INTRODUCTION

- It is important to determine what predicts success in college so that the understanding may lead to appropriate interventions and supports being put in place to increase students’ likelihood of success.
- The implicit theory of intelligence is a promising starting point. In terms of intelligence, (1) Incremental Theory is the belief that intelligence is malleable, and (2) Entity Theory is the belief that intelligence is unchangeable (Dweck, Chiu, & Hong, 1995).
- Past research has established a relationship between kindergarten – 12th (K – 12) students’ intelligence theories and academic achievement, but undergraduate students have received less attention in the literature.
- Within undergraduate students, the intelligence theory is positively correlated with exam grades (Elliott & McGregor, 2001; Grant & Dweck, 2003; Kornilov, Kornilov, & Chumakova, 2009), individual or multiple class grades (Grant & Dweck, 2003), standardized test scores (Aronson, Fried, & Good, 2002), semester GPAs (Aronson et al., 2002), and cumulative GPAs (Kornilova et al., 2009).
- The next step is to examine potential behavioral mediators within undergraduate student populations. Three academic behaviors will be considered within the intelligence theory and academic achievement relationship.

MEASURES

PROBLEMATIC ACADEMIC BEHAVIORS

(1) Survey of Study Habits and Attitudes (SSHA) Work Habits subscale measures studying habits with 24 items (Brown & Holtzman, 1967).
(3) Tuckman Procrastination Scale (TPS) measures procrastination as a result of one’s inability to self-regulate with 35 items (Tuckman, 1991).

IMPLICIT THEORIES OF INTELLIGENCE

Theory of Intelligence Scale (TIS) for Adults measures both incremental and entity theories of intelligence with 8 items (Dweck, 1999).

METHOD

PARTICIPANTS: 178 undergraduates, 32 males and 138 females (62%); ranged from 18 to 29 years of age (M = 19.04, SD = 1.6).

PROCEDURE: Students filled out a Federal Educational Rights and Privacy Act (FERPA) release form, then were given paper surveys to complete.

PLAN OF ANALYSIS: Prior to analyses, all major study variables were examined for outliers and assumptions of normality. Correlational analyses were conducted for TIS, GPA, and the three PAB.

RESULTS

<table>
<thead>
<tr>
<th>Study 1 Correlations</th>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GPA</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. TIS</td>
<td>-15**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. TPS</td>
<td>-17*</td>
<td>-03</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SSHA</td>
<td>0.21**</td>
<td>0.04</td>
<td>-0.58**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>5. PALS</td>
<td>-0.20**</td>
<td>0.08</td>
<td>0.36**</td>
<td>-0.26**</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

- Official GPA was significantly correlated in the expected directions with PALS (self-handicapping), SSHA (study habits), and TPS (procrastination).
- Contrary to our hypothesis, the results showed a significant negative correlation between GPA and intelligence theory, such as GPA increased incremental theory decreased. These results are inconsistent with previous research.
- Perhaps beliefs about intelligence are different in college. Students might believe that they can change certain facets of intelligence, but not intelligence as a whole.
- There was a substantial lack of variability in GPAs. 76.8% of GPAs were above a 3.00; the mean was 3.33 and the median was 3.43. Study 1 was completed in one week during the Fall semester, which could account for the lack of variation.

STUDY TWO

PARTICIPANTS: 250 undergraduates, 70 males and 180 females (72%). Ages ranged from 18 to 29 years (M = 19.18, SD = 1.35).

PROCEDURE: Minor changes were made after Study 1. Study 2 was conducted over the entire Spring semester and Qualtrics was utilized instead of paper surveys.

MEASURES: Additional measure, the Academic Beliefs Scale (ABS), was used to measure undergraduate students’ implicit theories of academic achievement. 22 items focused on effort, challenging assignments, and success in class and GPAs.
- Examples: “Doing well in a class requires regular effort” and “Someone’s GPA is either destined to be above a 3.0 or it is not.”

PLAN OF ANALYSIS: Correlational analyses were conducted for TIS & ABS, GPA, and the three PAB. Regression analyses were used to test whether the relationship between GPA and PAB was mediated by ABS incremental and entity scores.

RESULTS

<table>
<thead>
<tr>
<th>Study 2 Correlations</th>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>1. GPA</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. ABS (ET)</td>
<td>-0.33**</td>
<td>-</td>
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<td>3. ABS (IT)</td>
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<td>-0.41**</td>
<td>-</td>
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<td>4. TIS</td>
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<td>-0.15**</td>
<td>0.17**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PALS</td>
<td>-0.25**</td>
<td>-0.25**</td>
<td>-0.41**</td>
<td>-11</td>
<td>-04</td>
<td>-</td>
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<td>6. TPS</td>
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<td>0.19**</td>
<td>-0.16**</td>
<td>-0.08</td>
<td>0.43**</td>
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<td>7. SSHA</td>
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<td>-0.32**</td>
<td>0.47**</td>
<td>0.12</td>
<td>0.33**</td>
<td>-0.57**</td>
<td>-</td>
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</table>

- We created z-scores for PALS, TPS, and SSHA, and summed each variable (with SSHA reverse scored) and created a single outcome variable Problematic Academic Behaviors (PAB).

MEASUREMENT MODELS:

- As predicted and consistent with Study 1, GPA was a significant predictor of the three academic behaviors and in the expected directions.
- As predicted, ABS incremental and entity scores were significantly correlated in the expected directions with official GPA, PALS, SSHA, and TPS.
- TIS scores were not significantly correlated with GPA, which is inconsistent with Study 1. The TIS again was not significantly related to the academic behaviors (ps > .08), consistent with Study 1.
- The PAB was a significant mediator of the relationship between entity theory and GPA, and the relationship between incremental theory and GPA.
- Time of participation was significantly and negatively correlated with official GPA. This supports the protocol change in Study 2, whereby the study was completed over the duration of one semester.
- Future research needs to assess the psychometric validity of the TIS in undergraduate populations. The implicit theories of intelligence might impact academic achievement differently in undergraduate students.

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