Introduction

- Grit shapes success in ways that talent and intelligence cannot.\(^1\)
- Students with a growth mindset take on more challenging tasks, grasp more information, and earn better grades.\(^2\)
- Feelings of belonging uniquely contribute to a higher self-esteem.\(^3\)
- This study is a novel examination of how these three factors interact and affect academic experiences over time.

Hypotheses:
- Main Effects: Grit, growth mindset, and belonging will each be associated with greater feelings of academic success
- Interactions: Students with collectively high levels of grit, growth mindset, and belonging will demonstrate the most positive feeling about academic performance
- Research Question: How does grit, growth mindset, and belonging shift over time, and how does this impact feelings about performance?

Methodology

- 60 participants across Johns Hopkins University and University of Maryland Baltimore County.
- Age of participants ranging from 18 to 23 years old
- Participants:
  - 60 participants across Johns Hopkins University and University of Maryland Baltimore County.
  - Age of participants ranging from 18 to 23 years old

Materials:
- Grit Scale\(^*\) (1-5 Likert-type)
  - EX: “Setbacks do not discourage me. I don’t give up easily.”
- Growth Mindset Scale\(^*\) (1-6 Likert-type)
  - EX: “You have a certain amount of intelligence, and you can’t really do much to change it.”
- Belonging Uncertainty Scale\(^*\) (1-7 Likert-type)
  - EX: “When something bad happens, I feel that maybe I don’t belong at my university.”

Outcome Variables
- Feelings about academic performance (1-5 Likert type)
  - EX: “How well did you believe you performed on this assignment/assessment relative to your usual performance.”

Procedure

- Part 1: Week 1
- Part 2: Week 1
- Part 3: Week 1
- Part 4: Week 4

Results

- **Main Effects** (averaged over time):
  - Grit
    - \(b = 0.09\) (p = .01, 95% CI: 0.00-0.18)
  - Growth Mindset
    - \(b = -0.09\) (p = 0.01, 95% CI: -0.20 to 0.03)
  - Belonging Uncertainty
    - \(b = -0.02\) (p = 0.45, 95% CI: -0.13 to 0.06)

- **Interactions** (averaged over time): Grit x Belonging Uncertainty
  - Grit x Belonging Uncertainty: \(b = 2.05, p = .04\)

Interpretation & Conclusions

- **Main Effects**
  - There was overall little relationship between the 3 predictors and feelings about academic performance.
  - Those who were low in each of the 3 predictors had poor feeling about academic success but those who were high in each of the 3 predictors did not show exceptionally better feelings about academic success.
  - Growth mindset negatively correlated with feelings about performance: comfortable with recognizing and acknowledging academic setbacks.

- **Interactions**
  - Only when belonging uncertainty was high was there a marginally significant positive relationship between grit and feelings about academic performance.
  - Grit compensates for higher belonging uncertainty

- **Longitudinal Findings**
  - Belonging, grit, growth mindset, and feelings about performance remained consistent over time.

- **Conclusions**
  - Incentivize university administrators to create empirically-supported programming that could cultivate grit in students who feel they do not belong and vice versa.

- **Limitations and Future Research**
  - The study relied heavily on self-report surveys. Could implement behavioral alternatives to negate potential presentation bias.
  - Many factors also not considered: Socioeconomic status, challenges experienced in college, and mental health variables.
  - A small sample size. Could replicate this study at larger schools with more accessible recruiting populations.

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Sources: