Does Fear Have an Effect on Reactions to Uncertainty? A Semantic Priming Study

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INTRODUCTION

- People are constantly taking in information from their senses. However, this information is often uncertain[1].
- Prior research has shown that individuals vary in their emotional responses to and tolerance for uncertainty[2], impacting several processes including decision-making[3], [4], threat detection[5], and risk-taking[4].
- Little work has been done to examine the role of emotional state on individuals' responses to *sensory* uncertainty (i.e., uncertainty related to input from the senses).
- Here, we assess how priming fear (v. a neutral control) impacts individuals' affective responses to a sensory uncertainty task.

PREDICTED RESULTS

- We predict that participants primed with words related to the concept of fear will self-report higher affective arousal and more negative valence in anticipation of completing the uncertainty task compared to those primed with neutral words.
- We predict a similar pattern to emerge for physiological measures such that individuals primed with fear concepts show larger sympathetic nervous system responses compared to neutral controls.

METHODS

Participants: 95 adults recruited via SONA undergraduate research pool; data collection is ongoing

Semantic Priming Task (64 trials) [5]

- Presented as testing reaction time, this task subconsciously primes participants with different words
  - **Fear Condition:** Participants primed with words related to fear
  - **Control Condition:** Participants primed with neutral words

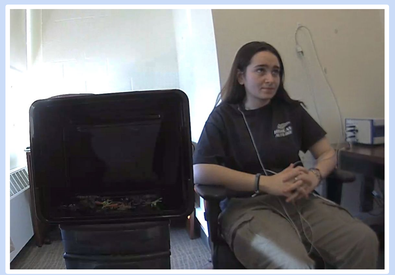
Participant focuses on fixation

Priming word appears for 60ms, not long enough to be consciously perceived

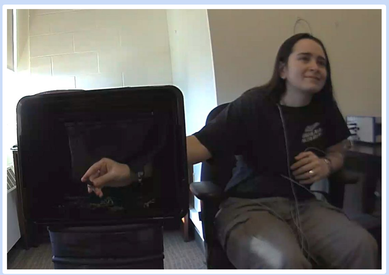
Participant presses the spacebar as soon as they see a string of letters appear

Uncertainty Task

- Participants are asked to put their hand in an opaque box and feel an unknown object.
  - **Physiological Measures:** Assessed autonomic nervous system activity (i.e., respiration, heart rate, and electrodermal activity).
  - **Self-reported Affect:** Participants rated their arousal (feelings of activation/deactivation) and valence (feelings of pleasantness/unpleasantness) on 5-point Likert scales



Anticipatory Period
Participant sits quietly next to the box for 30 seconds



Resolution Period
Participant puts their hand into the box and verbalizes their guesses as to what the object is.

REFERENCES

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[3] Helou, M. A., DiazGranados, D., Ryan, M. S., & Cyrus, J. W. (2020). Uncertainty in Decision Making in Medicine: A Scoping Review and Thematic Analysis of Conceptual Models. *Academic medicine : journal of the Association of American Medical Colleges*, *95*(1), 157–165.
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DISCUSSION

- Results will reveal whether one's emotional state plays a role in how they approach and respond to uncertain sensory stimuli.
- Findings will begin to shed light on sources of behavioral variability in situations where perceptual information may be more (or less) uncertain.
- Future work should investigate this in applied contexts including in populations with impaired sensory processing (e.g., ASD, anxiety disorders) and atypical emotional experience (e.g., mood disorders).