



Growth Mindset: Relations with Achievement Among Gifted Students

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ABSTRACT

This study examined the relation between growth mindset and standardized achievement (math and reading) for elementary students on Regular Track versus a Gifted-Talented Track in school. Students in the two tracks did not significantly differ in their levels of growth mindset, but growth mindset only predicted achievement for students in the Regular Track. Differences in growth mindset's relation with achievement for the two groups was significant for reading, but not math. Results add several new dimensions to the growth mindset research, which often focuses on older students and math achievement.

INTRODUCTION

- Growth mindset captures individuals' implicit belief that their abilities can change with effort (Blackwell, Trzesniewski, & Dweck, 2007).
- Like other socioemotional skills (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) a growth mindset predicts greater motivation and standardized achievement (Blackwell et al., 2007).
- Educators' dialog around student ability makes a difference (Rattan, Good, & Dweck, 2012): elementary students praised as "smart" were more likely to give up on difficult math problems than those praised for being "hardworking" (Mueller & Dweck, 1998). Students persisted more on activities that emphasized growth over inherent ability (O'Rourke).
- Educators often conceive of giftedness in terms which exclude a growth mindset. Common descriptors include "innate ability," "potential," and "rarity" (Lee, 1999). Gifted students are more often described as "being" (rather than "becoming") excellent (Olthouse, 2014).

OBJECTIVES

Examine relations between growth mindset and school achievement for elementary-aged students who are either in a "Regular" or "Highly Gifted" track.

- Placement in a Gifted and Talented program may emphasize students' intelligence more than their effort, and we hypothesize lower levels of growth mindset among Highly Gifted students.
- We speculate that growth mindset may be less related to school achievement for Highly Gifted students.

METHODS

Data Collection

Assessed 3rd- 5th grade students growth mindset and achievement in March, of 2015 (n = 243) using the following measures:

- Growth Mindset subscale: Helpless vs. Mastery-Oriented Responses to Failure (Blackwell, 2007)
- Obtained standardized test scores in reading and math from the school district which was assessed in April of 2015 (Measures of Academic Progress in Reading and Math – "MAP-R" and "MAP-M")

Graduate students individually administered the questionnaires.

Fifty students participated in the Gifted and Talented Program.

Analysis

- Between samples t-test to compare levels of growth mindset between Tracks.
- A structural equation model was tested in which growth mindset was set to predict MAP-M and MAP-R achievement scores, controlling for age, gender, ethnicity, and whether the student was a dual language learner, using Mplus (Muthen & Muthen, 2015).
- Multigroup model testing was conducted using Mplus between those in the Regular track versus the Gifted and Talented (GT) track, and significance tests compared the strength of the growth mindset estimates on achievement for the two tracks.

RESULTS

| Measure | Regular Track | | | | Gifted and Talented Track | | | |
|--------------------|---------------|------|------|--------------|---------------------------|------|------|--------------|
| | Estimate | SE | p | 95% CI | Estimate | SE | p | 95% CI |
| MAP-Reading | | | | | | | | |
| Growth Mindset | 0.19 | 0.07 | 0.01 | 0.07, 0.31 | 0.03 | 0.17 | 0.84 | -0.25, 0.31 |
| Age | 0.00 | 0.07 | 0.98 | -0.11, 0.12 | -0.20 | 0.17 | 0.24 | -0.47, 0.08 |
| Gender | 0.00 | 0.07 | 0.96 | -0.12, 0.11 | 0.10 | 0.14 | 0.50 | -0.14, 0.33 |
| Ethnicity | 0.00 | 0.09 | 0.97 | -0.14, 0.15 | -0.03 | 0.15 | 0.85 | -0.28, 0.22 |
| Dual-Language | -0.24 | 0.08 | 0.00 | -0.37, -0.11 | 0.10 | 0.14 | 0.45 | -0.12, 0.33 |
| MAP-Math | | | | | | | | |
| Growth Mindset | 0.19 | 0.09 | 0.04 | 0.04, 0.33 | 0.09 | 0.08 | 0.30 | -0.05, 0.22 |
| Age | -0.03 | 0.06 | 0.64 | -0.14, 0.08 | -0.15 | 0.12 | 0.21 | -0.34, 0.05 |
| Gender | -0.11 | 0.07 | 0.11 | -0.23, 0.00 | -0.21 | 0.06 | 0.00 | -0.30, -0.11 |
| Ethnicity | 0.05 | 0.08 | 0.51 | -0.08, 0.19 | 0.09 | 0.08 | 0.24 | -0.04, 0.22 |
| Dual-Language | -0.30 | 0.08 | 0.00 | -0.43, -0.18 | -0.03 | 0.11 | 0.80 | -0.22, 0.16 |

Table 1. Structural Equation Modeling Estimates Growth Mindset's Associations with Achievement

- **Hypothesis 1:** Independent t-tests suggested similar levels of growth mindset between Regular Track ($M = 4.92, SD = .66$) and GT Track ($M = 4.99, SD = .56$) students; $t(241) = -.68, p = .50$.
- **Hypothesis 2:** Growth mindset was only a significant predictor of reading and math achievement for students in the Regular track (Table 1 and Figure 1). Multigroup difference tests suggested a significant difference in growth mindset's prediction of reading between the Regular and GT tracks (Estimate = -5.95, SE = 2.37, $p < .05$, CI[-10.59, -2.09]). This relation trended toward significance for math achievement (Estimate = -5.92, SE = 3.12, $p = .058$, CI[-12.04, .19]). The model fit was adequate, RMSEA = .00, CFI = 1.00, SRMR = .00. Students' status as a dual language learner was a significant control variable for both reading and math.

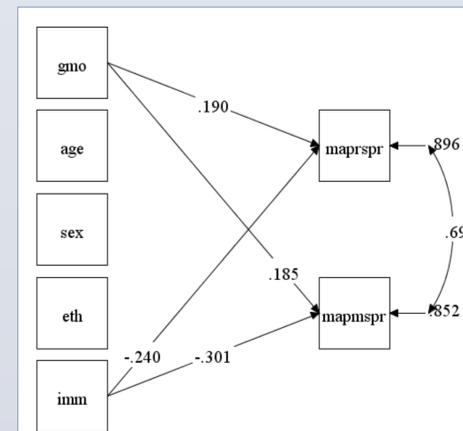


Figure 1. Growth Mindset's Associations with Achievement Among Students in the Regular Track

DISCUSSION

Levels of growth mindset did not differ between Regular and GT track students.

Growth mindset only had an impact on achievement for Regular Track students. For those in the GT Track, growth mindset did not predict achievement.

Differences between the two tracks were significant for reading. This finding is particularly important in light of the field's focus on growth mindset and math.

Potential reasons for growth mindset's differing relations with achievement between student tracks:

- Smaller sample of GT participants. Yet, the estimates were weak for GT participants, suggesting that small sample size was not the cause.
- Other factors than growth mindset may better account for GT achievement, like, perhaps, engagement (Reis & McCoach, 2000).
- Growth mindset may still predict other kinds of achievement for Gifted and Talented students (e.g., more narrow academic assessments or nonacademic outcomes).

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