Can a Growth Mindset Intervention Overcome Persistent Messages About the Stability of Intelligence?

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ABSTRACT

This study investigated (1) how academic labeling predicts beliefs about intelligence, motivational beliefs, and academic performance and (2) whether a growth mindset intervention buffers these relations. The National Study of Learning Mindsets dataset includes ninth grade students who were randomly assigned to the intervention or active control condition; we used a subsample (N = 4,044) in which students were labeled as gifted, in special education, or received neither label. Academic labeling predicted fixed mindset perceptions, which was moderated by the intervention. Endorsing more fixed mindsets negatively predicted GPA and was related in unexpected ways to motivational beliefs.

INTRODUCTION

- Students are constantly confronted with information about their academic capabilities. One example occurs when students are labeled as intellectually gifted and/or as having a learning disability.

- These labeling practices are concerning because they may reinforce *fixed beliefs about intelligence* (i.e., a fixed mindset, or the perception that intelligence is unchangeable), which are negatively related to motivation, behavior in achievement situations, and academic performance (Yeager & Dweck, 2012).

- Beliefs about intelligence are responsive to intervention (e.g., Blackwell, Trzesniewski, & Dweck, 2007) and feedback is a powerful precursor of these beliefs and subsequent behaviors (Henderlong & Lepper, 2002).

- However, the impact of a more implicit type of feedback -- academic labeling -- remain underexplored. Guided by achievement goal theory (e.g., Dweck & Leggett, 1988; Senko, 2016), we attempted to address this gap.

RESEARCH QUESTIONS & CONCEPTUAL MODEL

1. Does academic labeling (i.e., being identified as gifted, receiving special education, or receiving neither label) predict a fixed mindset, motivational beliefs, and grade point average?

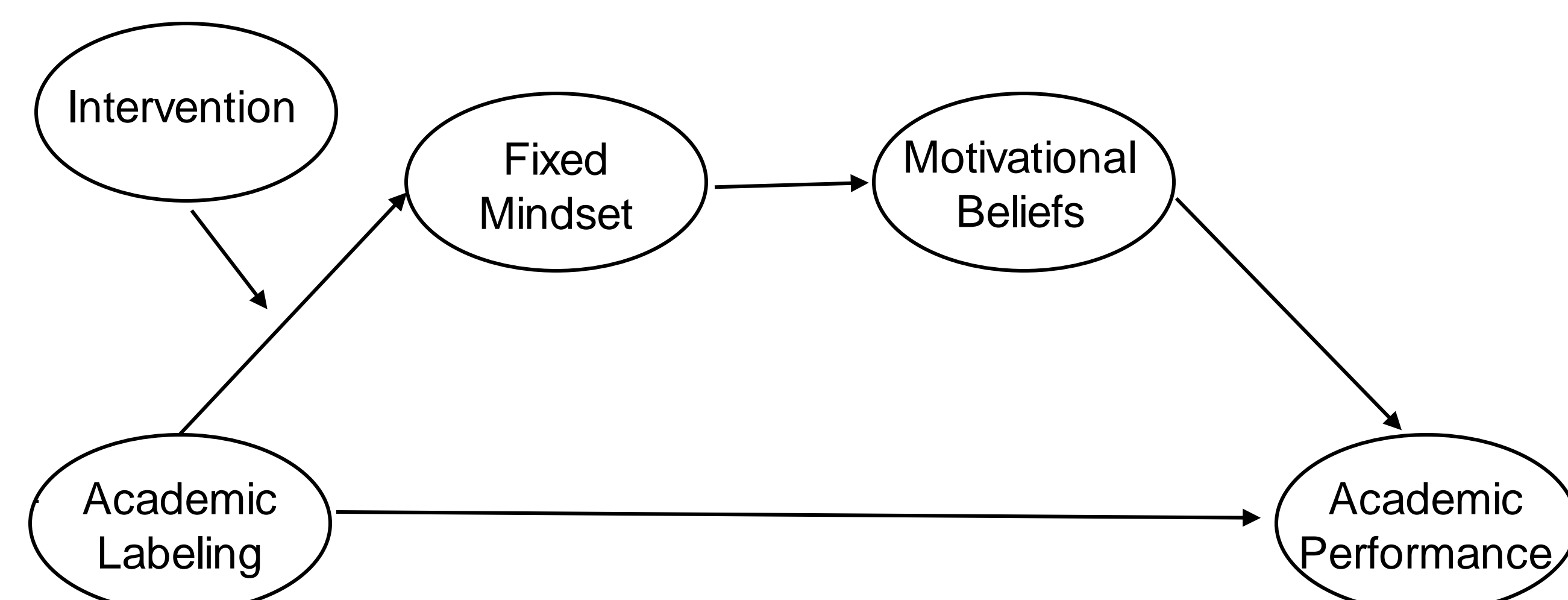2. Does a growth mindset intervention moderate these relations?

Figure 1. Conceptual model guiding the current study.

METHOD

Sample:

- A subsample of 9th grade students (N = 4,044, 25 schools) from the National Study of Learning Mindsets (NSLM) dataset.

- 48% female, 55% White, 34% free/reduced-price lunch.

- Students were (a) gifted or enrolled in an international baccalaureate (IB) program (n = 340), (b) in special education (n = 310), or (c) received neither of these labels (n = 3,390).[1]

Procedure and Measures:

- Students completed a baseline survey followed by randomization to the growth mindset intervention or active control condition.

- Several weeks later, they were exposed to a second session of the condition[2] and completed an additional survey (see Table 1).

- **Growth Mindset Intervention:** Read about evidence for neural plasticity, reflected on strengthening brain by persisting through challenges, completed writing exercise to internalize lessons[3].

- **Active Control:** Read article on brain functions, completed writing exercise to internalize lessons.

Table 1. *Summary of Measures*

Variable	Source	Sample Item or Description
Fixed mindset	Student self-report (Six-point Likert scale) Two Items: α = .82	"You have a certain amount of intelligence, and you really can't do much to change it."
Meaningfulness of schoolwork (i.e., motivational belief)	Student self-report (Five-point Likert scale) Single Item	"When I work hard in school, it makes me feel like I'm doing something meaningful."
Performance-avoidance goal orientation (i.e., motivational belief).	Student self-report (Five-point Likert scale) Single Item	"One of my main goals for the rest of the school year is to avoid looking dumb in my classes."
Academic performance	School records	Post-intervention grade point average (GPA).

RESULTS & CONCLUSIONS

- Path analysis was conducted with baseline fixed mindset, effort beliefs, pre-intervention GPA, and sex included as covariates.
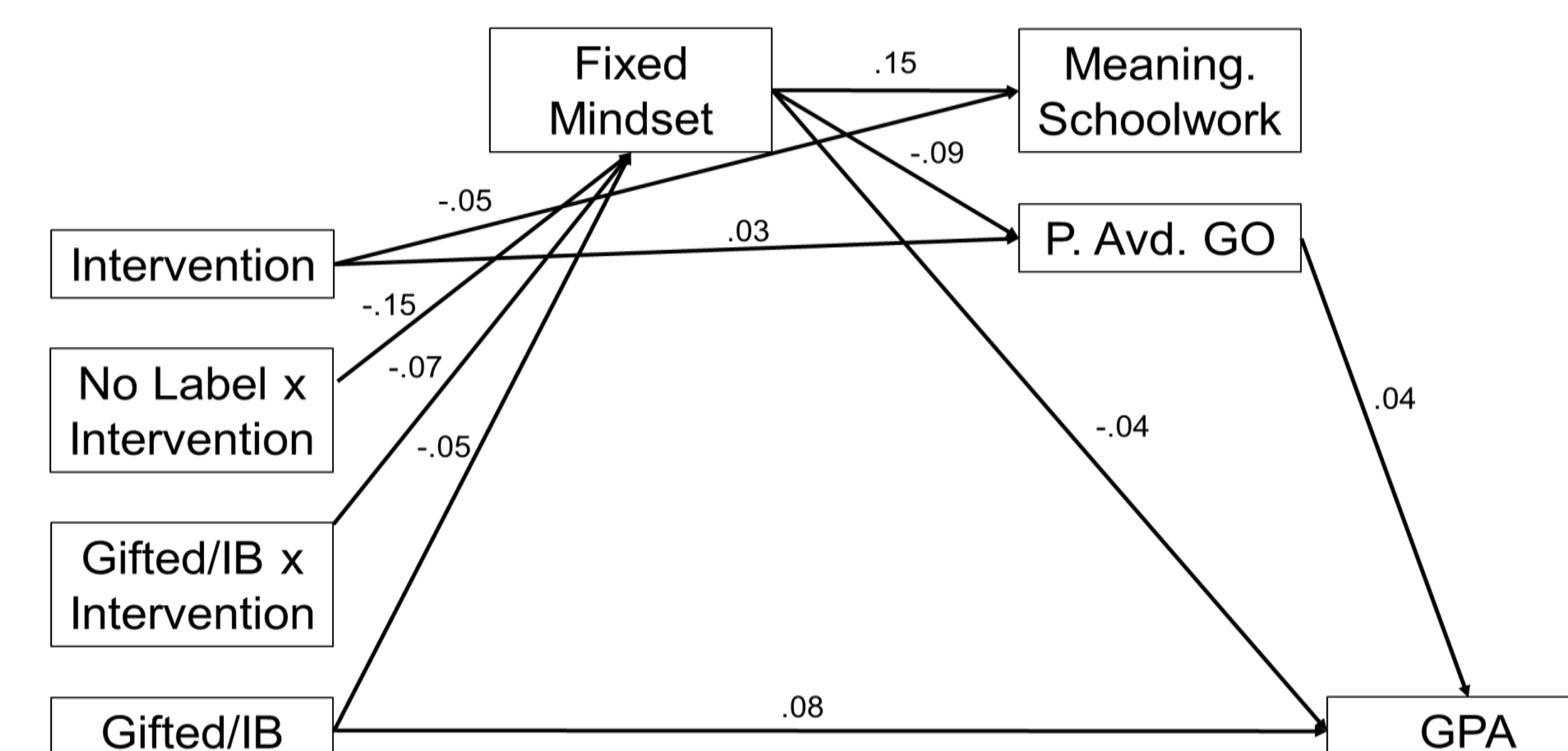

Figure 2. Summary of path analysis results. Indices revealed excellent fit. All coefficients provided in the figure are standardized. Only statistically significant paths are presented (p < .05) and pathways involving covariates have been omitted for simplicity. Students in special education and in the active control condition are the dummy-coded reference groups. Standard errors were adjusted for school-level clustering. Fixed mindset mediated relations between (a) Gifted/IB and meaningfulness of schoolwork and (b) performance-avoidance goal orientation.

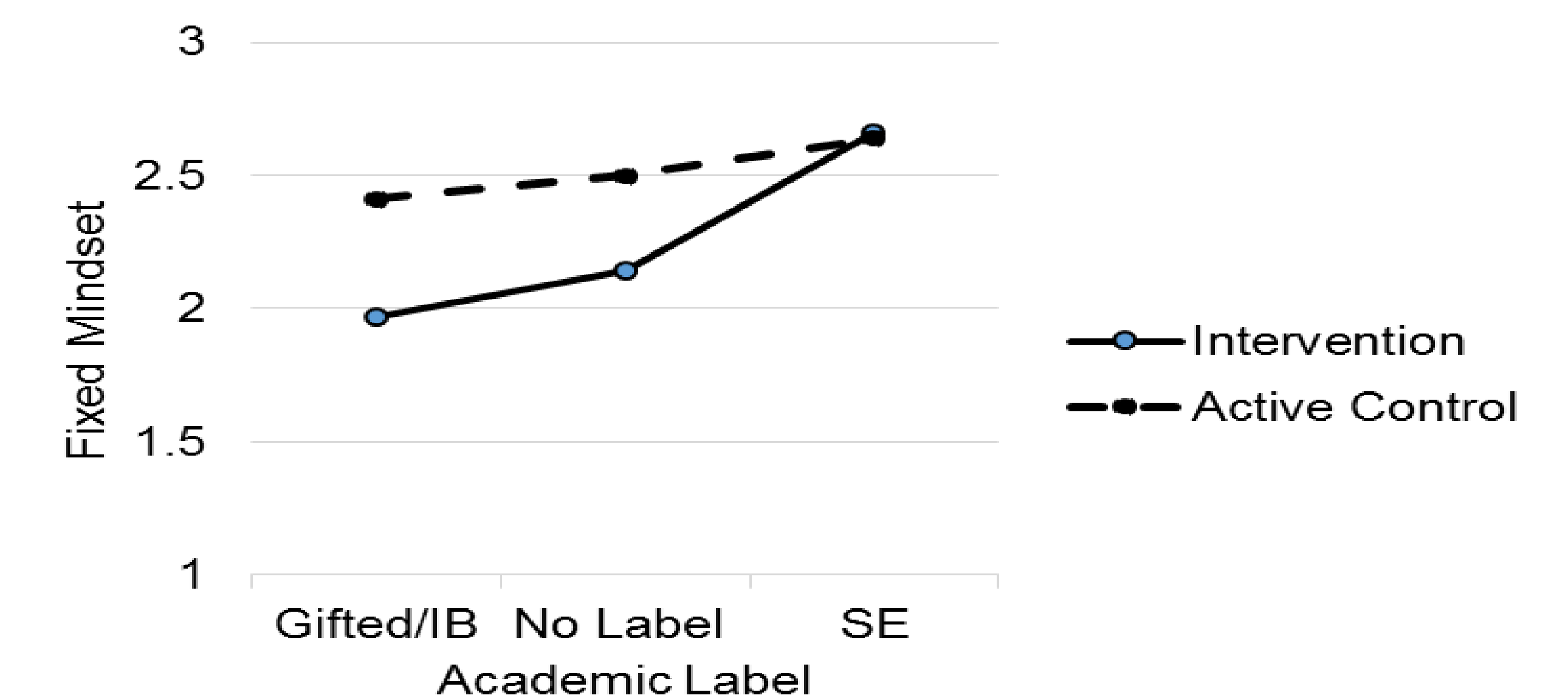## RESULTS & CONCLUSIONS (CONTINUED)

Figure 3. Moderating effect of growth mindset intervention in the relation between academic label and fixed mindset. SE = Students in special education. Higher scores indicate stronger endorsement of a fixed mindset.

Conclusions[4]:

- Academic labeling predicted differences in fixed mindset perceptions, yet this pattern was qualified by the moderating effect of a growth mindset intervention (see Figures 2 and 3):

  - The intervention reduced fixed mindset perceptions for students who (a) were gifted and/or enrolled in IB and (b) were not labeled.

  - Students in special education who received the intervention did not report lower levels of fixed mindset perceptions compared to their control group counterparts.

- Fixed mindset perceptions were associated in unexpected directions with motivational beliefs, as was performance-avoidance goal orientation with GPA (see Figure 2).

Implications:

- A more tailored version of growth mindset interventions may be needed for students in special education.

- More work is needed to better understand the mechanisms of the unexpected relations involving motivational beliefs, , especially given that they were each measured by a single item in the current study.

ENDNOTES, REFERENCES, & ACKNOWLEDGEMENTS

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This project was pre-registered with OSF:
https://osf.io/xkz6t/register/5c08457ed283380029cf73bf

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