

Growth Mindset

"Failure is an opportunity to grow"

GROWTH MINDSET

"I can learn to do anything I want"

"Challenges help me to grow"

"My effort and attitude determine my abilities"

"Feedback is constructive"

"I am inspired by the success of others"

"I like to try new things"

"Failure is the limit of my abilities"

FIXED MINDSET

"I'm either good at it or I'm not"

"My abilities are unchanging"

"I don't like to be challenged" "I can either do it, or I can't"

"My potential is predetermined"

"When I'm frustrated, I give up"

"Feedback and criticism are personal"

"I stick to what I know"

Context

- Roughly 20% of U.S. students do not finish high school on time, placing them at risk for poverty, poor health, and shorter life expectancy.
- The transition to secondary school (9th grade) is a key turning point: grades often fall and rarely recover.
- Researchers have focused on social-psychological interventions that shift students' beliefs about themselves in ways that help them navigate academic difficulty.
- One such intervention: Growth mindset, which teaches that intelligence can grow with effort, strategies, and help-seeking.

Research Questions

- The researchers conducted the National Study of Learning Mindsets to test, at a national scale:
 - Does a brief, online growth-mindset intervention improve academic performance in 9th graders?
 - Which students benefit the most?
 - Which school environments support or hinder the intervention's effects?
 - Does it influence longer-term decisions, like taking advanced math?

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Study Design

- Sample:
 - 65 regular U.S. public high schools
 - 12,490 9th-grade students
 - Schools selected to be nationally representative
- Randomization:
 - Students randomly assigned within schools to receive either:
 - The Growth Mindset Intervention, or
 - A Control Module on brain structure/function (neutral content)

Study Design

- The Intervention:
 - Two 25-minute online sessions:
 - Explains that the brain is like a muscle—abilities grow through effort and good strategies
 - Students reflect on times they learned through challenges
 - They write an advice letter to a future 9th grader (to internalize the message)
- Primary Focus:
 - GPA in core subjects (math, science, English, social studies) at end of 9th grade
 - Lower-achieving students = those at or below the school's GPA median.

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- Advanced Math Enrollment
 - Advanced math enrollment increased from 33% to 36%

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Two Kinds of Schools

- The core question: Where does the intervention work best?
- The study pre-registered two moderators:
 - School Achievement Level (formal resources)
 - Peer Challenge-Seeking Norms (informal resources)

1. School Achievement Level

- Key Finding
 - Intervention effects were weaker in high-achieving schools.
 - Effects were stronger in low- and medium-achieving schools.
- Why?

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- Key Finding
 - Intervention effects were weaker in high-achieving schools.
 - Effects were stronger in low- and medium-achieving schools.
- Why?
 - High-achieving schools already provide strong supports; less room for mindset benefits.
 - Low/medium-achieving schools may have more students struggling with challenge and needing mindset reframing.

2. Peer Challenge-Seeking Norms

- What It Means
 - Measured via the “make-a-math-worksheet” task:
 - Students choose easy vs. challenging problems.
 - Schools where more students chose challenging tasks → “supportive norms.”
- Key Finding
 - Intervention effects were significantly stronger in schools with supportive peer norms.
 - In unsupportive schools, students may fear looking “stupid” when trying hard.
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- Why
 - Belief change needs a context that rewards challenge-taking.
 - Without supportive norms, social costs counteract new beliefs.

Growth Mindset Intervention Design

Growth Mindset Intervention Design

- How the Intervention Was Designed
 - Online delivery: uniform, self-paced, and independent of teacher skill
 - Two sessions (\approx 25 minutes each)
 - Self-guided modules with text, and videos
 - Cognitive reframing: intelligence as malleable; effort and strategy as pathways to growth
 - Student reflection: writing about past challenges to internalize message
 - Reflective writing: giving advice to future 9th graders
 - Scalable: implemented identically across all schools

Theories of Intelligence

Updates

- All assignment tabs will be up on LMS by end of this week
- Upcoming submissions:
 - Assignment 3 – Spaced vs Massed Practice
 - Assignment 4 – Experiment Summary
 - Classroom Observation(s)
- Final
 - Finalize your groups and topics
 - Please sign up for a time to meet with me

Theories of Intelligence – Blackwell et al. (2009)

- Group 1 – Background and context
- Group 2 – Key variables
- Group 3 – Design and results (study 1)
- Group 4 – Critique – results and discussion
- Group 5 – Design and results (study 2)
- Group 6 – Critique – results and discussion

