

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

Alison C. Koenka¹, Amy L. Dent², and Jennifer H. Corpus³

¹The Ohio State University²University of California, Irvine³ Reed College

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?

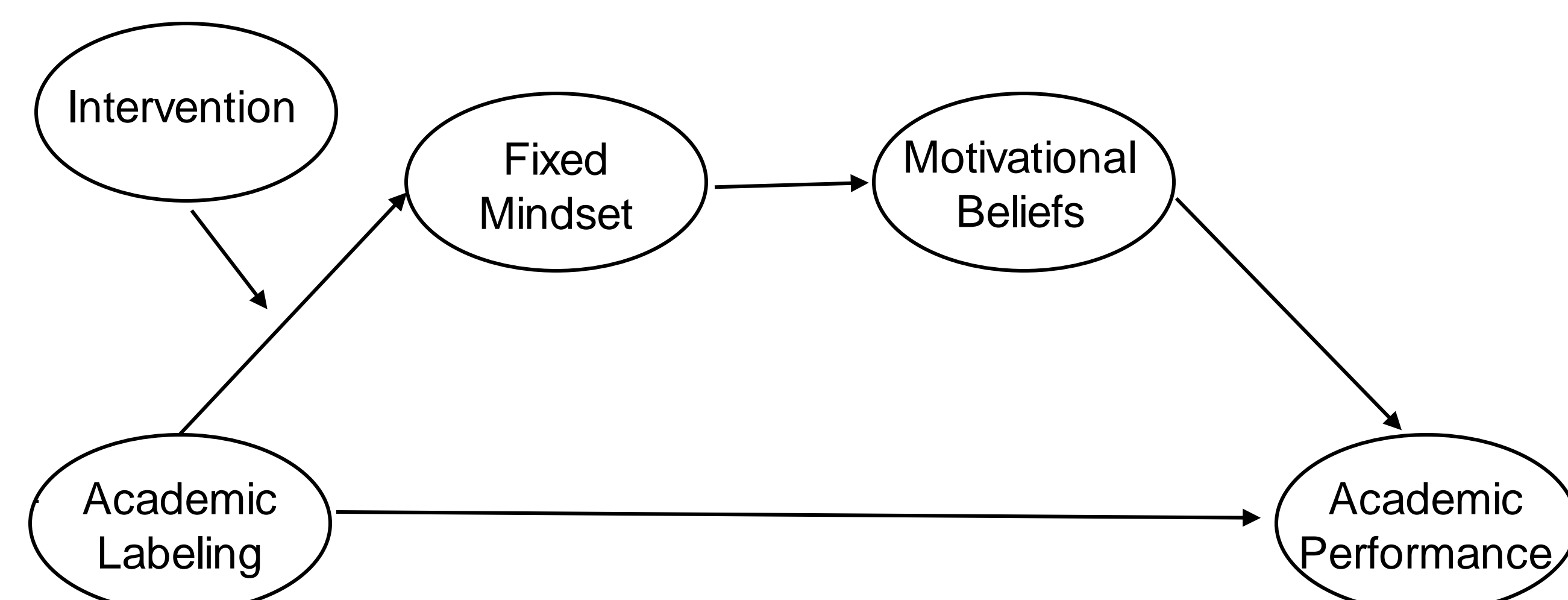


Figure 1. Conceptual model guiding the current study.

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 condition² 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 lessons³.
- **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: $\alpha = .82$	"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.

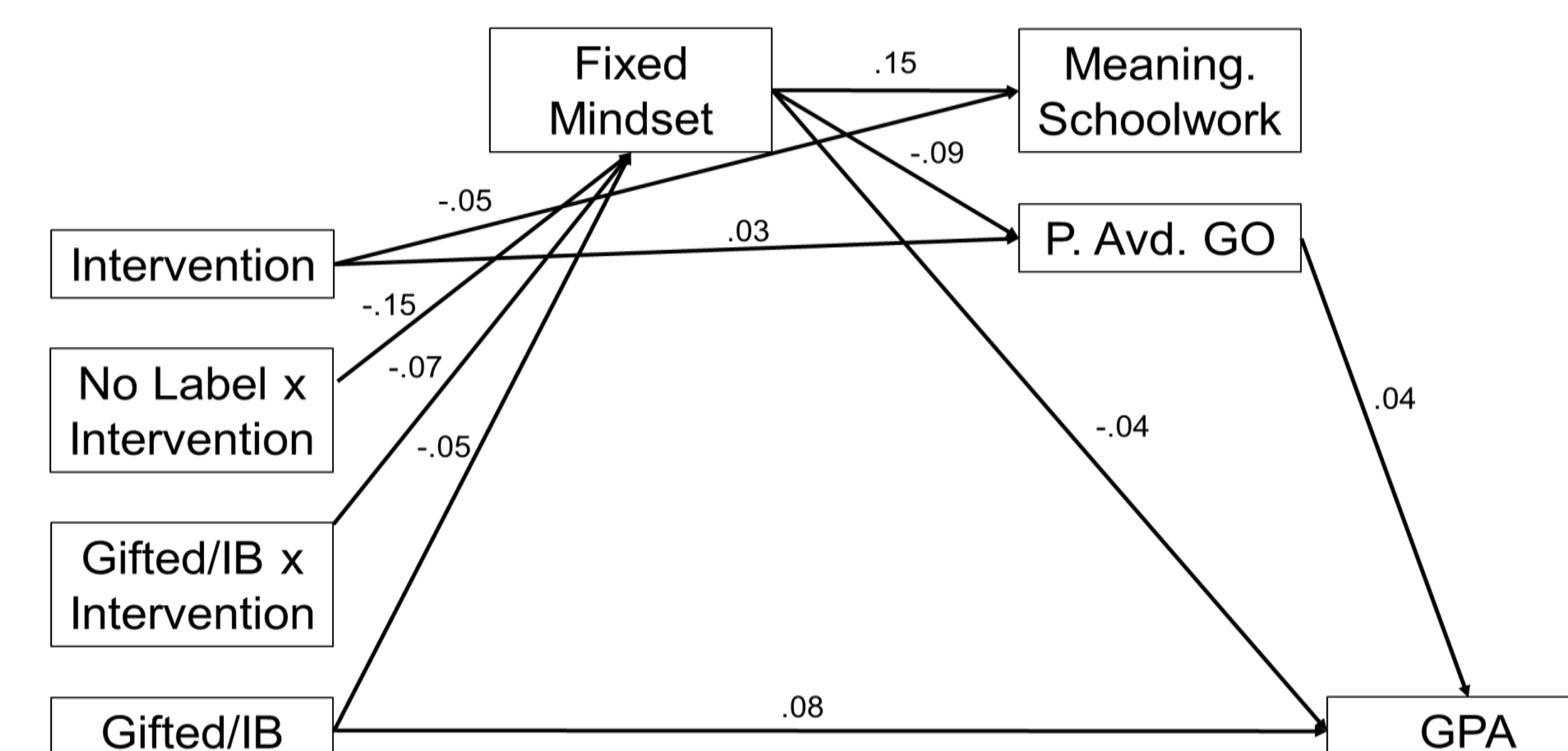


Figure 2. Summary of path analysis results. Indices revealed excellent fit. All coefficients provided in the figure are standardized. Only statistically significant paths are presented ($p < .05$) and pathways involving covariates have been omitted for simplicity. Students in special education and in 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)

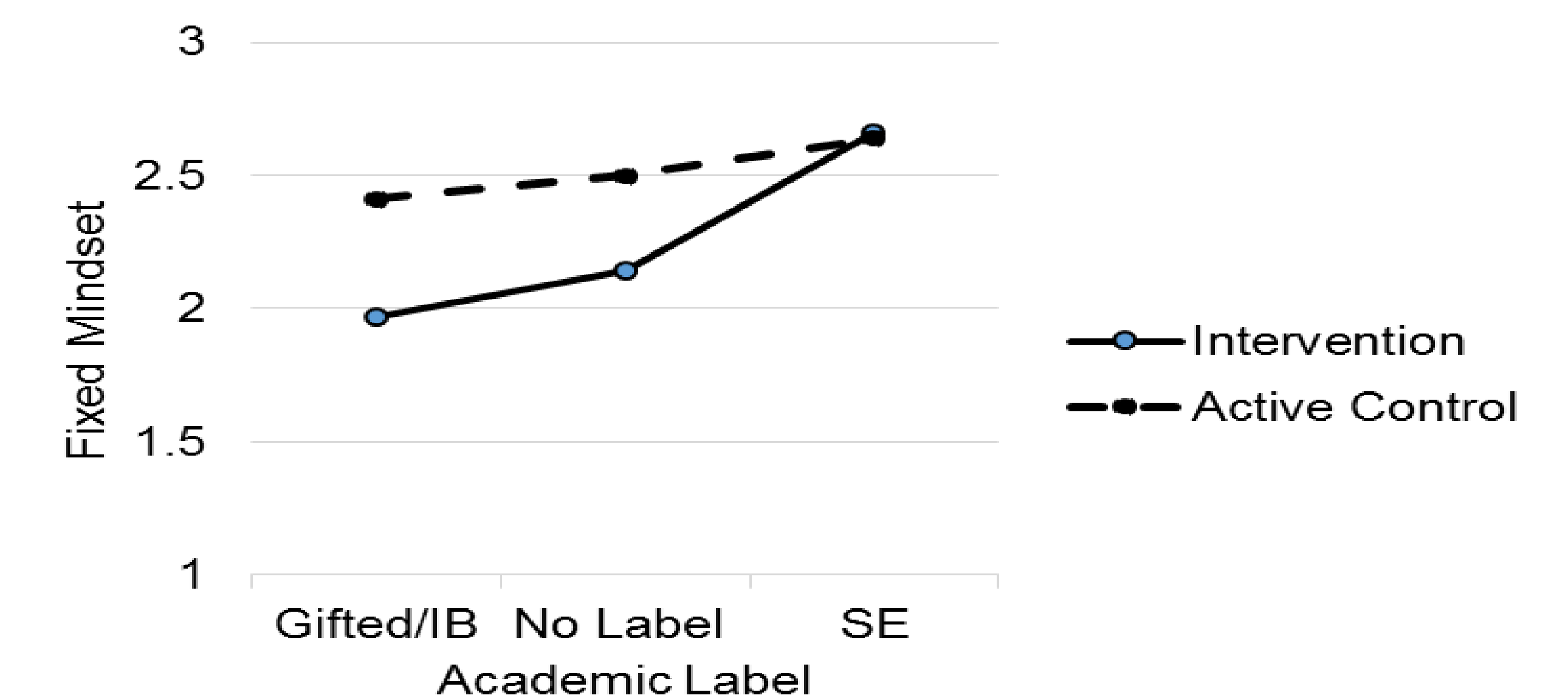


Figure 3. Moderating effect of growth mindset intervention in the relation between academic label and fixed mindset. SE = Students in special education. Higher scores indicate stronger endorsement of a fixed mindset.

Conclusions⁴:

- 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

¹ All reported sample and subsample sizes are rounded to the nearest 10.
² Students remained in the same randomly-assigned condition in Sessions 1 and 2.
³ The overarching objective of the growth mindset intervention was to convey to students that intellectual abilities can be developed and emphasized prosocial benefits of doing so.
⁴ The current study's findings only refer to NSLM schools that reported information on students' gifted/IB and special education information.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78, 246-263. doi:10.1111/j.1467-8624.2007.00995.x

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273.

Henderlong, J., & Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin*, 128, 774-795. doi:10.1037/0033-2909.128.5.774

Senko, C. (2016). Achievement goal theory: A story of early promises, eventual discords, and future possibilities. In K. Wentzel & D. Miele (Eds.), *Handbook of Motivation at School* (Vol. 2, pp. 75-95). New York: Routledge.

Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, 47, 302-314. doi:10.1080/00461520.2012.722805

Research reported in this poster was supported by the National Study of Learning Mindsets Early Career Fellowship with funding generously provided by the Bezos Family Foundation to the Mindset Scholars Network and the University of Texas at Austin Population Research Center. The University of Texas at Austin receives core support from the National Institute of Child Health and Human Development under the award number 5R24 HD042849. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Bezos Family Foundation, the Mindset Scholars Network, the University of Texas at Austin Population Research Center, or the National Institutes of Health.

This poster uses data from the National Study of Learning Mindsets (PI D. Yeager; Co-Is: R. Crosnoe, C. Dweck, C. Muller, B. Schneider, & G. Walton), which was made possible through methods and data systems created by the Project for Education Research That Scales (PERTS), data collection carried out by ICF International, meetings hosted by the Mindset Scholars Network at the Center for Advanced Study in the Behavioral Sciences at Stanford University, assistance from C. Hallerman, R. Ferguson, M. Shankar, T. Brock, C. Romero, D. Fauskeski, C. Maccandor, T. Wilson, E. Korar, M. Weiss, E. Tipton, and A. Duckworth, and funding from the Raikes Foundation, the William T. Grant Foundation, the Spencer Foundation, the Bezos Family Foundation, the Character Lab, the Houston Endowment, the National Institutes of Health under award number R01HD084772-01, Angela Duckworth (personal gift), and the President and Dean of Humanities and Social Sciences at Stanford University.