STRESS MINDSET: DOES IT (OR DOES IT NOT) AFFECT COGNITIVE PERFORMANCE?

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WHAT IS STRESS MINDSET?

• Two possible mindsets:
  • Mindset that stress is enhancing for health and performance outcomes
  • Mindset that stress is debilitating for health and performance outcomes
MEASURING STRESS MINDSET

- Crum, Salovey, and Achor (2013) created Stress Mindset Measure (SMM)
- Keech, Hagger, O’Callaghan, and Hamilton (2018) created more nuanced Stress Control Mindset Measure (SCMM)
  - 15-item Likert scale from 1 (strongly disagree) to 6 (strongly agree)
  - Included items that suggested stress \textbf{CAN BE} enhancing/debilitating – not \textbf{IS} enhancing/debilitating
<table>
<thead>
<tr>
<th>STRESS CONTROL MINDSET MEASURE (SCMM)</th>
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<tr>
<td>1. You are unable to use stress to enhance your performance and productivity</td>
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<td>2. Stress can be used as a way to get the most out of your life</td>
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<tr>
<td>3. Stress can be used to enhance your health and vitality</td>
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<tr>
<td>4. Stress must be reduced or avoided to get the most out of life</td>
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<tr>
<td>5. You can use stress to boost your performance and productivity</td>
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<tr>
<td>6. Stress will impair your health and vitality</td>
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RESULTS OF PREVIOUS STUDIES

- Crum et al. (2013):
  - Mindsets were successfully manipulated with videos
  - Having a positive mindset influenced participants’ self-reported work performance
- Keech et al. (2018):
  - No manipulation
  - Mindset did not influence end-of-year academic performance
WHY STUDY THIS?

• Stress mindset could be a way to combat the negative effects of stress
• No previous research on objective cognitive performance
CURRENT STUDY

• Question: Does stress mindset have an influence on cognitive task performance?

• Hypothesis: Participants with a Positive Mindset would have improved cognitive performance compared to participants with a Negative Mindset
PROCEDURE

- Experimental design manipulating participants’ mindsets with Crum et al. (2017) videos
- Measuring mindset with SCMM (Keech et al., 2018)
- Induced stress with the threat of giving a speech in front of principal investigator
- Cognitive performance measured with Stroop color-word task
MANIPULATING STRESS MINDSET

3-minute multimedia videos biased towards either a positive or negative mindset

POSITIVE MINDSET VIDEO

The stress response is designed to enhance cognitive performance

NEGATIVE MINDSET VIDEO

The stress response can deteriorate cognitive performance

Crum, Akinola, Martin, & Fath, 2017
COGNITIVE PERFORMANCE

STROOP COLOR-WORD TASK

blue

1  2  3
COGNITIVE PERFORMANCE

STROOP COLOR-WORD TASK

green
PARTICIPANTS

• 28 undergraduate students recruited through Psychology Research Pool
• 89% female
• 54% white
• Mean age: 27
ANALYSIS

• Two-way mixed design ANOVA
• Independent variables:
  • Mindset manipulation (positive or negative)
  • Participants’ baseline stress mindset (positive or negative)
• Dependent variable: cognitive performance
RESULTS

• Statistically significant difference between SCMM scores before and after mindset manipulation, $F(1, 24) = 33.30$, $p < 0.01$

• However, we found no statistically significant differences in Stroop task performance before and after mindset manipulation

• These results do not support our hypothesis
Stress Mindset Control Scale scores for participants with negative baseline mindset

Estimated Marginal Means

- **Baseline**
- **Post-stress induction**
- **Post-mindset manipulation**

Mindset Manipulation
- **Negative**
- **Positive**
Stress Mindset Control Scale scores for participants with positive baseline mindset

Mindset Manipulation
- Negative
- Positive

Estimated Marginal Means

- Baseline
- Post-stress induction
- Post-mindset manipulation

Mindset
Stroop performance for participants with negative baseline mindset

Stroop Reaction Time Latency Between Congruent and Incongruent Trials

Mindset Manipulation
- Negative
- Positive
Stroop reaction time latency between congruent and incongruent trials

Baseline mindset manipulation

Stroop performance for participants with positive baseline mindset

Estimated Marginal Means

Mindset Manipulation

- Negative
- Positive

Baseline
Post-stress induction
Post-mindset manipulation

Stroop Reaction Time Latency Between Congruent and Incongruent Trials
LIMITATIONS

• Small sample size limited statistical analysis
• The method of stress induction may not have been reliable
• Potential practice effect on cognitive task
• Potential participant bias
ONGOING RESEARCH

• Future plans
  • Implicit stress mindset
  • Physiological measure of stress (e.g., cortisol reactivity)
  • Different cognitive task