Research Methods in Psychology (PSYC 362) Posters: Manipulated Arousal and the Threat-Focus Effect on Memory

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Katie Treichler

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Manipulated Arousal and the Threat-Focus Effect on Memory

John Duvall II, Vivian Hyatt, Alexander Lee, Katie Treichler

Introduction

Research Question
Can primed physiological arousal be used to mediate the effect of threatening stimuli on memory recall?

Threat Focus
Threat Focus Effect – phenomenon in which the presence a perceived threat in a crime scene decreases subsequent testimonial recall for peripheral details like the perpetrator’s appearance or the content of their message

Threat Levels
Pickel and Staller (2012) - found that when explicit death threats were included in a simulated crime scene, participants recalled less of the perpetrator’s message than when explicit death threats were left out, despite implicit threat being present in both

Primed Arousal
Brunyé and Mahoney (2019) – found high levels of physiological arousal before stimulus exposure had a moderating effect on threat-focus, with increased primed arousal causing greater interference with encoding and retrieval of memories

Breathing Technique
Brumback (2010) – developed model abdominal breathing technique used in this study, which was shown to decrease physiological arousal

Hypothesis
If participants are taught to use calming breathing techniques before exposure to threatening audio stimuli, then the manually decreased arousal will mitigate the detrimental effects of threat-focus on passive encoding and subsequent recall

Participants (N = 100)

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<thead>
<tr>
<th>Gender</th>
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<tbody>
<tr>
<td>Female: 67%</td>
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<tr>
<td>Male: 32%</td>
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<tr>
<td>Other: 1%</td>
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<table>
<thead>
<tr>
<th>Age</th>
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<tbody>
<tr>
<td>Mean: 20</td>
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<tr>
<td>Range: 18 - 31</td>
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<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
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<tbody>
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<td>White: 71%</td>
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<tr>
<td>Asian: 4%</td>
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<tr>
<td>Hispanic: 11%</td>
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<tr>
<td>Black: 8%</td>
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<tr>
<td>Other: 6%</td>
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<table>
<thead>
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<th>Class Year</th>
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<tbody>
<tr>
<td>Freshman: 75%</td>
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<tr>
<td>Sophomore: 13%</td>
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<td>Junior: 6%</td>
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<tr>
<td>Senior: 6%</td>
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Procedure

Breathing Technique
Taught in Manipulated Arousal condition only; control group not taught

Audio Stimulus
Simulated Hostage Negotiation (Audio Only)
High/Low Threat based on presence/absence of explicit threat

Heart Rate Measure
Two Measurements: Resting & Post-Exposure
Physiological arousal operationalized as percent change in BPM

Questionnaire
Demographics: Gender, Age, Race, Class
Manipulation Checks (Threat & Stress)

Memory Assessment
Targeted memory recall (16 points possible)

Results

Fig. 1
Effect of Manipulated Arousal and Threat-Level on Memory Recall Results:

- The main effect of threat condition on memory recall was significant, \( F(1, 96) = 17.65, p = .001 \)
- The main effect of breathing technique on memory recall was significant, \( F(1, 96) = 24.08, p = .001 \)

Fig. 2
Effect of Manipulated Arousal and Threat-Level on Physiological Arousal Results:

- The main effect of threat condition on physiological arousal was significant, \( F(1, 96) = 51.99, p = .001 \)
- The main effect of breathing technique on physiological arousal was significant, \( F(1, 96) = 108.45, p = .001 \)
- The interaction of breathing technique and threat condition on physiological arousal was significant, \( F(1, 96) = 27.32, p = .001 \)

Discussion

Implications

- Breathing technique was as an effective method for reducing physiological arousal in high threat situations
- Manipulated arousal was effective in mitigating the negative effects on memory recall associated with threat-focus

Limitations

- Participants were assigned by availability instead of at random
- The stress manipulation check was not significant, indicating that participants’ subjective feeling of stress did not match their physiological arousal

Future Research

- Applied research using participants whose careers often put them in stress-inducing, threatening situations (e.g. law enforcement)
- Generalization of findings to other forms of stimuli, like visual threats or situations in which the participant is a victim and not a bystander

References