

ORIGIN AND CONTROL OF PERSISTENT MENTAL CONTENT

Gabriel Kressin Palacios¹, Buddhika Bellana² & Christopher J. Honey¹

¹Department of Psychological & Brain Sciences, Johns Hopkins University; ²Department of Psychology, Glendon Campus, York University

C152

INTRODUCTION

Recent experiences shape our current thoughts, actions, and decisions. But how do experiences persist in our thoughts? Persistent thoughts enable us to find creative solutions to problems (Gable et al., 2019) but are also associated with depression and anxiety (Spinhoven et al., 2018). We recently introduced a method to measure what mental content persists in spontaneous thought after participants read a story (Bellana et al., 2022).

In what form is persistent mental content maintained over time?

How can persistent mental content be controlled?

METHODS Paradigm Story Post-task Free Free \rightarrow Association Association Reading Questions 3 Minutes Self-reported 3 Minutes Text Manipulation Intact (n=80) Lingering Word-scrambled (n=80) Norming of Story Relatedness Free Association n=431(separate participants) previous cue generated associate associate -> next cue How related is the word BOD' to a **specific moment** within the story? 1 || 2 || 3 || 4 || 5 || 6 || 7

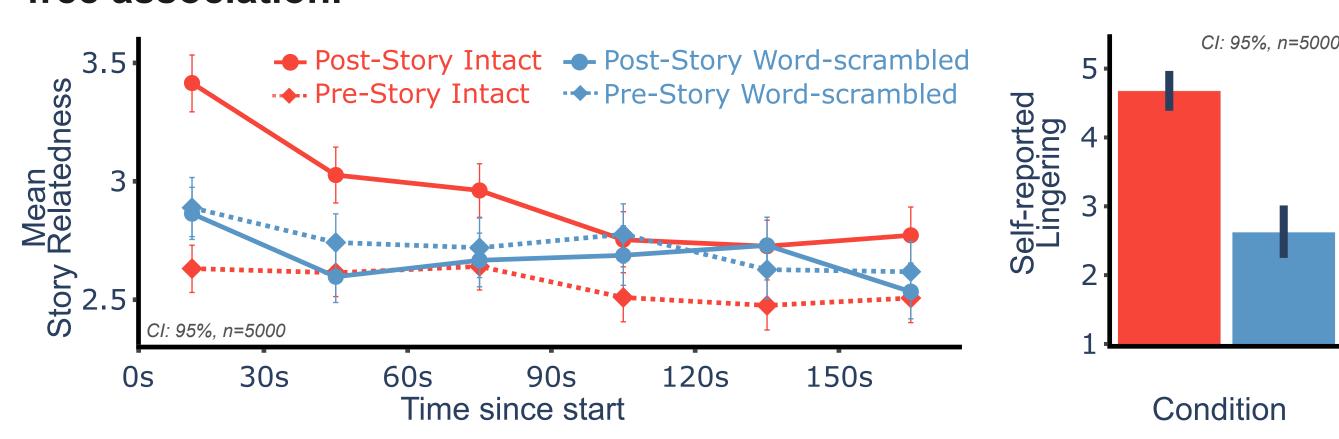
Example wordchain

Fime (5 Minutes)



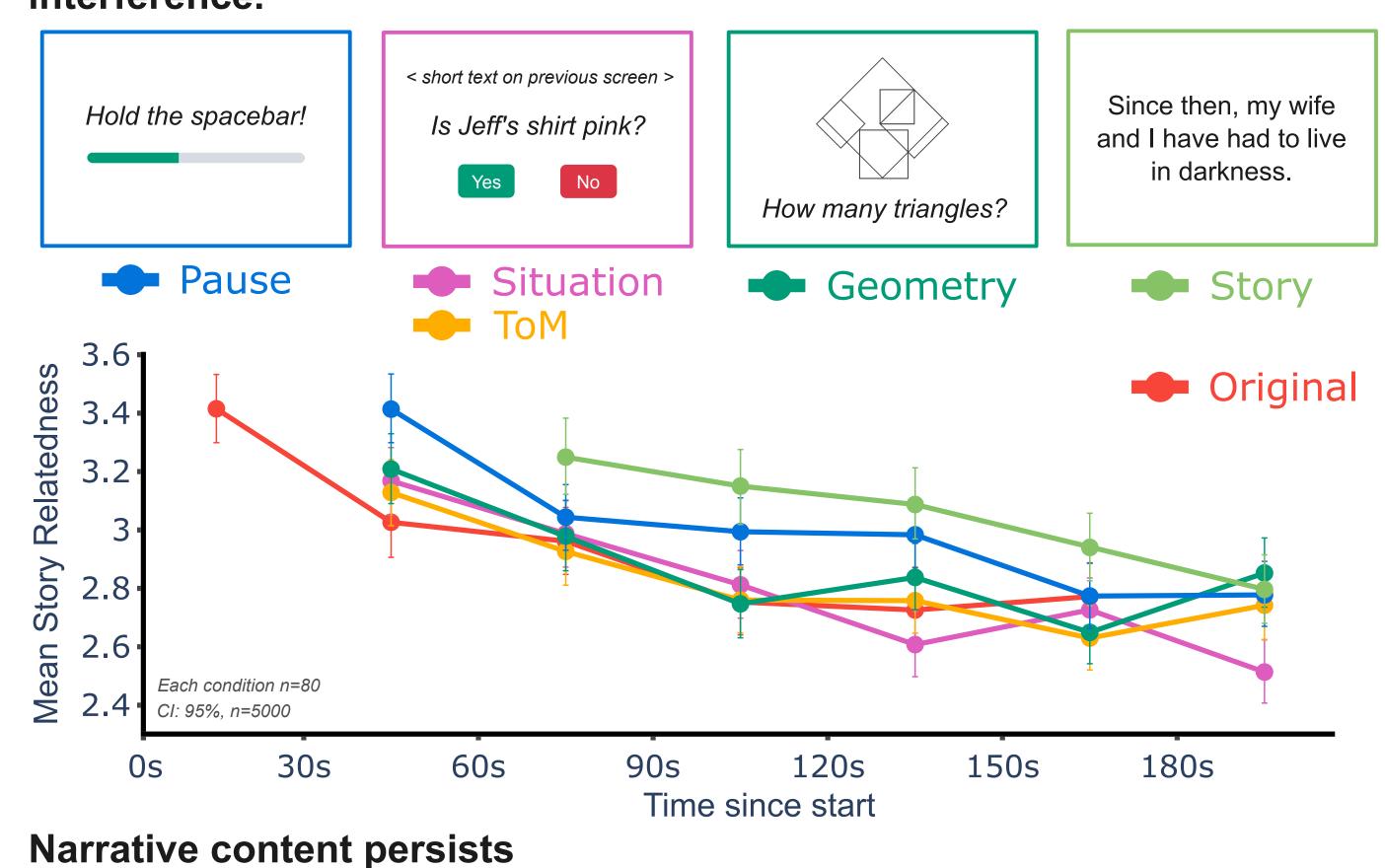
Each word is rated at least 10 times

Persistent mental content is detectable as semantic bias in free association.

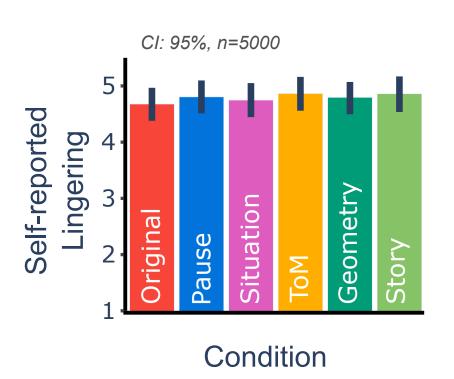


PERSISTENT CONTENT IS RESISTANT TO INTERFERENCE

Persistent content, measured via semantic bias, is widely resistant to interference.



in subjective experience regardles of interference.



Original - main story relatedness
Original - interference relatedness
Story - main story relatedness
Story - interference relatedness

Cl: 95%, n=5000

Two stories can persist simultaneously.

CONCLUSIONS

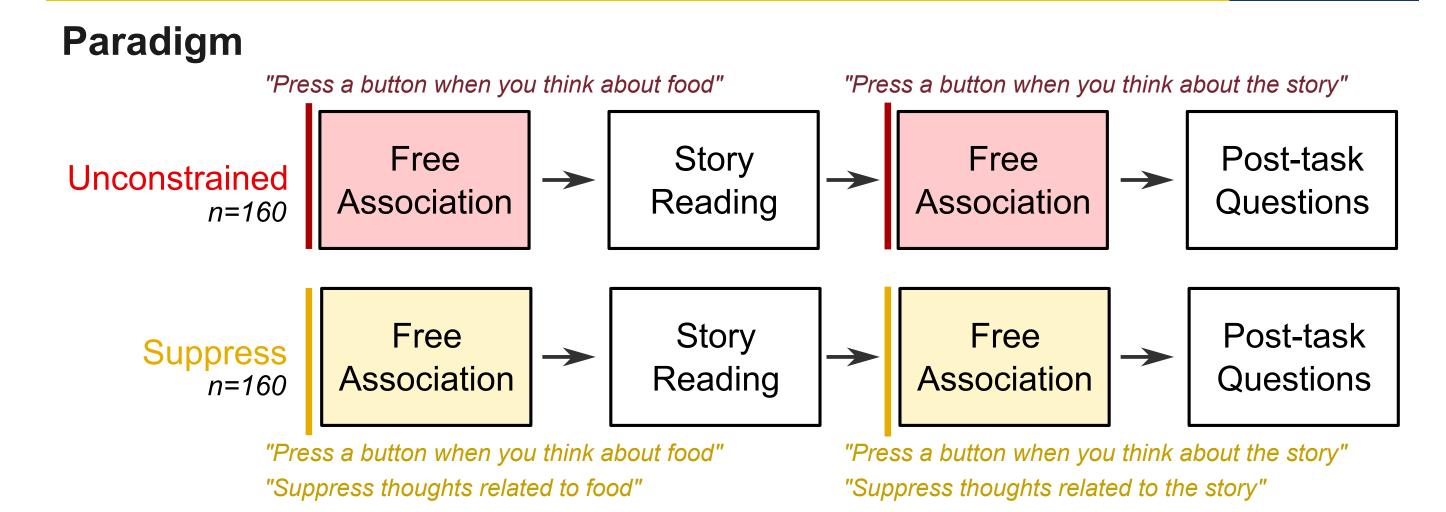
Persistent mental content decays over the course of a few minutes but is not maintained in capacity-limited short-term memory buffers. This calls for a novel memory process or an update to our understanding of long-term memory accessibility.

Participants can block behavioral expression of persistent thoughts, but not the thoughts themselves.

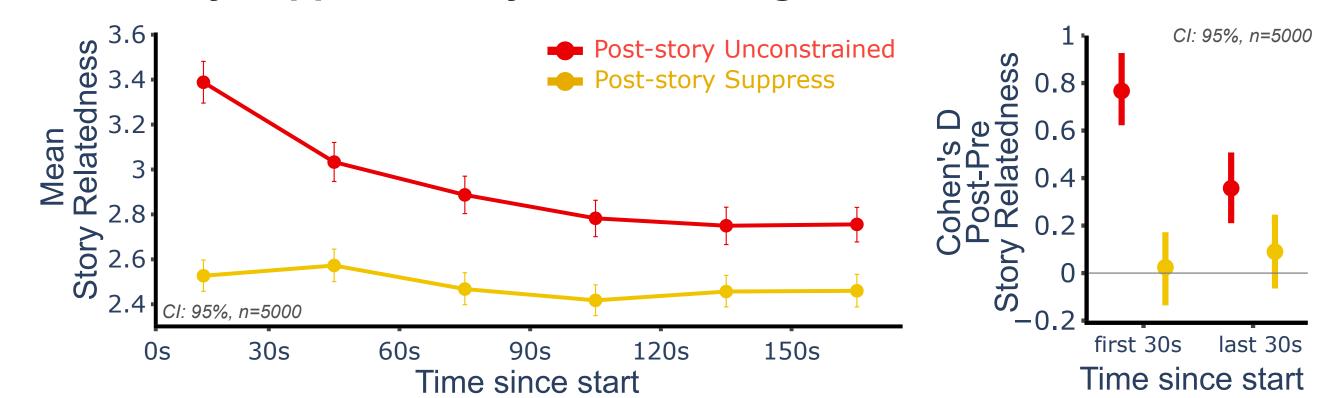
Working hypothesis: Persistent mental content reflects a state of enhanced accessibility in long-term memory. Information enters this state when it is situationally or personally relevant.

Open question: Why is persistent mental content most readily induced by situational/episodic content?

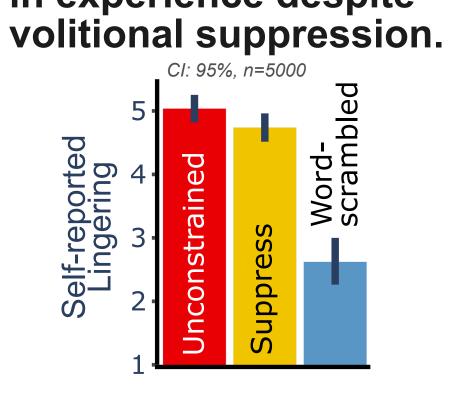
PERSISTENT CONTENT IS NOT VOLITIONALLY ELIMINATED



Semantic biases undetectable when participants volitionally suppress story-related thoughts.

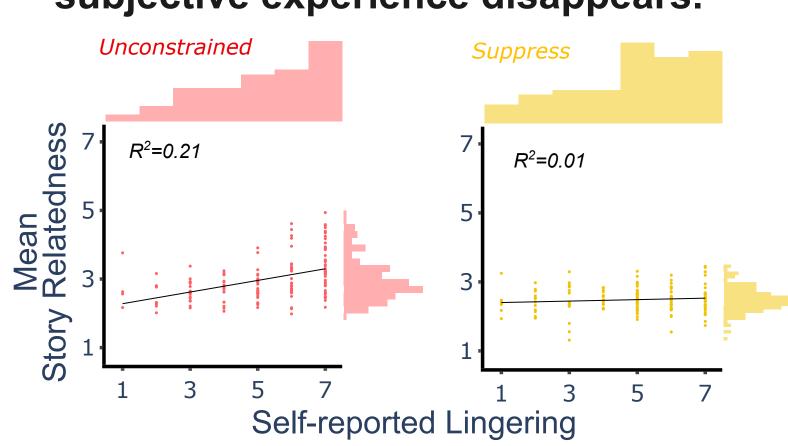


Narrative content persists in experience despite

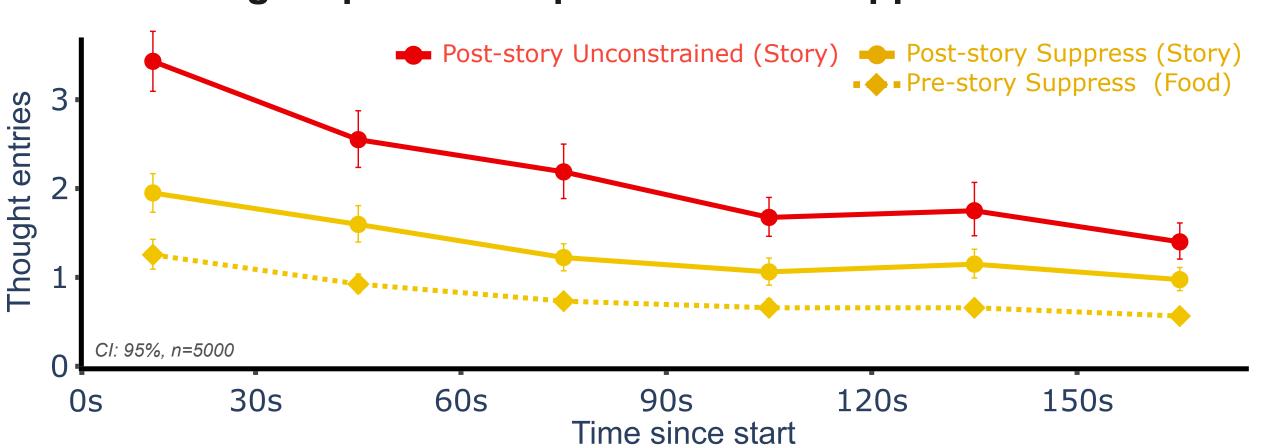


Condition

Correlation between semantic bias and subjective experience disappears.



Narrative thoughts persist despite volitional suppression.



REFERENCES

Andrews-Hanna et al. (2022). Journal of Experimental Psychology: General, 151(3), 628–642.

Bellana et al. (2022). *Nature Communications*, 13(1), Article 1. Cowan (2017). Psychological Bulletin & Review, 24(4), 1158-1170.

Gable et al. (2016). Psychological Science, 30(3), 396–404.

Honey et al. (2023). Directions in Psychological Science, 09637214221143053.

Klinger (1978). *The Stream of Consciousness: Scientific Investigations into the Flow of Human Experience* (pp. 225–258) Spinhoven et al. (2018). Journal of Affective Disorders, 241, 216–225.

We gratefully acknowledge the support of the NSF (CAREER Award, C.J.H.) and the NIMH (R01 MH 119099, C.J.H.). We thank Samira Tavassoli for her assistance.