

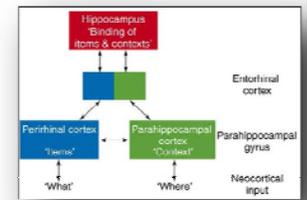


# Source and Recognition Memory under Conditions of Internal vs. External Context

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## Background

Source monitoring refers to the processes used to determine the context or origin of a retrieved memory (Johnson, Hashtroudi, & Lindsay, 1993). In this comprehensive framework the source of a memory can, for example, include remembering the identity of the person who delivered a message (i.e., which of many potential people told you a particular thing). Many models of memory suggest that source information is stored separately from item information. In other words, the individual message that is delivered to you is stored as one (or more) form of an item memory. Any other associated pieces of information, such as context (e.g., who said it, where it was said, etc.) will be stored separately, albeit bound to the item memory in some fashion.

One dimension of context that has yet to receive much experimental attention (to the best of our knowledge) is whether or not *item* information can be processed independently from the *context* (see Mulligan, 2004). That is, some contextual information is so inextricably linked to the item that one cannot possibly study the item without noticing (and potentially encoding) that context. For example, it would be impossible to study a printed word (*item*) on a computer monitor without also noticing/processing the font color (*context/source*). By contrast, external context may be processed independently of the item, which may affect the degree to which it is efficiently bound to the item in memory. To continue with color as a context dimension, the background color behind the word may be an example of an external context.

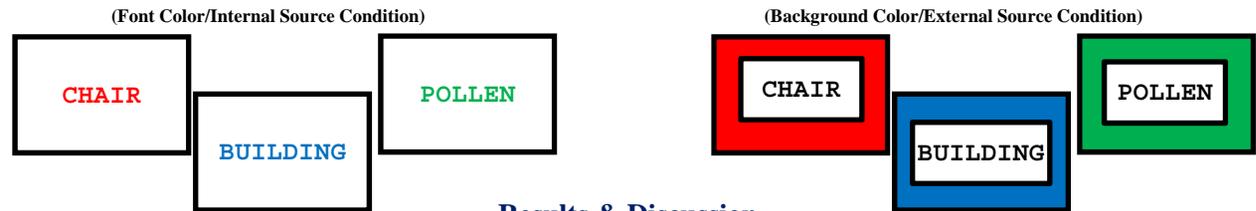
## Goals and Predictions

We predict that context source memory may be stored independently of the target memory. We do not, however, predict any main effects of internal vs. external source dimensions.

## Methods

Ninety words were selected from a larger corpus of 180 words (selected from the English Lexicon Project; Balota et al., 2007). The 135 studied words (45 in each color) were randomly presented in either a red, blue, or green font (INTERNAL) or with a red, blue, or green background (EXTERNAL). All words were presented visually on the computer monitor.

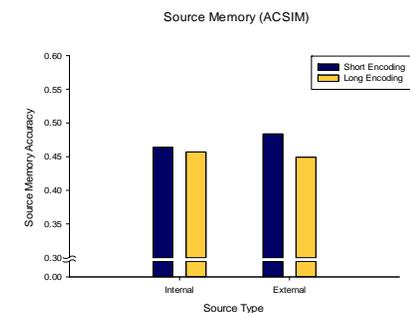
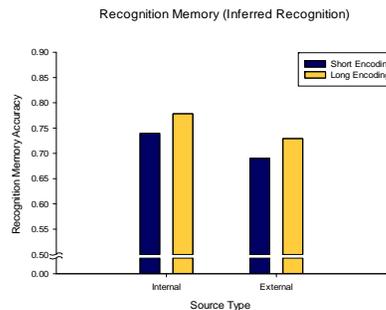
160 participants from the University of Michigan – Dearborn were asked to learn a list of 135 serially presented words that were randomly presented with one of three color sources (selected from the English Lexicon Project). The nature of this source dimension (i.e., internal vs. external) was manipulated between subjects. Following the study phase, all subjects were asked to perform a source recognition test. During this final phase the studied words appeared along with 45 new words. Participants judged each word to be either presented, in which case they designated the studied source, or they decided that the word was a new word.



## Results & Discussion

Not surprisingly, intentional encoding of either source dimension resulted in increased source recognition,  $F(3, 156) = 4.91, p < .001$ . More importantly for our hypotheses, there were absolutely no differences in source memory between internal and external sources even with rather large sample sizes,  $F < 1$ . There were also no significant interactions between the dimension of source, intentionality of encoding instructions, and presentation time. Although we did not conduct a power analysis we feel confident that our large sample size ( $N = 160$ ) would have ample power to detect a difference in source memory had one existed. That being said, we are currently conducting follow up studies using a number of other examples of internal and external context (different monitors, gender voice) to rule out the possibility that our effect is limited to our chosen sources.

Our study contributes to the literature by further demonstrating that context is likely learned in its entirety, and that the internal and external components are encoded automatically. These results dovetail with the recently proposed One Shot theory of context storage, which suggests that all contextual features of a memory are learned in the first two seconds of encoding. That model does not differentiate between types of context and it appears as though our data support that lack of differentiation.



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