Contextual novelty and familiarity influence the effects of switching on free recall performance

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Background

Abruptly shifting to a novel context can create a disruptive effect on memory [1]

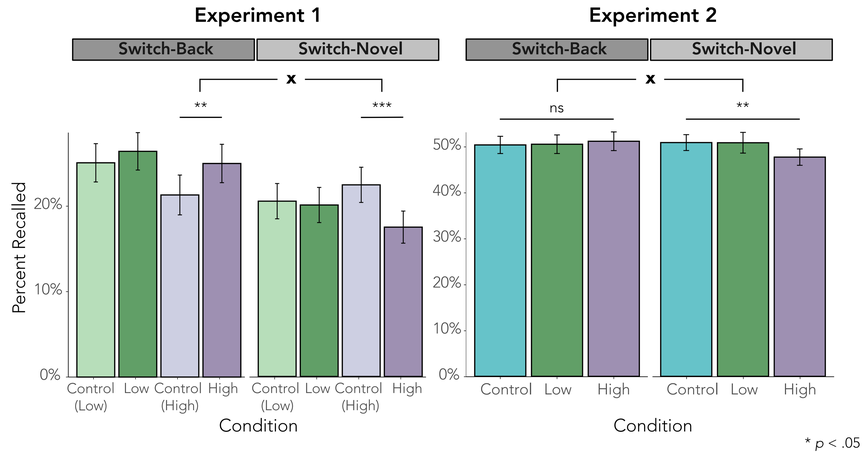
However, some studies have shown that free recall [2] and source memory [3] benefit from context switches

Less is known about how contextual familiarity might modulate the effects of context switches on free recall

One possibility is that familiarity may allow our internal context to drift more slowly and act as a bridge between more rapidly changing item representations [4,5,6]

Q1: How does switching to familiar vs. completely novel contexts influence free recall?
Q2: Does familiarity modulate how context is bridged across change?

Immediate Recall

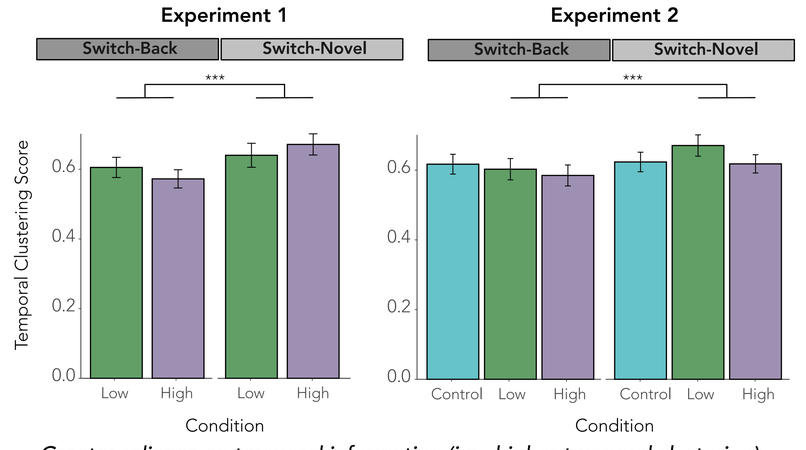


Rapidly switching to novel, but not familiar, contexts reduced memory performance

Interaction (x): p < .001

* $p < .05$
** $p < .01$
*** $p < .001$
Interaction (x): p = .03

Temporal Clustering



Greater reliance on temporal information (i.e., higher temporal clustering) when switching to completely novel contexts

Calculated Using Scripts from the Behavioral Toolbox from the Computational Memory Lab

Experimental Design

Task: Does the item fit or make sense in the scene?

Groups

Switch-back (Exp 1: N = 41, Exp 2: N = 82)

Switch-novel (Exp 1: N = 41, Exp 2: N = 84)

1s Cue *500ms ISI* *2.5s Word* *1s ITI*

Exp 2: Min 60s Max 120s *Min 180s Max 300s*

time

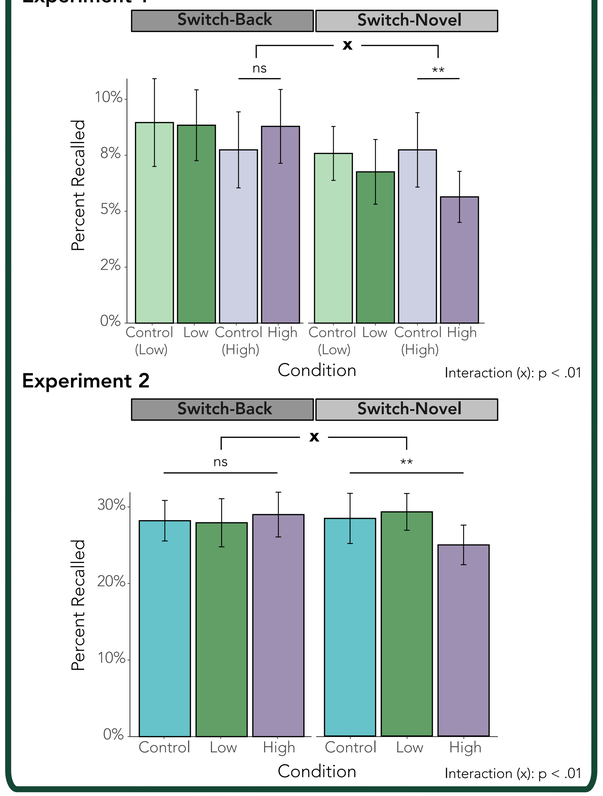
Experiment 1 (N = 82): *Individuals recruited from University Subject Pool for a between-subjects design with 8 blocks of study-test followed by a final free recall*

Block Types
Low Switch → Control
High Switch → Control
Control → Low Switch
Control → High Switch

Experiment 2 (N = 166): *Individuals recruited from an Online Sample for a between-subjects design with 6 blocks of study-test followed by a final free recall*

Block Types
Low Switch
High Switch
Control

Final Recall



Interaction (x): p < .01

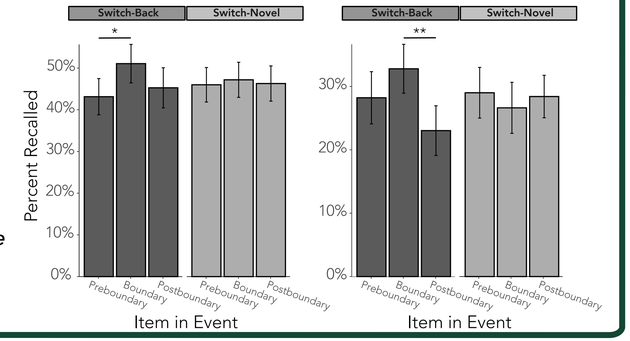
Interaction (x): p < .01

Exp 2: Recall Performance at Boundaries

Low Switch Only

More boundary item words recalled in the switch-back group compared to neighboring items

No recall benefit for boundary items in the switch-novel group



Controlling for encoding RTs

Conclusion

The negative effect of rapidly switching on recall was reduced when switching back to a familiar context immediately and at final recall

A "blended" context may serve as a better retrieval cue in familiar contexts compared to contexts with high amounts of novelty

Participants relied more on temporal information in situations of contextual novelty

There is a recall benefit for boundary items only when the context is familiar

References

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Acknowledgements: This project is supported in part by a 2019 NARSAD Young Investigator Grant from the Brain Behavior Research Foundation. Special thank you to my Undergraduate Research Assistants for annotating participant verbal recall.

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