



# Matching Odor Does Not Reinstate Context

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## INTRODUCTION

### Study



### Test



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Godden & Baddeley, 1975

## Context Reinstatement Effects:

Memory is better when environmental context at study and test matches:

- Associations between context and studied info
- Same context at test cues those associations

Typically environmental contexts are complex:

- Many potential associations
- Potential for multiple cue associations

## RESEARCH QUESTION

Will context reinstatement effects be obtained when only one aspect of the environment is reinstated?

## Odor as Context:

Odor is an important cue for memory:

- Memories cued by odor have more autobiographical associations (Herz & Engen, 1996)
- Primary olfactory cortex directly connected to amygdala-hippocampal complex

## Experiment 1

### Design and Participants:

4 (Context Type: no odor context, reinstated odor context, changed odor context, no odor context at test) x 2 (Test Type: cued recall and no cue) factorial design  
293 Mississippi State University students participated for research credit.

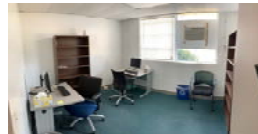
### Materials:

List of 100 words – 10 categories  
Essential oil: rosemary or lemon

### Procedure:

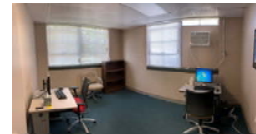
#### Study

Room 1

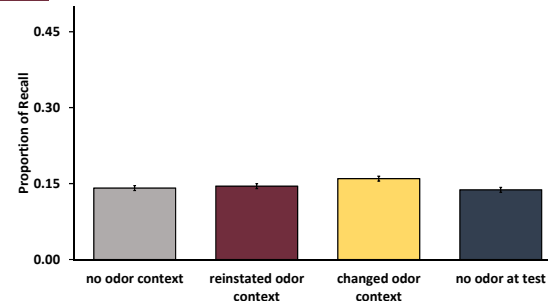


#### Test

Room 2



### Results:



### Discussion:

No effect on memory for context type,  $F(3,285) = 0.62$ ,  $p = .60$ , and for test type,  $F(1,285) = 1.35$ ,  $p = .25$ , and no interaction,  $F < 1$ .

- Potential for floor effects
- Moving rooms disrupted context reinstatement effects (Strand, 1970)
- Word list too long – *Cue Overloading hypothesis* (Watkins & Watkins, 1976)

## Experiment 2

### Design and Participants:

One-way design with 3 levels (Context Type: no odor, reinstated odor, changed odor)  
251 Mississippi State University students participated for research credit.

### Materials:

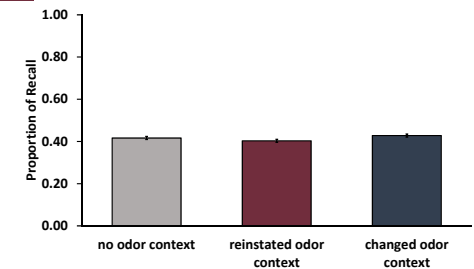
List of 40 words – 8 categories  
Essential oil: peppermint or lemon

### Procedure:

Study and test in same room  
Moved diffuser, changing odor



### Results:



### Discussion:

No effect of odor context on memory,  $F(2,248) = 0.59$ ,  $p = 0.56$ .

- Use of categorical word lists:
  - Suppressed environmental context – *Overshadowing hypothesis* (Smith & Vela, 2001)
  - Led to better cues than context cues – *Outshining hypothesis* (Smith & Vela, 2001)
- Context was not actually reinstated
- Adaptation to odor
- Odors not distinctive from environment (Herz, 1997)

## Conclusion

Context reinstatement effects may be possible with odor as context, but only under particular conditions (Isarida & Isarida, 2014).