



Source Monitoring Trade-Offs From Prospective Memory Intentions

Ece Kilic

Jennifer Adkins

Curtis D. Dobbs

Chad R. Blair

For more information, contact: Arlo Clark-Foos, Ph.D. at acfoos@umd.umich.edu



Background

Much of the recent debate in the prospective memory (PM) literature has revolved around the role of attention in the detection of PM cues. Although the majority of this research has investigated differences in latency to respond to ongoing task trials during various intentions, some work has looked at the cost to memory that occurs as a result of maintaining PM intentions (Cook et al., 2007). In that research, studying words while maintaining active PM intentions reduces free recall memory for words. The reduction in free recall is greatest when participants were given intentions that did not specify the precise nature of their future PM cues. That is, when they were told to make a special response when encountering an animal, they set a higher attentional allocation policy to detecting the PM cues, thus reducing their recall of the words themselves. When participants were told precisely which cues they would encounter (i.e., Focal intentions) free recall was reduced compared with a no-intention control but less so than Nonfocal intentions.

The goal of the current study (and companion data that are part of the larger project) is to investigate further the task interference effect in memory that occurs from maintaining an intention. Specifically, we feel that a potentially fragile source encoding process may be more prone to task interference effects than free recall. We predict a tradeoff insofar as monitoring for PM cues should reduce memory for the source of studied words but this tradeoff may be qualified by participants' attentional allocation policy (i.e., their type of PM intention).

Method

Ninety participants from the University of Michigan Dearborn took part in partial fulfillment of a course research requirement. All participants were asked to make NOUN or OTHER categorization judgments on 106 words displayed individually on a computer screen and simultaneously spoken by either a male or female. Words were chosen from the English Lexicon Project (Balota et al., 2007) to be medium frequency and between 4 and 8 letters. This noun-other ongoing task (OGT) either occurred alone (control) or was paired with one of two types of PM intentions (Focal vs. Nonfocal). Nonfocal instructions asked participants to make a special key press ("") when the word denoted any animal and Focal instructions named the specific animals (*COW*, *DOG*, *GOAT*, & *HORSE*) that they would respond to. A brief, 3 minute delay was interpolated between instructions and OGT (for all conditions) to deemphasize the importance of the PM intention. After the OGT ended, all participants read instructions for a surprise source recognition phase where studied words were presented along with 53 new words, randomized anew for each participant. They were asked to judge if the word on the screen was earlier spoken by a MALE, FEMALE, or was a NEW word.

Experimental Setup and Results

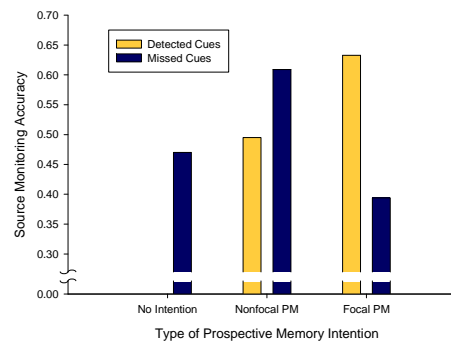
1) OGT & PM



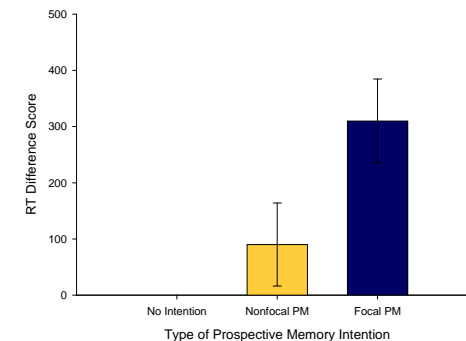
2) Source Recognition Test



Source Memory for Prospective Memory Cues



RT Difference Score: Detected PM Cues - Ongoing Task Trials



Discussion

A 2 (Focal-Nonfocal) x 2 (Detected or Missed Cues) Mixed Model ANOVA on correct source memory for prospective memory cues revealed a main effect of cue detection, $F(1,40) = 4.01, p < .05, \eta_p^2 = .09$, indicating participants had better source memory for cues that were responded to. The effect of intention type approached significance, $F(1,40) = 3.65, p = .06, \eta_p^2 = .08$ but both main effects were qualified by a significant interaction between cue detection and the type of PM intention, $F(1,40) = 3.97, p = .05, \eta_p^2 = .09$. This interaction was the result of better source memory for detected cues when the intention was Focal and better source memory for missed cues when the intention was Nonfocal. A significant difference in slowing to detected cues (compared with OGT; RT Difference Score) was observed in when the intention was Nonfocal, $t(100) = 2.07, p = .04$.

If participants in the Focal PM condition set a more conservative attention allocation policy (as evidenced by faster reaction times on the OGT), then missed cues should receive less attention because of the speed of the judgment. Detected cues, by contrast, significantly delayed responding for Focal intentions, leaving additional time (and potentially resources) to encode the source of the cue. Nonfocal intentions require greater attention to the OGT (c.f., Einstein & McDaniel, 2005), perhaps increasing source memory for all trials. When a cue is encountered, however, the word itself may be surprising because of the generality of the categorical intention. That surprise, and resulting coordination of PM responding, may drive the lower source memory for detected cues. Missed cues would not receive the surprise or additional coordination of PM, leaving only the increased attention to the OGT to improve source monitoring.

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