



Zeigarnik Effects:

Activation and Memory for Completed and Uncompleted Intentions

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Background

Future intentions must be attended to if one has any hope of completing them (c.f., Smith, 2009). For example if my intention is to purchase a gallon of organic milk on my way home from work, I must monitor my environment for relevant reminders (e.g., seeing Kroger). Zeigarnik (1927) discovered an interesting phenomenon whereby people tend to have better memory for actions that require future thought. His study demonstrated that when individuals are interrupted in the middle of a task, they are likely to exhibit superior recall for the uncompleted action in comparison to a task that they were able to finish. This is known as the Zeigarnik effect. Lately, this effect has been studied in the context of features affecting the completion of impending intentions, *prospective memory* (Marsh et al., 2003).

Prospective memory primarily focuses on the intentions of future events in response to internal thoughts. This type of memory is essential in everyday processes, and examples include, remembering to attend a 4pm meeting with a realtor (time-based) or remembering to take out the trash when you see the can (event-based). A crucial aspect is that prospective memory occurs at a time relevant to the action. Prospective memory requires the ability to be able to process certain cues into related actions. When an action is intended, it remains in a constant state of monitoring for retrieval cues until the action is confronted (for an argument in favor of automaticity, see Einstein & McDaniel, 2005). These cues are important in determining the speed in which a response is given or if it is ever completed.

The discrepancy then lies in whether the prospective memory is Focal or Nonfocal in nature. Focal requires the specific focus on the subject or task, whereas Nonfocal has no specific focus on the subject. An event-based prospective memory (EBPM) requires conscious recognition of specific environmental cues as intention-related. Cues not within the realm of attention are part of Nonfocal EBPM. By extension, Focal intentions must be solely within the primary focus of attention.

In order to demonstrate activation of intentions, prospective memory researchers have adopted two distinct latency measures: Task and Cue interference. Task interference refers to overall slowing to an ongoing task judgment that results from maintaining Nonfocal PM intentions (but see Smith, 2003 for a discussion of Focal intentions and task interference). Cue interference is the slowing on PM cue trials that reflects noticing the cue and coordinating the intended action. In this research we investigate changes in both cue and task interference that result from two different prospective intentions

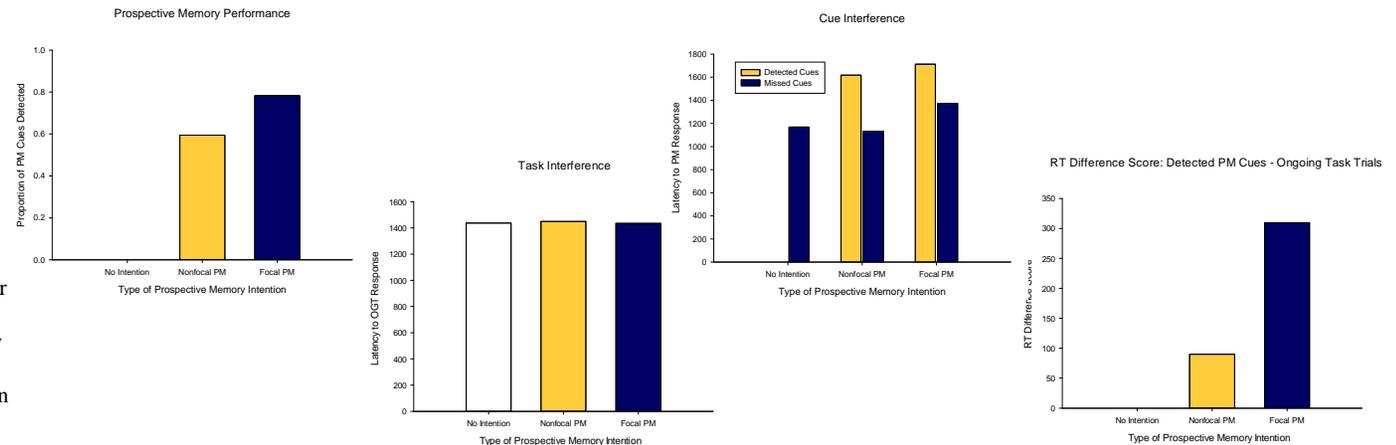
Goals and Predictions

Our experiments attempt to replicate aspects of the Zeigarnik effect. We also attempt to replicate some early research that is based around persistent activation and how it relates to future goals, while adding in elements that involve intention superiority effect and its effects on later memory.

Methods

Ninety participants from the University of Michigan - Dearborn were asked to make noun or other categorization judgments on 106 words displayed individually on a computer screen and simultaneously spoken by either a female or male. This ongoing task (OGT) either occurred alone (control) or was paired with one of two types of prospective memory intentions. Nonfocal instructions included asking participants to press a specific key when the word named any **ANIMAL**. The Focal instructions listed the *specific animals* that they would respond to (**COW, DOG, GOAT, HORSE**). Following the OGT, all participants began an unexpected source recognition phase where studied words were presented along with 53 new words (159 total trials). They were asked to judge if the word on the screen was spoken by a male, female, or was a new word in order for us to be able to test the relationship of prospective memory in Focal and Nonfocal intentions.

These data are part of a larger project investigating task interference in terms of both latency and source memory that results from both Nonfocal and focal intentions in prospective memory.



Results & Discussion

Overall our data appear to support a Zeigarnik-like activation in memory for intention-related material. While task interference did not replicate earlier literature (i.e., longer latencies to OGT when maintaining an intention), we did replicate the classic difference in overall cue detection (i.e., higher cue detection for focal intentions). Of most interest to this project is our latencies to respond to the PM cues. On the surface there would appear to be no differences in overall cue interference, however a difference score measure (calculated by subtracting mean RT to the OGT from mean RT from detected cues) did reveal a marginally significant cue interference effect, which was largest when the intention was focal, $t(99) = 1.896, p = .06$. These results, coupled with companion source memory data (presented elsewhere) paint an interesting picture of how monitoring and noticing of cues in Nonfocal and Focal intentions affect both latency as well as memory for source.

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