably and extends on the elaborated control theory of repetitive thought (Watkins, 2008). Therefore, this commentary will focus on: (a) the consistency of these elaborations with the control theory account; (b) the wider implications of this account of mind wandering for repetitive thought (RT) in general.

It is important to note that the Watkins (2008) review of RT has a rather different emphasis from the current review. First, it is focused on RT in general, rather than on mind wandering specifically. Whilst mind wandering will often be a form of RT, for example, when off-task thoughts during a task or activity keep returning to the same themes, mind wandering need not be repetitive: off-task thoughts can be expansive, open, and divergent, and, as such, would not be considered as RT. Thus, there is not necessarily always a direct correspondence between the processes underpinning RT and those underpinning mind wandering, although there is clearly some overlap. Second, Watkins (2008) focused on explaining the differential constructive versus unconstructive consequences of RT, whereas the current paper focuses on explaining the onset and frequency of mind wandering. The main argument of Watkins (2008) is that RT characterized by (a) a focus on negative content combined with (b) high-level, more abstract construals will have the most unconstructive consequences. In contrast, [*authors reference to be supplied*] propose that level-of-construal plays a direct role in the onset and frequency of mind wandering.

With this different emphasis, this executive-control failure account of mind wandering makes central to its account a number of assumptions that were relatively minor, implicit, or not present in Watkins (2008). It is therefore useful to examine whether these extensions are consistent with the original theory and can be justified within the current evidence base. Such extrapolation from the original theory can also be valuable by leading to further clarification of previous assumptions that may not have been fully articulated.

The first key assumption relevant to elaborated control theory made within this executive-control failure account is that level-of-construal influences the onset and frequency of RT (mind wandering), and, more specifically, the entry of off-task thoughts into conscious awareness (e.g., p.9, “The entry of these thoughts into awareness is moderated by control over the level of construal (i.e., control over whether thoughts are about immediate task demands or about more abstract, high level goals)”. It is important to recognise that this view that level-of-construal influences what thoughts enter awareness is neither predicted nor articulated within the elaborated control theory (Watkins, 2008). Rather, more precisely, the elaborated control theory argues that RT will be triggered by a discrepancy between a goal and the current situation, and will continue either until the goal is met or until the individual disengages from and abandons the goal (Carver & Scheier, 1990; Klinger, 1975; Martin & Tesser, 1989; 1996). Moreover, within control theory, it is hypothesized that goals and behaviors are hierarchically organized and can be processed at different levels of abstraction, with more abstract, superordinate goals and standards guiding and informing more specific, subordinate goals and standards. Within this hierarchical organization, pursuit towards abstract goals occurs by specifying reference values at the next lower level of abstraction, all the way down to the concrete representations required to specify the actual behaviors needed to progress towards the goal (Carver & Scheier, 1990; Carver & Scheier, 1998; Vallacher & Wegner, 1987). As such, the elaborated control theory argues that specifying the

reference values at more abstract levels (for example, by adopting a more abstract level-of-construal) can prolong RT, because (a) superordinate abstract goals may be too vague to provide clear guidance as to when it is met or how to meet it; (b) more abstract goals may make goal disengagement more difficult, because the more abstract the representation of the goal, the more important the goal becomes to the general sense of self, and the harder it becomes to disengage from the goal (Martin & Tesser, 1996; McIntosh & Martin, 1992; Millar et al., 1988).

Thus, this executive-control failure account is consistent with elaborated control theory in hypothesizing that more abstract levels-of-construal will lead to more RT in the form of more extensive and more frequent mind-wandering about current concerns, because such thoughts will be more persistent. However, it diverges from the elaborated control theory in proposing that more abstract construals will increase entry of off-task thoughts into consciousness because the elaborated control theory does not explicitly consider the role of abstraction on accessibility of thoughts. This hypothesis is therefore a novel extrapolation beyond the elaborated control theory account of RT. This is certainly an interesting hypothesis, worth further investigation, especially since it suggests that level-of-construal influences both the conscious accessibility and persistence of goal-related thoughts. The suggested mechanism that “an abstract level of construal allows for a large network of related concepts to be activated, increasing the number of off-task thoughts that are likely to be generated” is plausible, especially as it is consistent with suggestions in control theory that processing at a higher-level affords more alternative sub-goals and behaviors to resolve the goal discrepancy (Brunstein & Gollwitzer, 1996). Nonetheless, despite an extensive literature confirming that unresolved and blocked goals increase the priming and accessibility of goal-relevant information, and the perseverance of goal-related thoughts (Brunstein & Gollwitzer, 1996; Martin & Tesser, 1989), to my knowledge, there is not any evidence that different levels of abstraction of these goals influences the accessibility of goal-relevant information (e.g., off-task

thoughts). Thus, there is an important untested assumption at the heart of this executive-control failure account with respect to whether level-of-construal influences the initial shift into consciousness of unresolved concerns. A key next step would be to seek empirical evidence for this hypothesis by examining the effect of manipulating level-of-construal of goals during studies of priming and accessibility of goal-relevant information.

The second key assumption relevant to elaborated control theory within this account is that shifts in level-of-construal require effortful executive control (e.g., p. 8, “we will focus specifically on Watkins’s perspective that executive control is necessary to match the level of construal to the demands of the situation”). Indeed, this hypothesis was explicitly articulated within the elaborated control theory (Watkins, 2008, p.70), albeit briefly: “Third, effective regulation of level-of-construal in response to situational demands is hypothesized to require good cognitive and central executive control. Thus, individuals with deficits in executive/inhibitory control, either because of greater cognitive load or reduced cognitive resources, would be impaired at effectively regulating level-of-construal in response to situational demands.” Importantly, the elaborated control theory account also noted that level-of-construal was influenced by factors other than deliberate executive control, including situational and motivational factors, such as beliefs about the need to understand why things happen. As well as evidence that people shift to more concrete construals when faced with difficult or novel situations (e.g., Vallacher, Wegner, & Frederick, 1987; Wegner et al., 1984), there is evidence that in neutral and happy moods, people adopt a more global, abstract processing style but shift into a more local, concrete processing style in response to sad mood (e.g., Beukeboom & Semin, 2005; Beukeboom & Semin, 2006; Bless et al., 1996; Gasper & Clore, 2002). In addition, psychological distance has been found to also influence level-of-construal, such that greater temporal distance, spatial distance, social distance, and reduced probability (increased hypotheticality) for an event or behavior, all produce more abstract construals of that event or

behavior (see Trope, Liberman, & Wakslak, 2007, for review). Thus, it appears that environmental and situational factors, other than executive control, can influence level-of-construal, suggesting that the view that executive control solely determines level-of-construal is an oversimplification.

Furthermore, it is as yet unresolved how much the shift in level-of-construal in response to situational demands such as psychological distance, mood, or difficulty, is an automatic learnt process or requires deliberate, effortful control. This is an important point for future theoretical and empirical clarification. Construal theory (Trope et al., 2007) proposes that the relationship between psychological distance and level-of-construal is a learnt bidirectional association. When objects are at a greater physical distance, we cannot see specific details of the object but only more abstract properties (e.g., at a great distance, we could recognise an object as a person, but not be able to differentiate those specific features that would identify him or her as a particular individual). Construal theory hypothesizes that this relationship between distance and abstraction becomes overlearnt and generalised to other situations. The logic of this analysis is that the shift in level-of-construal produced by changes in psychological distance should be relatively automatic and not require executive control. Consistent with this, the construal theory literature has reliably demonstrated that the way information is framed and the way language is used can manipulate the level-of-construal adopted (Trope et al., 2007). A similar argument could be made for the effects of mood or familiarity/difficulty on level-of-construal, particularly when there is potential positive reinforcement for this shift in level-of-construal if it helps to adaptively respond to circumstances. In contrast, the executive-control failure account hypothesizes that shift in level-of-construal is predominantly determined by effortful control.

Perhaps the most conservative assumption at this point is that like many cognitive operations, level-of-construal can be influenced both by effortful control and automatic association-based processing. To further refine both the elaborated control theory of RT and this

executive-control failure theory of mind wandering, it will be important to further disentangle the relative strength of these different mechanisms and how conflict between them is resolved.

Finally, it is important to note that evidence for a relationship between level-of-construal and executive control is limited and mainly indirect. There is evidence that the use of concrete construals frees up cognitive resources and improves task performance, especially when the task is considered difficult or occurs under conditions of high cognitive load (e.g., Brandstatter, Lengfelder, & Gollwitzer, 2001; Gollwitzer, 1999; Vallacher, Wegner, & Somoza, 1989). Nonetheless, the relationship between level-of-construal and executive control has not been empirically unpacked, suggesting this as a valuable line of research. In particular, testing whether shifts in level-of-construal in response to situational demands is an automatic response or an effortful one, perhaps by examining whether the shift is impaired by provision of a cognitive load, fatigue or alcohol, is an important line of inquiry.

The ideas in this current review of mind wandering can also be extended back into the consideration of RT more generally, with implications for our theoretical models of RT. First, I note that the authors draw upon a literature indicating that task-unrelated thoughts increase with fatigue and with alcohol consumption, and decreases with higher working memory capacity (WMC), as further evidence that mind wandering results from control-system failures. The logical corollary of this, which was not discussed in Watkins (2008), is that other forms of RT, such as depressive rumination, should also be influenced by these other factors that influence executive control such as fatigue, alcohol, or individual differences in working memory capacity. This hypothesis has obvious clinical implications. For example, fatigue is a common symptom of depression, which may make individuals with depression more prone to rumination. Moreover, it would predict that periods of sleeplessness (e.g., waking in the middle of the night) or of alcohol consumption, would be periods where individuals would be particularly prone to RT.

Second, a major contribution of the current review is the articulation of the *control failure by concerns* view (p. 17), which emphasises the interaction of executive control ability, presence of current concerns (in control theory terms, unresolved goals), and the relevance of the context for activating these concerns, in the onset of mind wandering. This hypothesis accounts for the effects of elevating personal concerns on subsequent off-task frequency, as well as the reduction in task-unrelated thoughts in older adults in experimental studies. Moreover, there may be value in extending this hypothesis to other forms of RT. For example, the onset of depressive rumination can be understood in terms of the reduced executive control found in depression (e.g., Hertel, 1997; Joormann, 2006), coupled with ongoing personal concerns related to loss and unresolved important goals that would be primed by current circumstances. The relevance of this approach to other forms of RT is still an empirical question but there is some evidence consistent with this view. Kashdan and Roberts (2007) found that for individuals with higher levels of social anxiety, but not for individuals with low levels of social anxiety, post-event rumination was associated with increases in negative affect following personal disclosure, but associated with decreases in negative affect following small-talk, indicating an interactive effect of personal concerns and context on RT. What remains to be examined is the moderating role of executive control capabilities.

In sum, [*authors reference to be supplied*] have highlighted that adding level of executive control as a moderating variable would be a useful further extension of Watkins' (2008) elaborated control theory with respect to explaining the onset and persistence of RT. Moreover, [*authors reference to be supplied*] propose a direct relationship between level-of-construal and executive control. This is an idea with considerable potential implications for the elaborated control theory of RT, which requires further empirical testing.

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