**Fostering a Growth Mindset in Medical Laboratory Science Students**

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**PROBLEM & PICOT**
- Medical laboratory science (MLS) is a rigorous field of study
- College students find their established study habits are unable to support them through school
- Students place a heavy focus on grades instead of on learning and the knowledge deficits
- Students quickly move on to the next topic
- Memorization
- Passing the next exam
- Fail to establish proficiency of the material
- Behaviors characteristic of fixed mindsets

**PICOT:** In medical laboratory science students, how would mindset training impact student mindsets and learning?

**AVAILABLE KNOWLEDGE & RATIONALE**
- Stanford Psychologist, Carol S. Dweck, Ph.D., conceptualized mindset theory (Dweck, 2006)
  - Fixed mindsets: human attributes are static
  - Growth mindsets: human attributes are malleable
- Improved exam scores and GPAs related to growth mindset interventions (Bostwick & Becker-Blease, 2018; Broda et al., 2018; Yeager et al., 2019)
- Students place a heavy focus on grades instead of on learning
- College students find their established study habits are unable to support them through school
- Medical laboratory science (MLS) is a rigorous field of study
- Students quickly move on to the next topic
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**METHODS**
- Subjects were junior MLS students at a public Midwestern University
- Growth mindset intervention modeled after Lewis et al. (2020)
  - One-hour face-to-face growth mindset training in January
  - PowerPoint
  - Activity
  - Group discussion
  - Mid-semester touch base
- Mindset measured via Undergraduate Lay Theories of Abilities (ULTra) Survey (Limeri et al., 2022)
  - Pre-intervention: start of Spring 2023 semester
  - Post-intervention: end of Spring 2023 semester
- Pre and post growth mindset intervention course outcomes (GPAs) collected to measure learning

**RESULTS**
- Sample size of nine participants ($n = 9$)

**DATA ANALYSIS**
- All data was matched and deidentified
- Data analysis was performed using Microsoft Excel
- Descriptive statistics of collected data was calculated
- Relationships between mindsets and GPA were measured using Pearson correlation
- Dependent samples t-tests were used to measure differences between survey data and GPAs pre and post intervention

**DISCUSSION**
- No statistically significant changes in growth or fixed mindset scores pre/post intervention
- Statistically significant decrease in participant GPA from Fall 2022 to Spring 2023, although this may be impacted by extraneous variables
- Moderate positive correlation between post-intervention growth mindset scores and post-intervention GPA
- Consistent with previous mindset studies

**LIMITATIONS**
- Low sample size
- Increased course rigor with program progression may have been an extraneous variable impacting results

**CONCLUSIONS**
- Post-intervention Pearson correlation results support improved learning for those with growth mindsets
- Assess growth mindset training on freshman MLS students
- Explore the long-term effects throughout the program and beyond

**RECOMMENDATIONS FOR FUTURE INVESTIGATIONS**
- Measure effects of growth mindset intervention between two or more cohorts
- Assess growth mindset training on freshman MLS students
- Explore the long-term effects throughout the program and beyond

**REFERENCES**

**TABLES**

<table>
<thead>
<tr>
<th>Grade Point Average (GPA)</th>
<th>Mean GPA</th>
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<tbody>
<tr>
<td>Fall 2022</td>
<td>3.32 (0.42)</td>
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<tr>
<td>Spring 2023</td>
<td>2.99 (0.54)</td>
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</tbody>
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Post-Intervention Pearson Correlation

| Growth Mindset to GPA | $r_{xy} = 0.42$ |