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

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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 (2019) – 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)

### Gender

- Female: 67%
- Male: 31%
- Other: 2%

### Age

- Mean: 20
- Range: 18 - 31

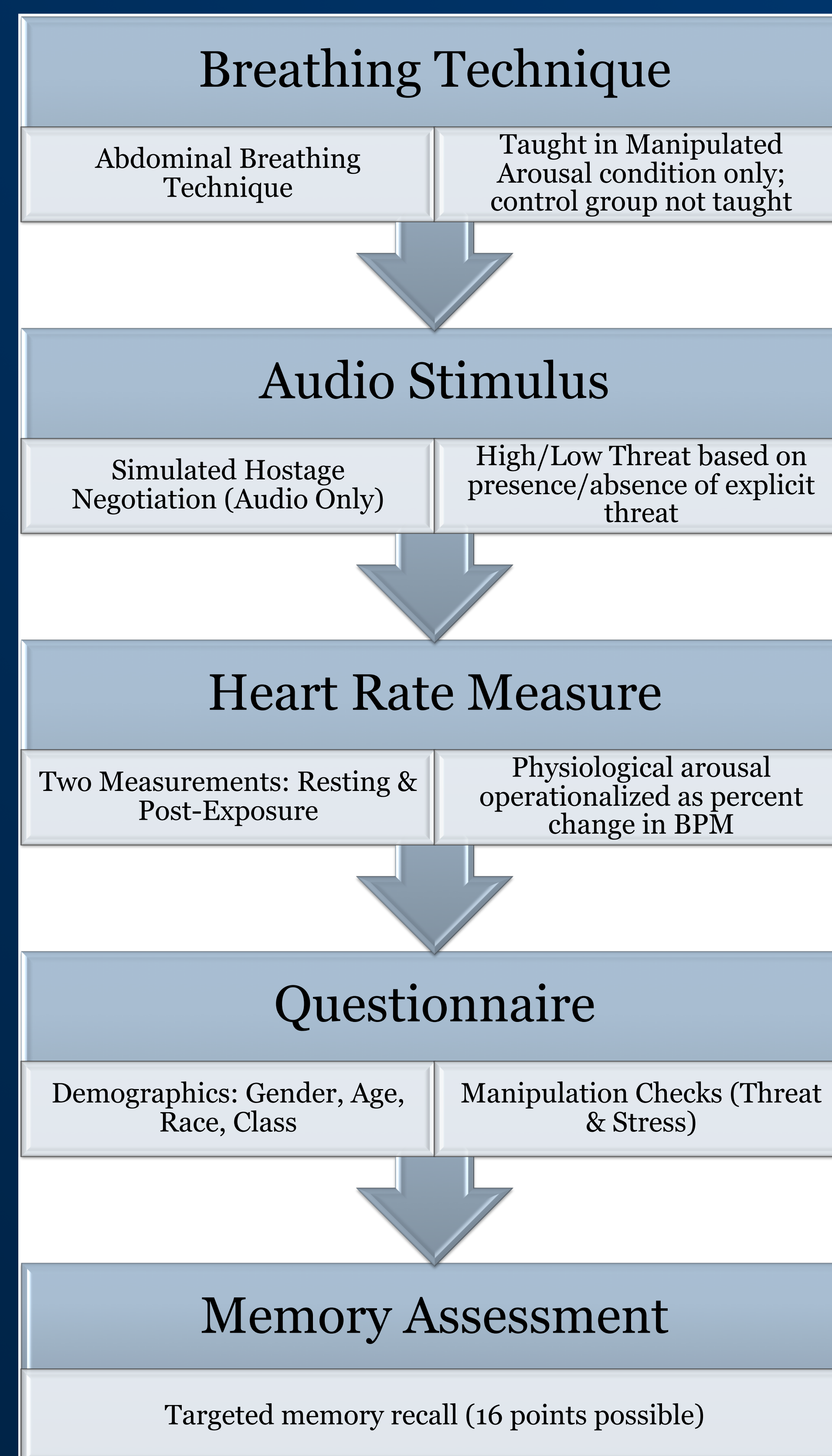
### Race/Ethnicity

- White: 71%
- Asian: 4%
- Hispanic: 11%
- Black: 8%
- Other: 6%

### Class Year

- Freshman: 75%
- Sophomore: 13%
- Junior: 6%
- Senior: 6%

## Procedure



## Results

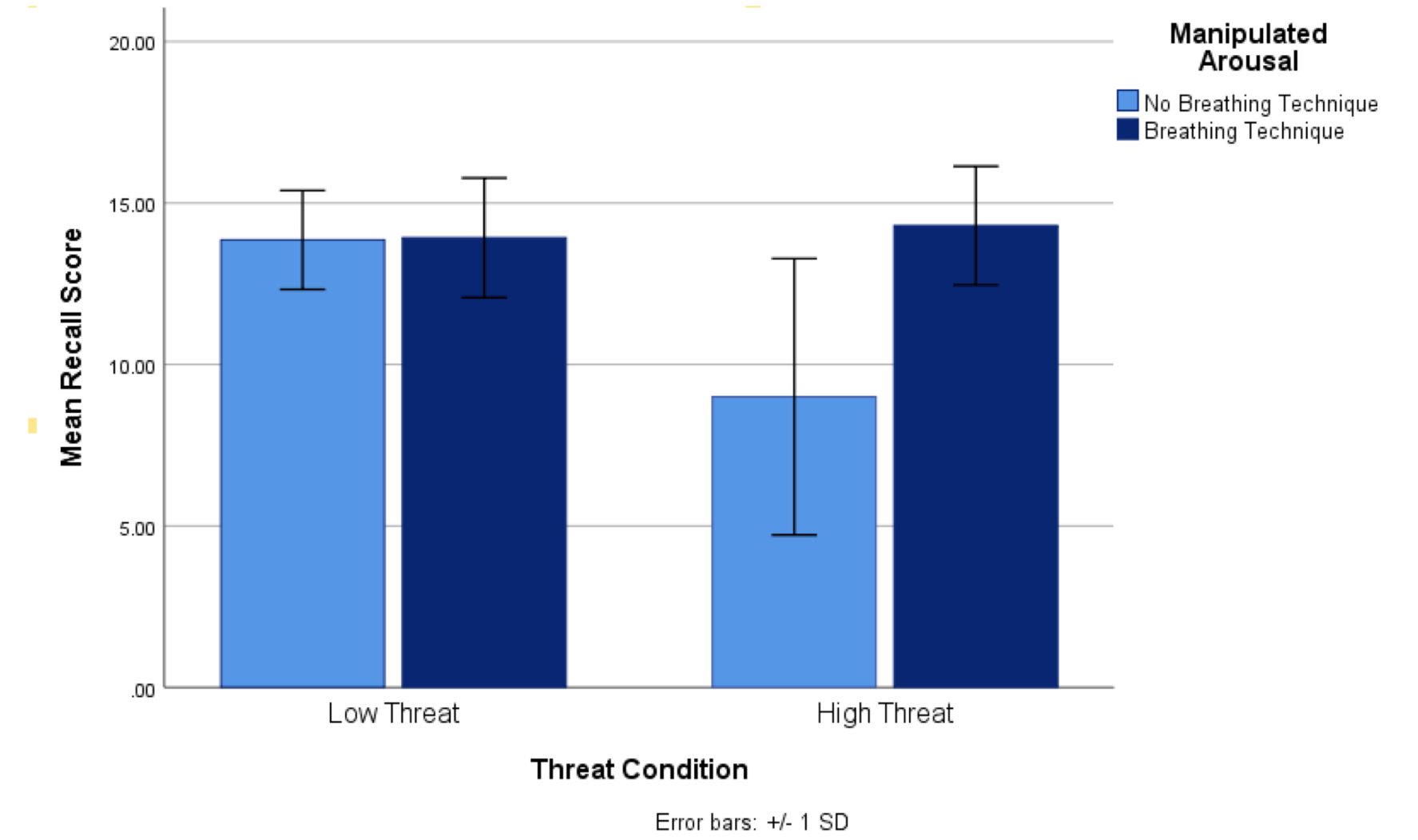
### Fig. 1 Effect of Manipulated Arousal and Threat-Level on Memory Recall Results:

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,  $F(1, 96) = 25.31, p = .001$

The interaction of breathing technique and threat condition on memory recall was significant,  $F(1, 96) = 24.08, p = .001$

Figure 1: Interaction between threat condition and use of breathing technique (manipulated arousal) on memory recall score. Error bars represent standard error.



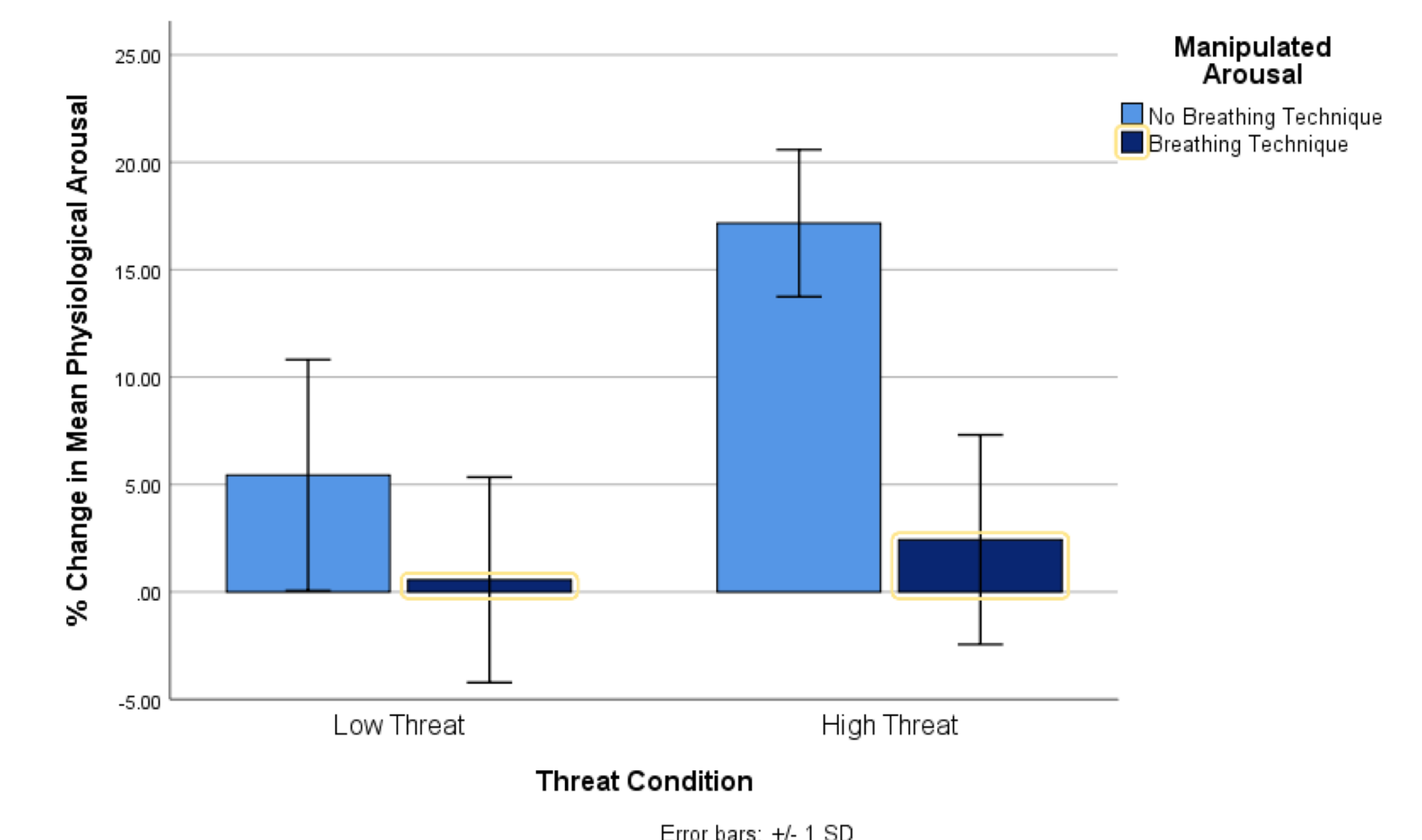
### Fig. 2 Effect of Manipulated Arousal and Threat-Level on Physiological Arousal Results:

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,  $F(1, 96) = 108.15, p = .001$

The interaction of breathing technique and threat condition on physiological arousal was significant,  $F(1, 96) = 27.32, p = .001$

Figure 2: Interaction between threat condition and use of breathing technique (manipulated arousal) on change in physiological arousal (BPM) pre- to post-exposure. Error bars represent standard error.



## 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

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