Connecting Events: Bridging and Predictive Mechanisms in Event Cognition

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Introduction

- Activation of event knowledge support event comprehension because they are important for causal inferences such as bridging and predictive inferences (Graesser et al., 1994; Kurby & Zacks, 2008; Poon et al., 2014).
- Activation of antecedents supports Bridging Inferences and activation of consequences supports Predictive Inferences (Grasser & Nakamura, 1982; Schank & Abelson, 1977; Zacks et al., 2007).

Theoretical Accounts

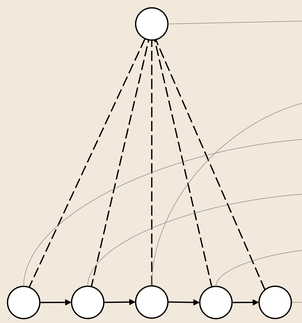
	Event Segmentation Theory	Theories of Narrative Comprehension	Event Horizon Model
Event	Daily (naturalistic)	Narrative (text)	Daily, Narrative
Focus	Event segmentation	Mental model construction	Event segmentation, Mental model construction
Causal inferences	Prediction	Bridging, Prediction	Bridging, Prediction

Goal

This study aims to understand the mechanisms of causal inferences by looking into the activation of antecedents and consequences of a subevent under an activated event schema.

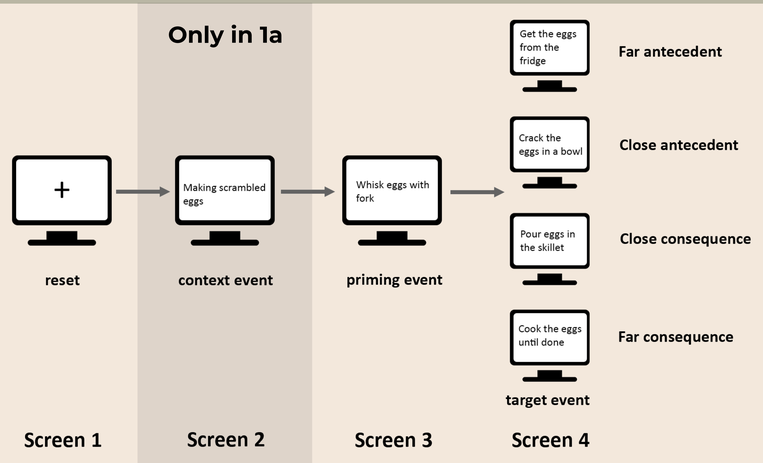
Study Design

- **Pilot Experiment (N=29):** material generation.
- **Experiment 1a (N=121):** relatedness judging task with 2(antecedent, consequence) × 2 (close, far) within subject design.
- **Experiment 1b (N=124):** same as 1a but without event context.



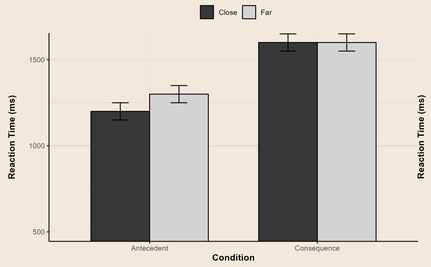
		Making Scrambled Eggs	Syllable counts	Average Position	Proportion	Similarity
Event context						
Prime sentence		Whisk eggs with fork	4	0.53	0.67	
Far Antecedent		Get the eggs from the fridge	6	0	0.30	0.607
Close Antecedent		Crack the eggs in a bowl	6	0.29	0.74	0.542
Close Consequence		Pour eggs in the skillet	6	0.81	0.63	0.631
Far Consequence		Cook the eggs until done	6	0.85	0.52	0.386

Procedure

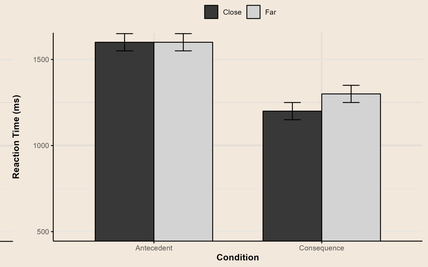


Hypothesis & Predictions

Antecedent Activation Hypothesis



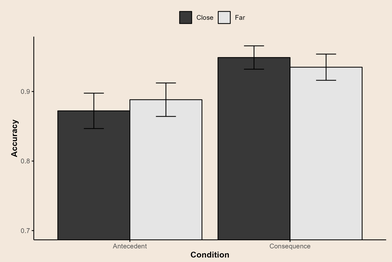
Consequence Activation Hypothesis



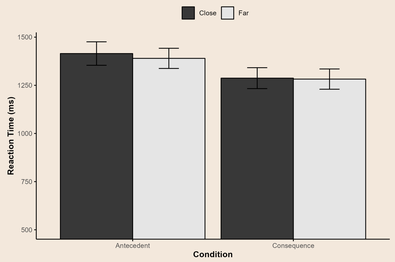
Results

Experiment 1a

Accuracy by Condition (with 95% CI)



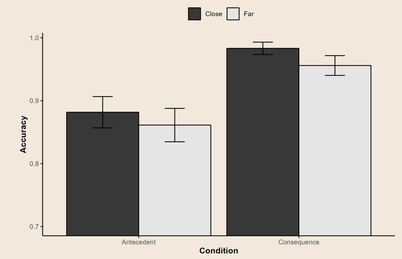
Reaction Time by Condition (with 95% CI)



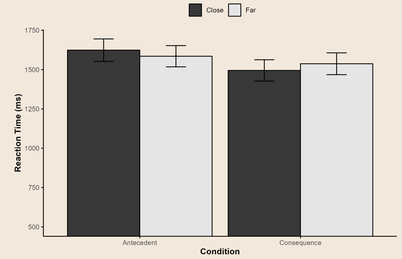
Results

Experiment 1b

Accuracy by Condition (with 95% CI)



Reaction Time by Condition (with 95% CI)



Conclusion

- The results support **Consequence Activation Hypothesis**.
- Reaction time data suggest **event context facilitate responses**.
- Accuracy data suggest the **effect of direction is stronger when event context is given**.

Future Direction

- Effects of different dimensions of events (e.g., character, action, spaciotemporal etc.) on knowledge activation.
- Effects of episodic context (e.g. previous events) on knowledge activation.
- Understand the mechanism of causal inferences via computational modeling for structure of event knowledge and knowledge activation.

References

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