

# Resilience Mitigates the Effects of Rumination by Reducing Symptoms of Depression, Anxiety, and Stress

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## Introduction

- Heavy workload in medical school → stress and detrimental effects in mental health
  - 1 in 3 medical students report anxiety symptoms<sup>1</sup>
  - 1 in 4 medical students report depressive symptoms<sup>2</sup>
  - Poor mental health → disrupted emotion regulation
- **Rumination** as a maladaptive emotion regulation strategy:
  - Repetitive focus on the causes of one's own distress
  - Impaired problem solving<sup>3</sup>
  - Stressful academic environments: exacerbation of ruminative tendencies, worse academic performance<sup>4</sup>
    - Cognitive resources consumed by rumination
  - High anxiety levels associated with prolonged rumination<sup>5</sup>
  - Tendency to ruminate greater in women than men<sup>6</sup>
- **Resilience** as a protective mechanism:
  - Hardiness, flexibility, and ability to overcome obstacles
  - Improved problem solving<sup>7</sup>
  - High stress and rumination associated with low resilience<sup>8</sup>
- Relationship between rumination, resilience, and their effects on medical student stress, anxiety, depression, and exam scores currently unexplored
- Examination of resilience as a possible mediator of rumination highly relevant to medical student well-being
- Determination of this relationship crucial to unearth gender-specific student risks
- Findings necessary to inform development of tailored programs to protect against rumination and enhance resilience

## Aims and Objectives

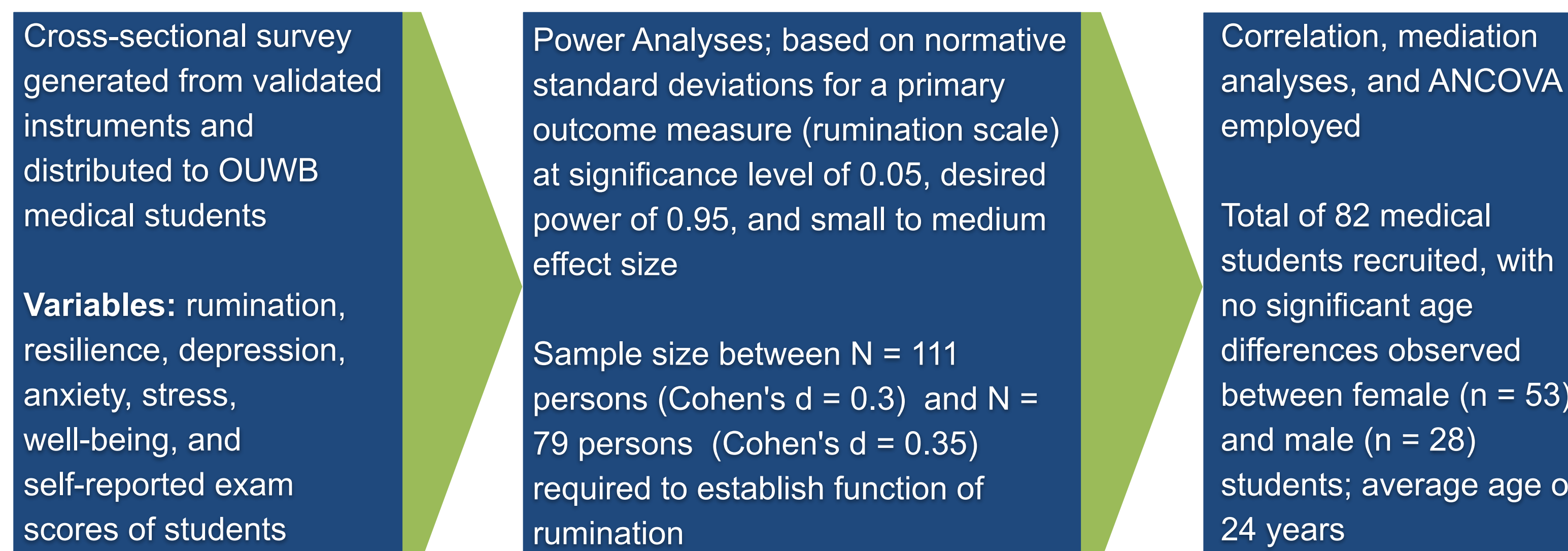
The aim of the study was to investigate whether resilience, as a mediator, buffers the impact of rumination and consequently decreases symptoms of depression, anxiety, and stress. Additionally, the study aimed to explore the mechanism by which rumination impacts exam performance.

### Anticipated Outcomes

When compared to students with low levels of rumination, students with high rumination levels will be:

- disproportionately female gender
- display increased stress/depression/anxiety levels
- show decreased resilience
- report decreased exam scores

## Methods

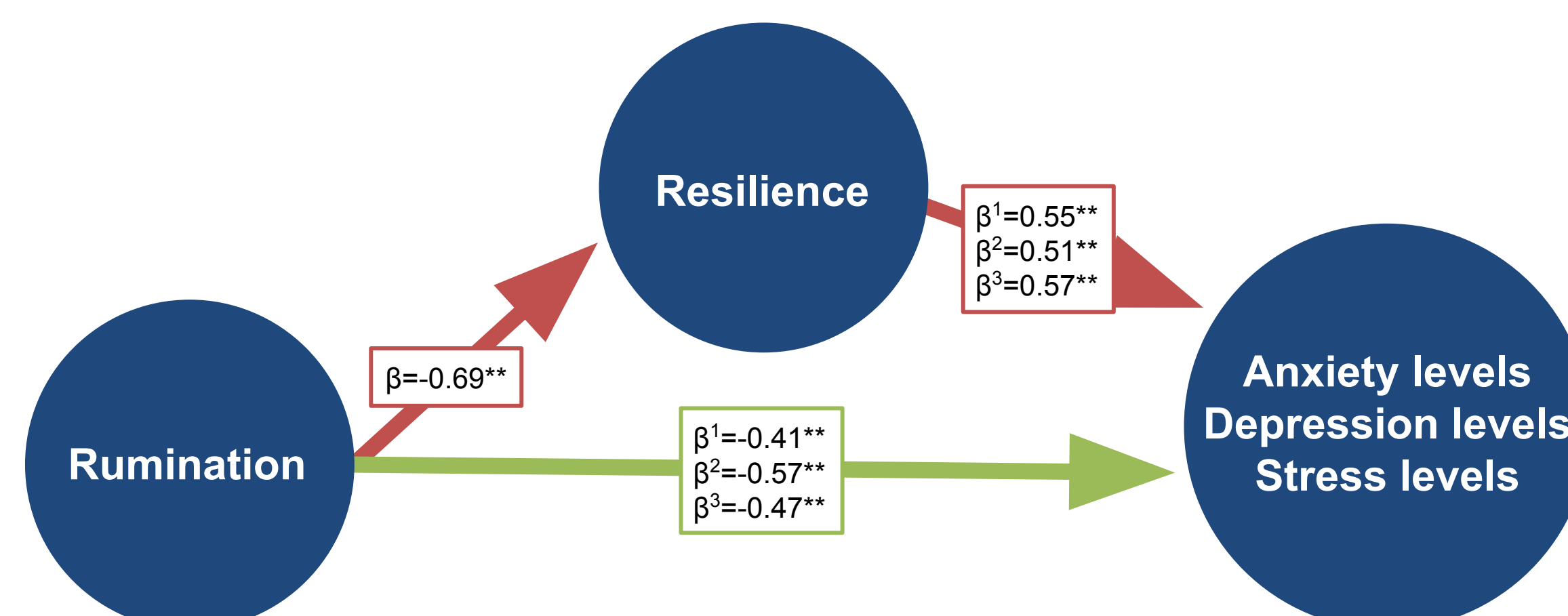


## Conclusion

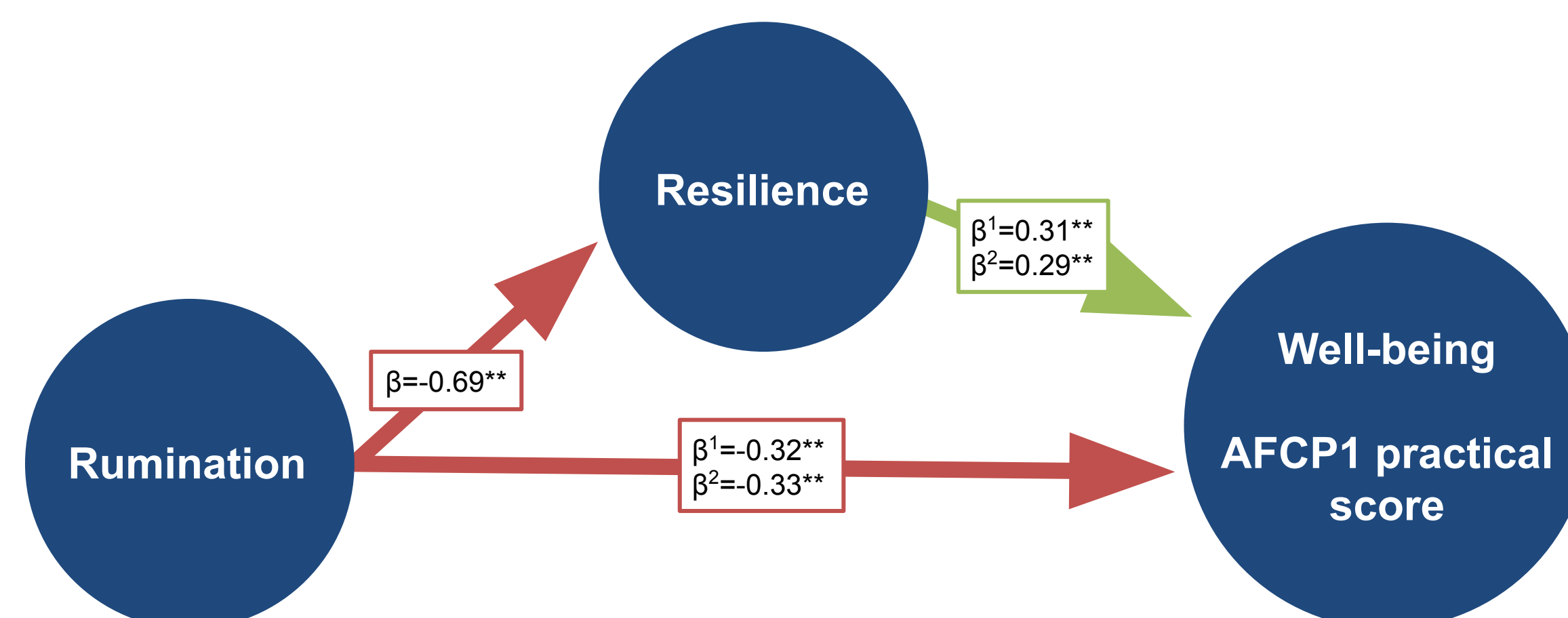
Rumination, a maladaptive coping strategy, exhibits a negative association with performance on anatomy practical exams and is positively linked to symptoms of depression, anxiety, and stress. Resilience, functioning as an adaptive mechanism, buffers this relationship and diminishes the impact of rumination. These findings underscore the necessity for emotion regulation training workshops tailored for medical students to not only reduce ruminative tendencies, but to enhance their mental well-being and academic performance by promoting resilience.

Notably, there was no gender difference in ruminative tendencies. Female students reported higher levels of stress and anxiety compared to males, positioning them as an at-risk population for stress-related disorders. Tailored and gender-specific educational workshops focusing on female-specific stressors are warranted.

## Results



**Figure 1. The mediating effect of resilience on rumination relating to anxiety (1), depression (2), stress levels (3).** Rumination was negatively correlated with resilience ( $\beta = -0.69^{**}$ ). Rumination was positively correlated with anxiety ( $\beta = 0.55^{**}$ ), depression ( $\beta = 0.51^{**}$ ), and stress ( $\beta = 0.57^{**}$ ) levels. Resilience was negatively correlated with anxiety ( $\beta = -0.41^{**}$ ), depression ( $\beta = -0.57^{**}$ ), and stress ( $\beta = -0.47^{**}$ ) levels. Additionally, **females reported higher anxiety levels** ( $M = 1.78$ ,  $SD = 0.61$ ) **than males** ( $M = 1.54$ ,  $SD = 0.57$ ) ( $t(79) = 1.73$ ,  $p = 0.44$ ). **Females also reported higher stress levels** ( $M = 2.22$ ,  $SD = 0.69$ ) **than males** ( $M = 1.96$ ,  $SD = 0.46$ ) ( $t(79) = 1.77$ ,  $p = 0.40$ ).



**Figure 2. The mediating effect of resilience on rumination relating to subject well-being (1) and AFCP1 practical exam scores (2).** Rumination was negatively correlated with resilience ( $\beta = -0.69^{**}$ ). Rumination was negatively correlated with well-being ( $\beta = -0.32^{**}$ ) and self-reported AFCP1 practical exam scores ( $\beta = -0.33^{**}$ ). Resilience was positively correlated with well-being ( $\beta = 0.31^{**}$ ) and self-reported AFCP1 practical exam scores ( $\beta = 0.29^{**}$ ).

## Discussion

The findings of this study underscore the effects of rumination on medical student success and well-being. Test scores can dictate residency competitiveness; students and administrators alike have a vested interest in optimizing student success in this area. The impact of rumination on performance and its association with mental health symptoms and resilience helps identify students at risk for rumination and provides evidence for further support targeted towards those individuals. This will promote more capable students and more competent physicians. Additionally, administrators can observe the factors that dictate student mental health with more detail and incorporate them into the curriculum, progressing into an evidence-based approach to reduce rumination, nurture resilience, promote academic success, and improve medical student well-being in the process. In doing so, medical student wellness can evolve.

## References

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