

Developing Growth Mindsets

Pasadena City College

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Mindset Works

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- ✓ Learn and develop any skills
- ✓ Succeed in college, career & life
- ✓ Adapt in a fast-changing world

by Patrick Giblin



Purpose:
develop
motivated &
effective learners



Sometimes students:

- lack aspirations to drive towards
- don't fully engage in learning tasks
- are unmotivated by tasks with no grades
- get overwhelmed by challenges
- don't fully develop important competencies
- drop out

Purpose:
develop
motivated &
effective learners



Photo credit: [Torley](#)

Sometimes adults:

don't fully engage in ongoing development

disengage when things get hard

are uncomfortable with soliciting, giving & receiving peer feedback

give up on finding new strategies to succeed

shy away from challenge & change

become complacent

Purpose:
develop
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effective learners



Photo credit: [Torley](#)

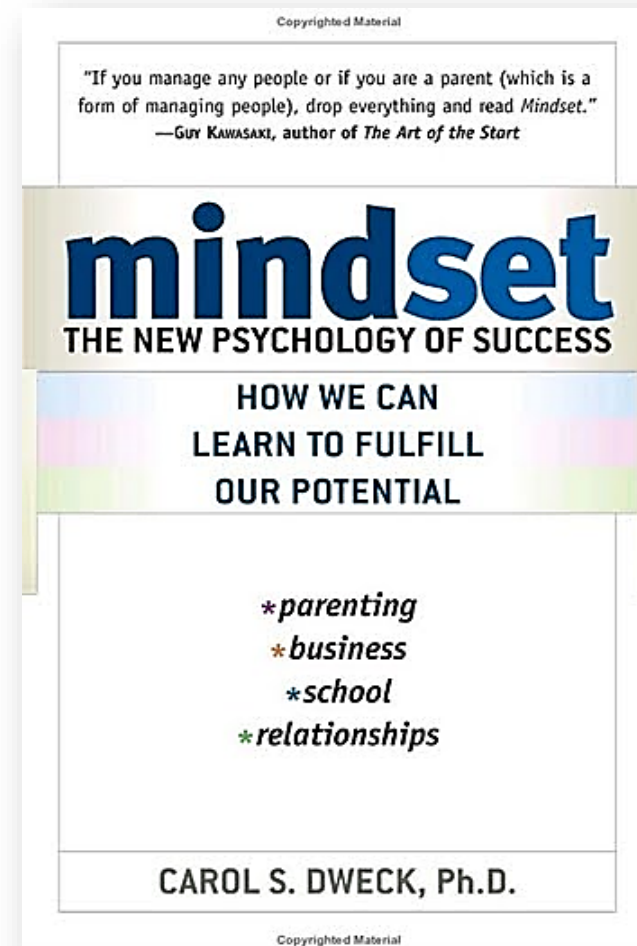
Do you care about inner drive to learn & improve?
If so, why? and what challenges you?

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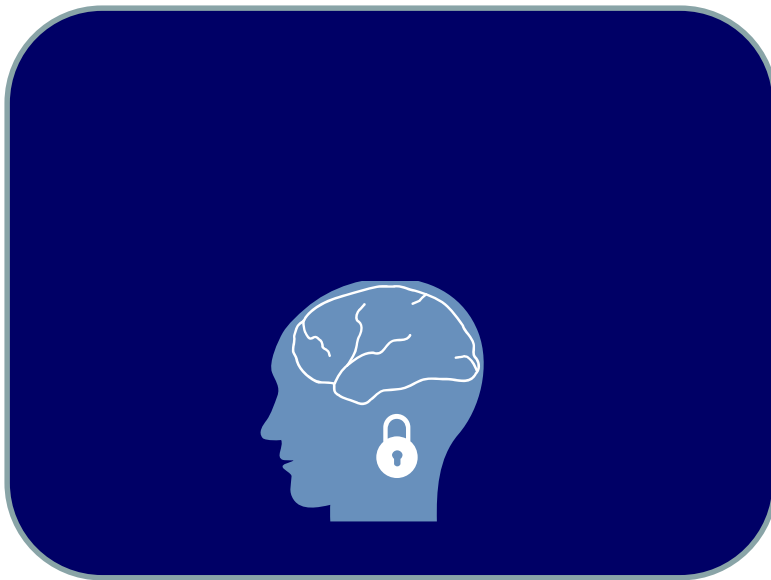
Photo credit: [Torley](#)

Growth Mindset



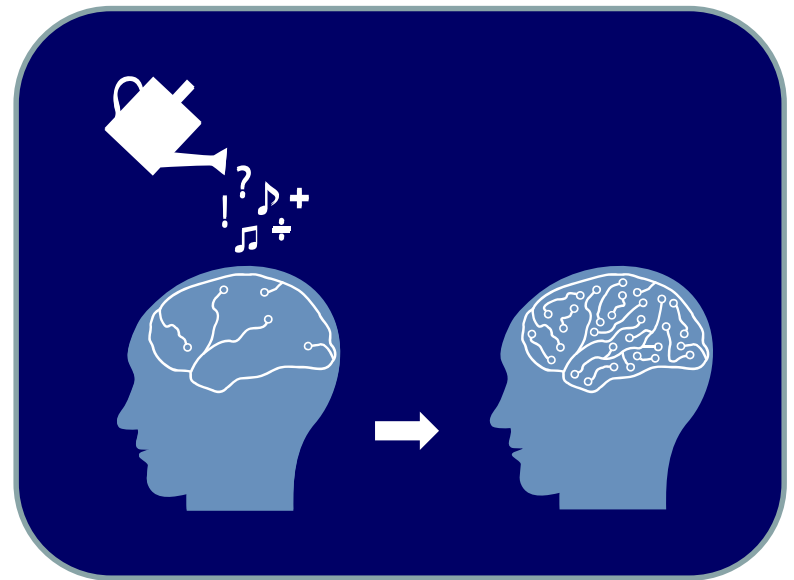
Fixed Mindset

Intelligence (or an ability) is a fixed trait



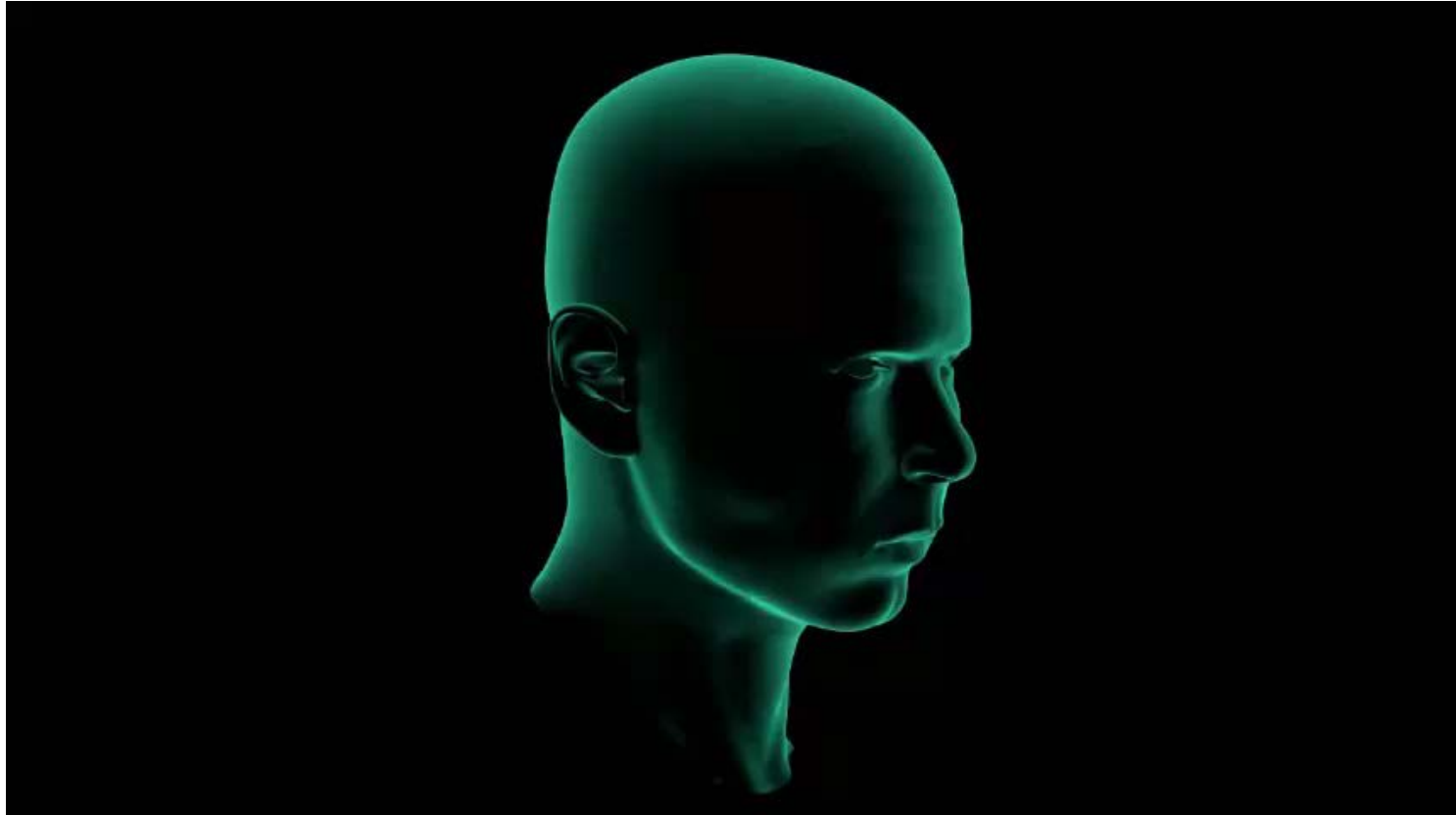
Growth Mindset

Intelligence (or an ability) can be developed



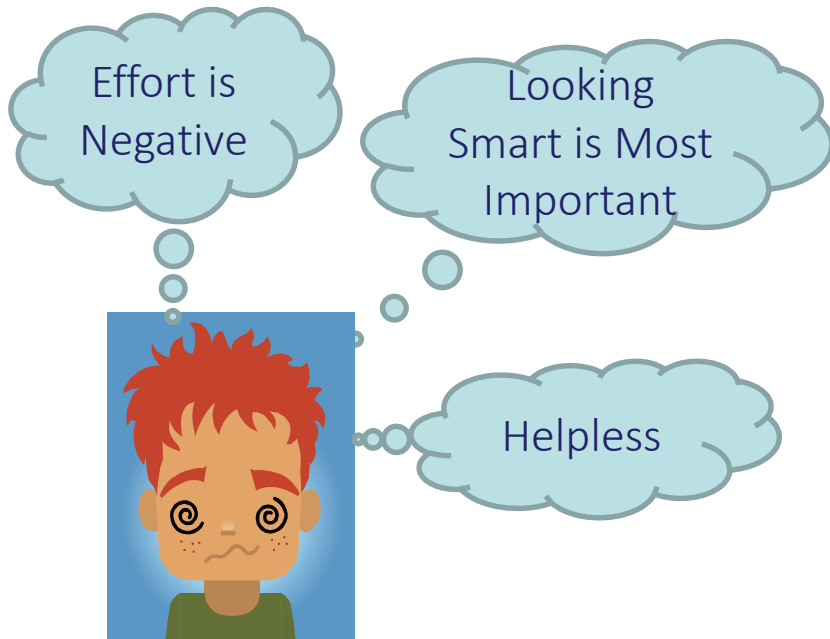
Belief (Mindset) → Behaviors → Outcomes

Way to Visualize Malleability of Intelligence



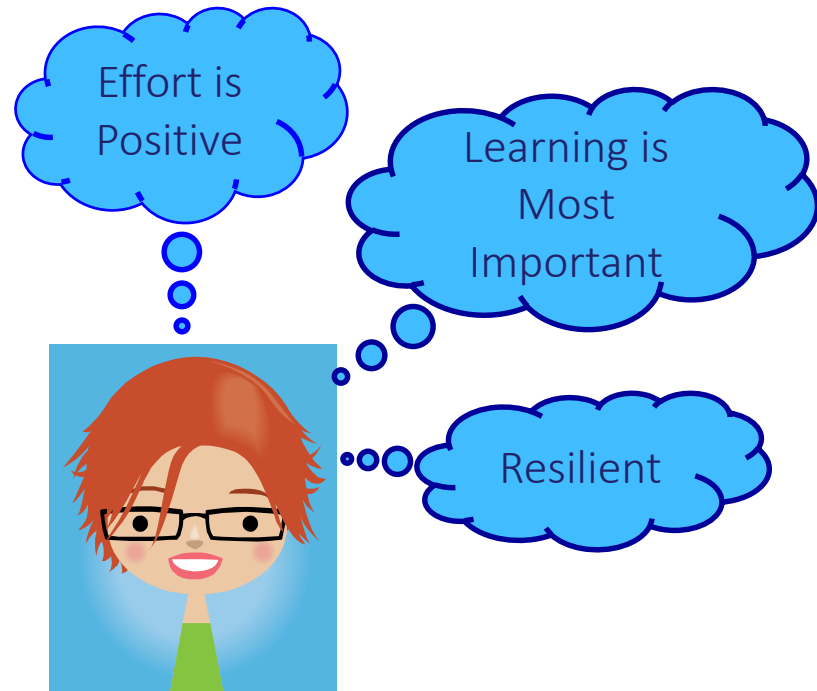
Fixed Mindset

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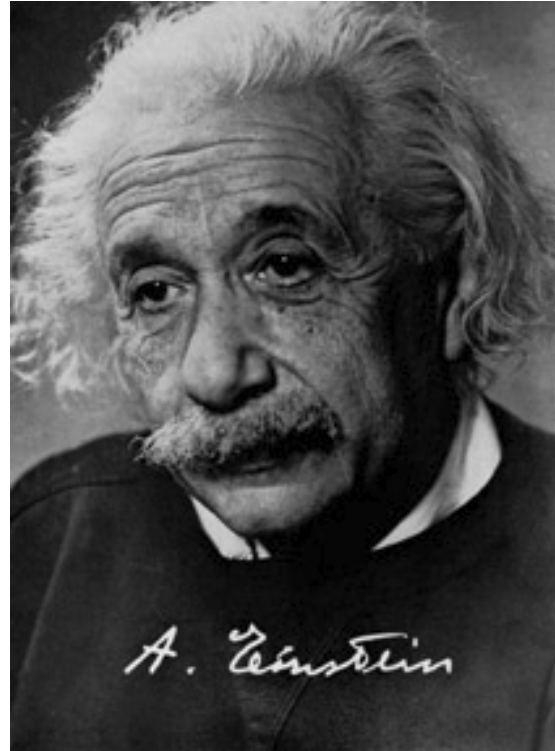


Growth Mindset

Intelligence (or an ability) can be developed



Example Growth Mindset in Action

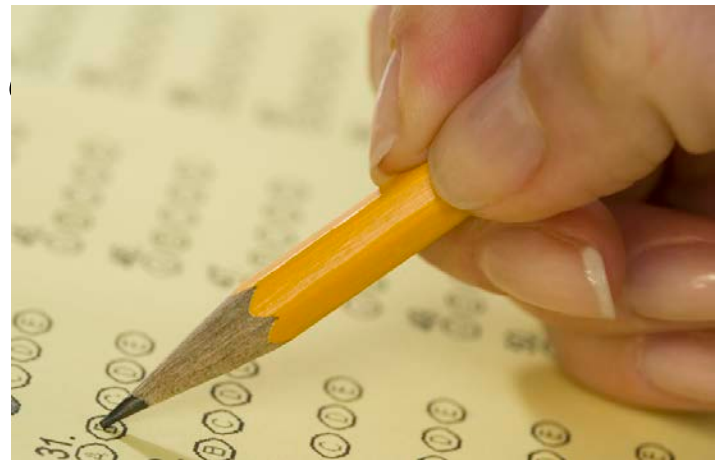


*“It’s not that I’m so smart,
it’s just that I stay with the problem longer.”*

Growth Mindset Increases Achievement

Mindset Impact on Achievement

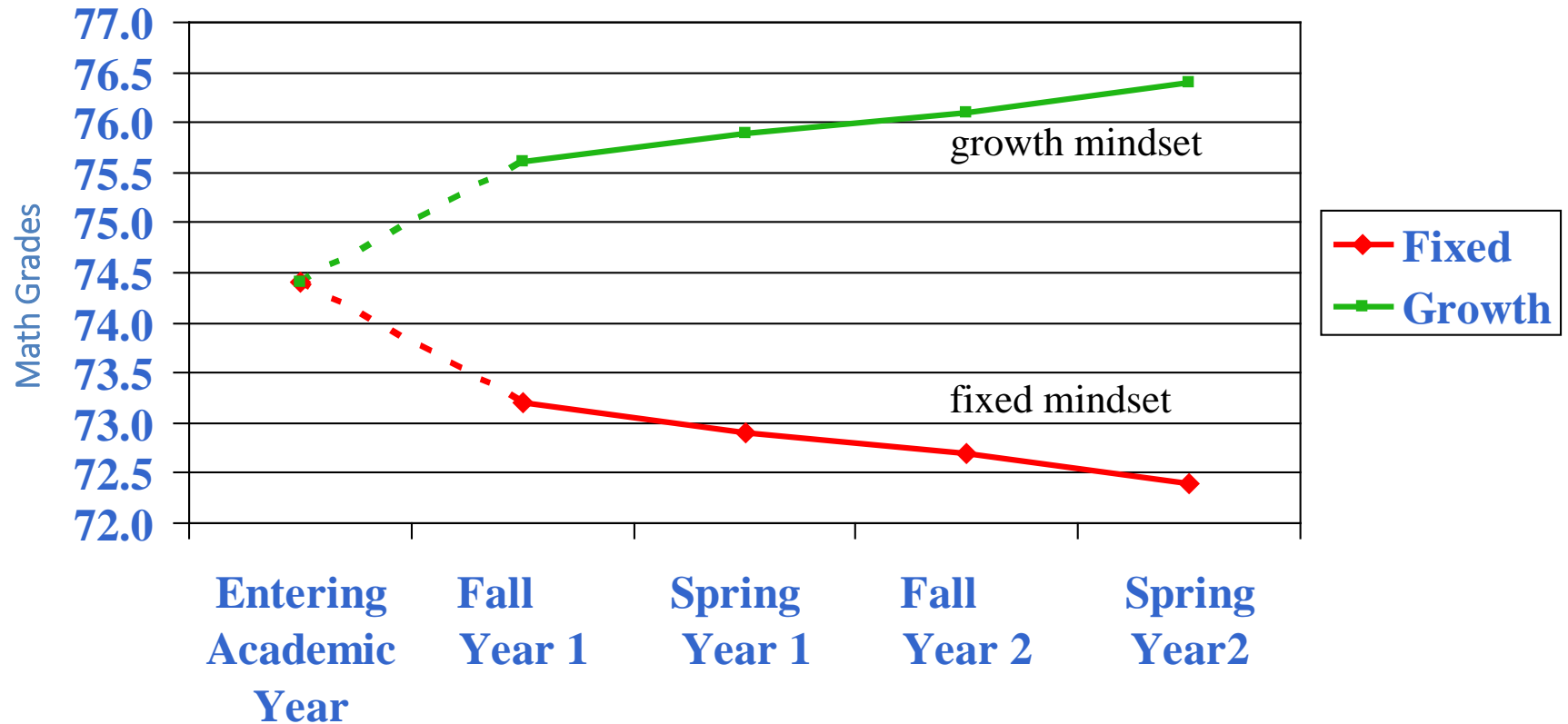
- *Your intelligence is something you can't change very much.*
- *You can learn new things, but you can't really change your basic intelligence.*
- *No matter who you are, you can't change your intelligence a lot.*



...

Study #1 on Students Making a Transition to 7th Grade, from: Blackwell, L., Trzesniewski, K., & 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.

Mindset Impact on Achievement



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Mindset Impact on Achievement is a Human Phenomenon

Academics

Sports

Health

Relationships

The Workplace

Mindset effect on reading tests

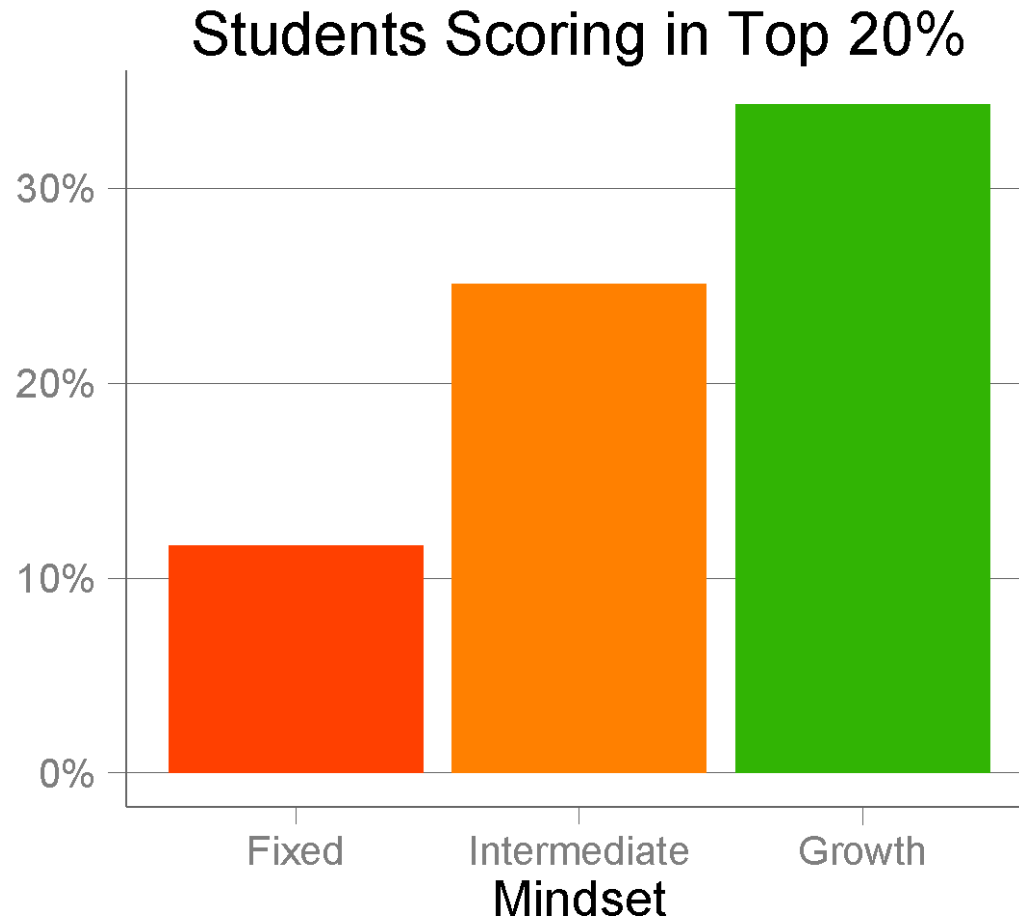


Susana
Claro

- Chilean National Achievement Test
- 10th grade test incorporated Growth Mindset Assessment
n=147,000

Claro, Paunesku, & Dweck, in prep.

Mindset effect on reading tests



Growth Mindset students were **3x more likely** to score in the top fifth!

Claro, Paunesku, & Dweck, in prep.

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College Examples

College students' who believe that math ability can be developed have higher entering math ability and improve faster.

College students who believe that intelligence can be developed complete more credits per term.

Yeager et al, 2013, study of 500 community college developmental math students attending 19 colleges around the country

What a Growth Mindset Looks Like



Warren Buffett
& Charlie Munger

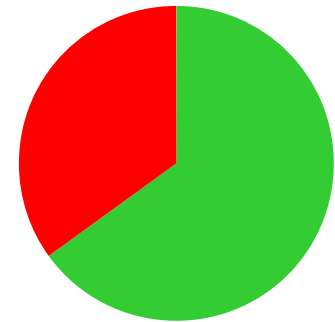
BERKSHIRE HATHAWAY INC.

- “Warren Buffett has become a lot better investor since the day I met him, and so have I. If we had been frozen at any given stage, with the knowledge we had, the record would have been much worse than it is. So the game is to keep learning.”
 - Charlie Munger
 - “I just sit in my office and read all day.” ... “Read 500 pages like this every day. That's how knowledge builds up, like compound interest.”
 - Warren Buffett

Workplace: Negotiation Skills

Business people who think good negotiators are made (vs. born) :

- ✓ Persevere in a tough negotiation
- ✓ Create more collective value
- ✓ Capture more value



■ Good negotiators are made
■ Good negotiators are born

Kray, Laura J., and Michael P. Haselhuhn (2007), "Implicit Negotiation Beliefs and Performance: Experimental and Longitudinal Evidence", *Journal of Personality and Social Psychology*, 93, 49-64.

Workplace: Management Skills

Research shows that managers who believe that people can develop their abilities:

- ✓ Are better at taking and using feedback from their employees, and become better managers
- ✓ Notice and appreciate growth in employees, and as a result provide more accurate performance feedback
- ✓ Are better at coaching their employees

Heslin, P. A., & VandeWalle, D. (2008). Managers' implicit assumptions about personnel. *Current Directions in Psychological Science*, 17, 219 - 223.

Wood, R.E., Bandura, A. (1989) Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology*, 56, 407-415.

Workplace: Leadership Skills

People who believe leaders are made (vs. born), experience:

- ✓ Higher confidence in their ability to lead
- ✓ Lower anxiety and depression-like symptoms
- ✓ Higher leadership performance

Hoyt, C. L., Burnette, J., & Innella, A. (2012). I can do that: The impact of implicit theories on leadership role model effectiveness. *Personality and Social Psychology Bulletin*, 38, 257-268.

Looking within



by [Pedro Ribeiro Simões](#)



by [Alan Cleaver](#)



by [James Abbott McNeill Whistler](#)

Problem: $\nabla^2 \phi + \lambda \phi = 0$, $\phi(r, \theta)$, $0 < r < a$, $0 < \theta < \frac{\pi}{2}$

BC $\begin{cases} \phi(r, 0) = \phi(r, \pi/2) = 0, & 0 < r < a \\ \phi(a, \theta) = 0, & 0 < \theta < \pi/2 \end{cases}$

use $\nabla^2 = \frac{1}{r} \frac{\partial}{\partial r} r \frac{\partial}{\partial r} + \frac{1}{r^2} \frac{\partial^2}{\partial \theta^2}$, separate: $\phi(r, \theta) = f(r)g(\theta)$

$\Rightarrow \frac{1}{r} (rf')'g + \frac{f}{r^2} g'' + \lambda fg = 0 \quad | \cdot \frac{r^2}{fg}$

$\Rightarrow \frac{1}{r} r(rf')' + r^2 \lambda = -\frac{1}{g} g'' \equiv \mu$

$\Rightarrow \begin{cases} \theta\text{-problem: } g'' + \mu g = 0, & g(0) = g(\pi/2) = 0 \\ r\text{-problem: } r(rf')' + (r^2 \lambda - \mu)f = 0, & f(a) = 0 \end{cases}$
and $f(\theta)$ finite.

Solve θ -problem: BC $g(0) = g(\pi/2) = 0$ leads to (from earlier)

$\mu = \frac{m^2 \pi^2}{L^2} = (2m)^2$ with $g(\theta) = \sin \frac{m\theta}{L} = \sin(2m\theta)$
 $L = \pi/2$

Solve r -problem: $r(rf')' + [r^2 \lambda - 4m^2]f = 0$ with $f(a) = 0$
 $f(\theta)$ finite.

regular sol. of ODE ($f(\theta)$ finite) as earlier ($m \rightarrow 2m$):

$f(r) = J_{2m}(\sqrt{\lambda} r)$ and $\lambda = \frac{z_{2m,n}^2}{r^2} \equiv \lambda_{m,n}$ because $f(a) = 0$.



by [bovinemagnet](#)




by [SGT Antony S. Lee](#)

Reflection


When have you or do you experience a fixed mindset?

Food for thought:

- *deeply understanding a subject area (math, physics, history...)*
- *teaching a student, or helping a fellow teacher*
- *leading your organization upon a setback*
- *helping an administrator or department*
- *having difficult conversations*
- *managing your time, responsibilities, or priority*



View of effort



Goal of looking smart vs. growing



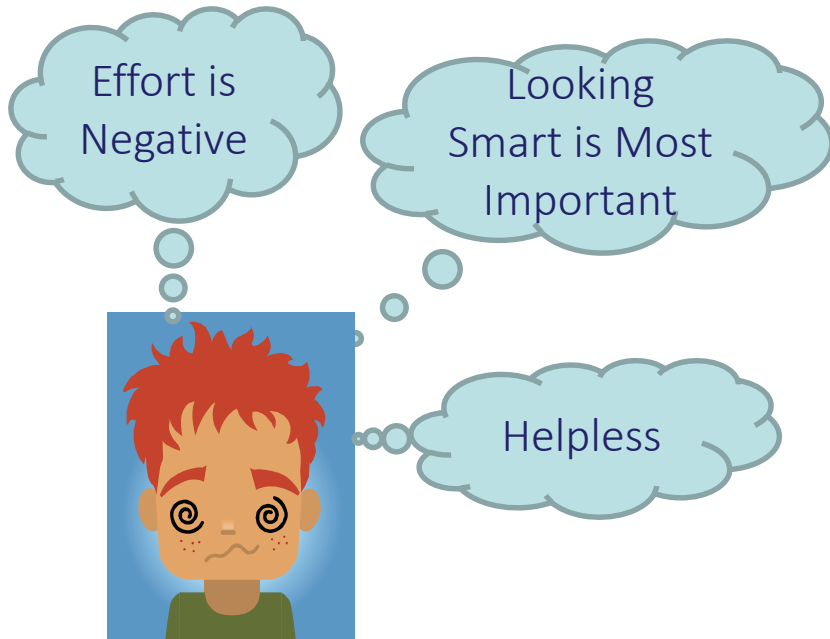
Helpless vs. resilient

What effect did/does it have on you?

Mindset Effect on Motivation

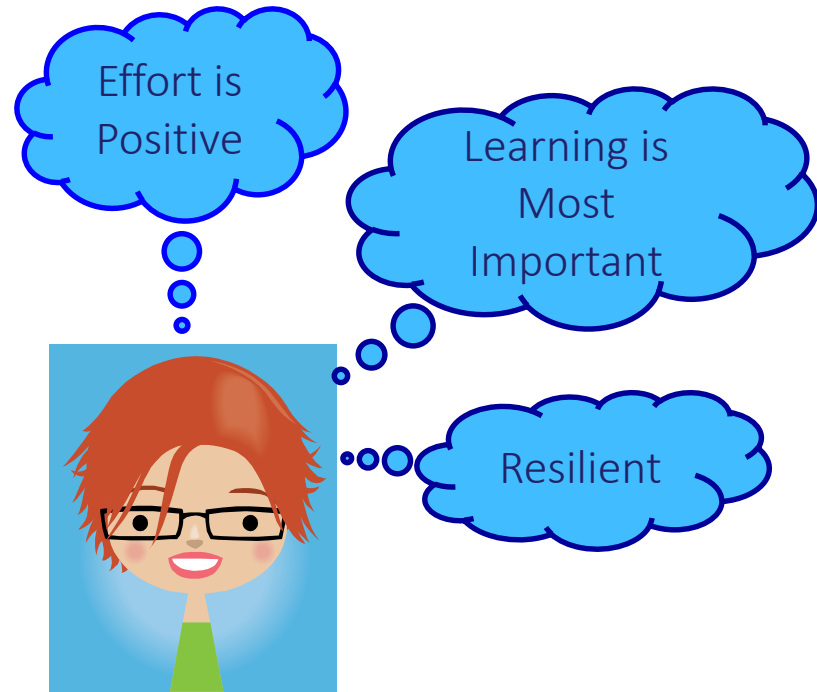
Fixed Mindset

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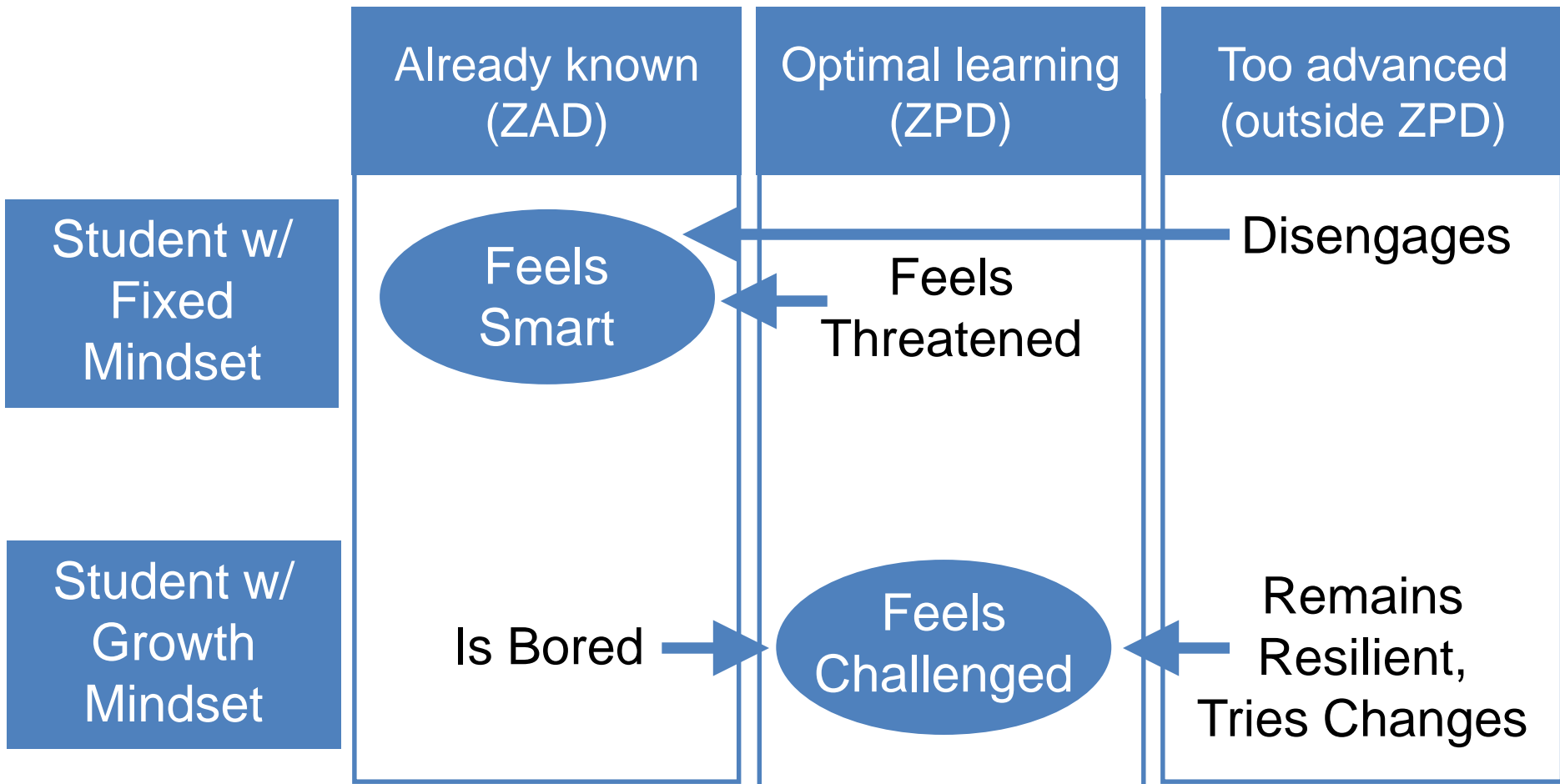
Growth Mindset

Intelligence (or an ability) can be developed



Belief → Behaviors → Outcomes

Zone of Prox. Dev. View of Mindsets



Adapted From: Murphy, L., & Thomas, L. (2008). Dangers of a Fixed Mindset: Implications of Self-theories Research for Computer Science Education. ITiCSE '08 June 30–July 2, 2008.

Growth Mindset Enhances Relationships

Learning that people, groups & abilities can change leads to:

- ✓ Seeing others as sources of learning (rather than as threats)
- ✓ Seeing “wrong-doing” as situational (rather due to fixed trait)
- ✓ More constructive conflict resolution
- ✓ Greater willingness to engage, listen, compromise & share

Yeager, D.S., Trzesniewski, K., & Dweck, C.S. (2013). An implicit theories of personality intervention reduces adolescent aggression in response to victimization and exclusion. *Child Development, 84*, 970-988.

Halperin, E., Russell, G. A., Trzesniewski, H. K., Gross, J. J., & Dweck, S. C. (2011). Promoting the Middle East Peace Process by Changing Beliefs About Group Malleability. *Science, 333*, 1767-1769.

Clarity

In your own words, what is the growth mindset?

Growth Mindset is NOT:

- Having high expectations
- Seeing effort as good
- Challenging oneself
- Persevering, never giving up

Growth Mindset is: understanding we can develop our abilities

- about our ability to teach
- about our students' abilities

Belief → **Behavior** → **Outcomes**
(Mindset)

Good news: mindset are malleable!

How to foster a growth mindset

Part 1: Explicit Learning

Developing a Growth Mindset

Blackwell, Trzesniewski, & Dweck (2007), Study 2

- workshop on the brain and study skills
- half of the students also taught that intelligence can be developed

You Can Grow Your Intelligence

New Research Shows the Brain Can Be Developed Like a Muscle

Many people think of the brain as a mystery. They don't know much about intelligence and how it works. When they do think about what intelligence is, many people believe that a person is born either smart, average, or dumb—and stays that way for life.

But new research shows that the brain is more like a muscle—it changes and gets stronger when you use it. And scientists have been able to show just how the brain grows and gets stronger when you learn.

Everyone knows that when you lift weights, your muscles get bigger and you get stronger. A person who can't lift 20 pounds when they start exercising can get strong enough to lift 100 pounds after working out for a long time. That's because the muscles become larger and stronger with exercise. And when you stop exercising, the muscles shrink and you get weaker. That's why people say "Use it or lose it!"

But most people don't know that when they practice and learn new things, parts of their brain change and get larger a lot like muscles do when they exercise.

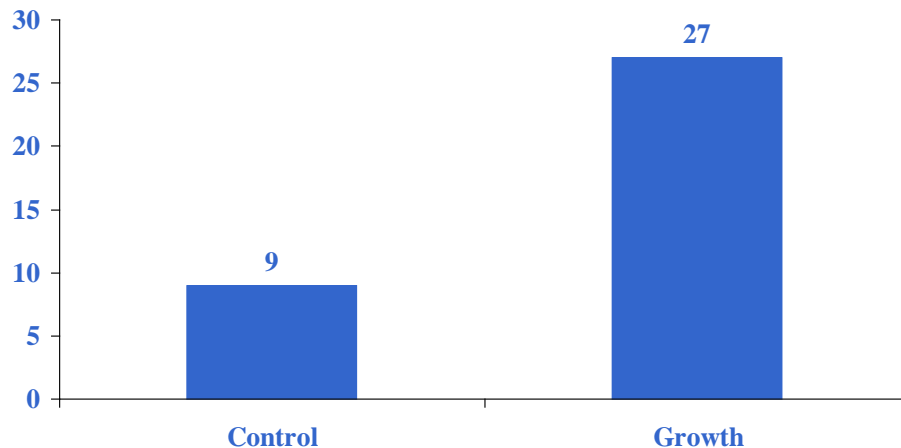


Inside the cortex of the brain are billions of tiny nerve cells, called neurons. The nerve cells have branches connecting them to other cells in a complicated network. Communication between these brain cells is what allows us to think and solve problems.

See full article at: <http://www.mindsetworks.com/websitemedia/youcangrowyourintelligence.pdf>

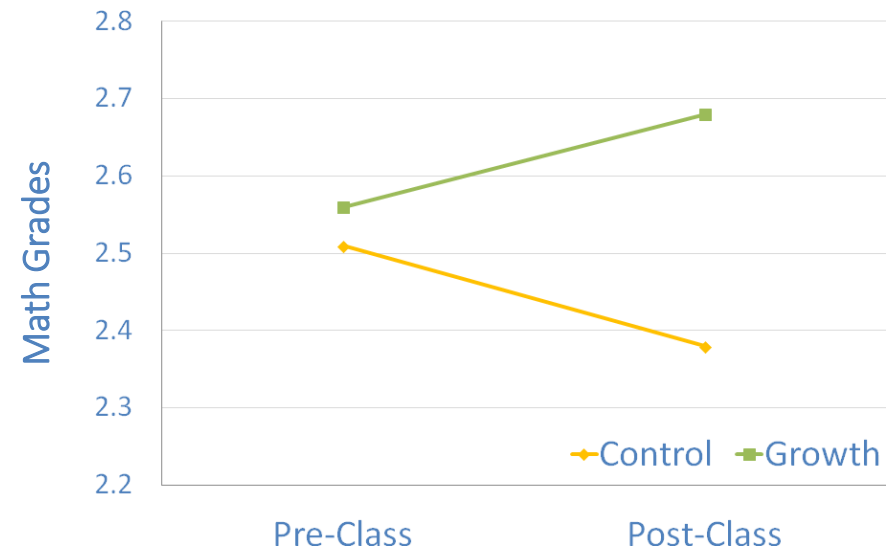
Impact of Teaching a Growth Mindset

% Identified by Teachers as Increasing in Motivation



“Your workshop has already had an effect. L, who never puts in any extra effort and often doesn’t turn in homework on time, actually stayed up late working for hours to finish an assignment early so I could review it and give him a chance to revise it. He earned a B+ on the assignment (he had been getting C’s and lower).”

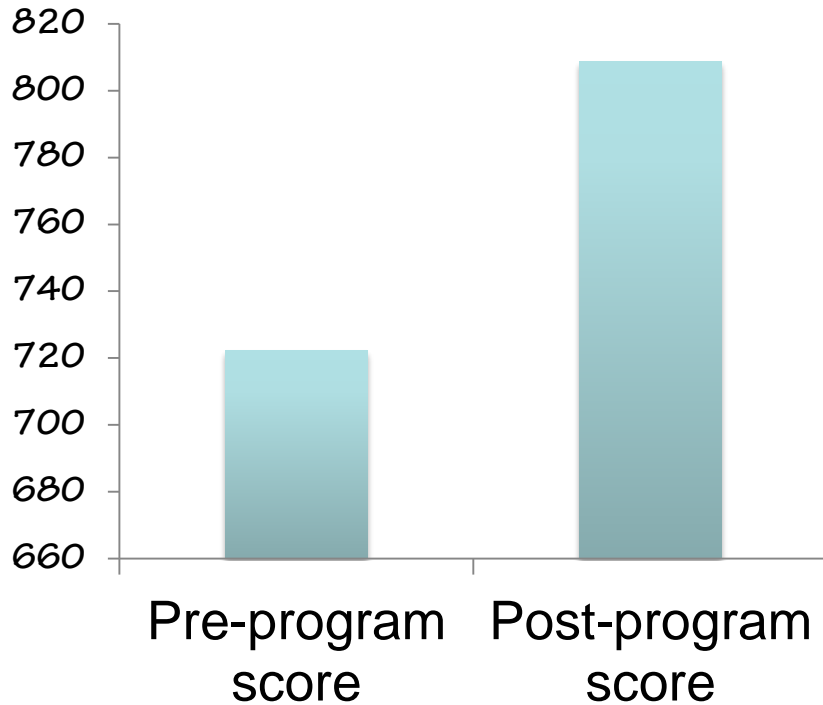
Change in Math Grades



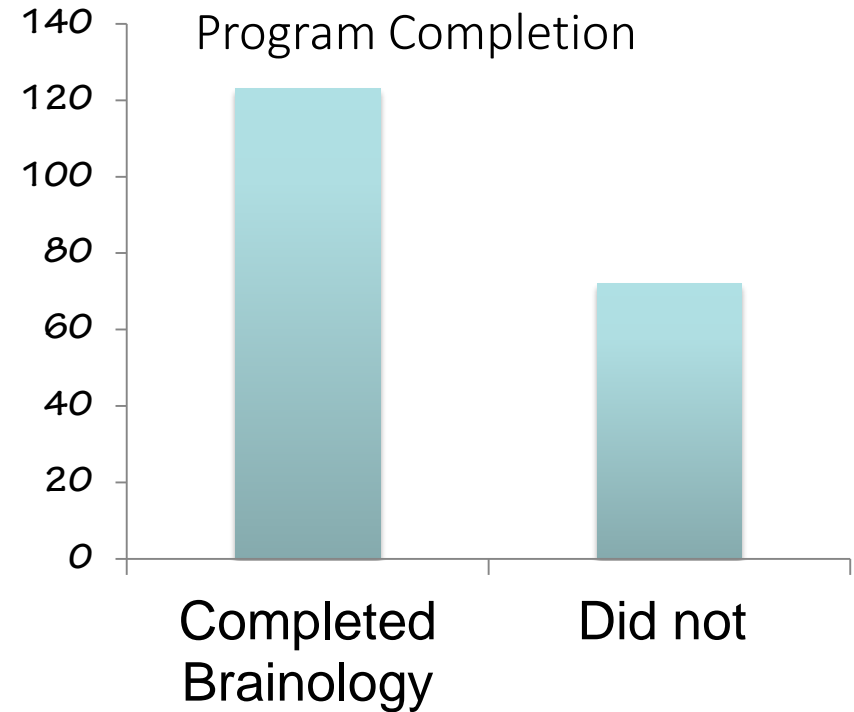
Study #2 on mindset intervention with students making the transition to 7th grade, from: Blackwell, L., Trzesniewski, K., & Dweck, C.S. (2007). Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention. *Child Development*, 78. 246-263.

Impact: Scholastic Reading Inventory (SRI) scores

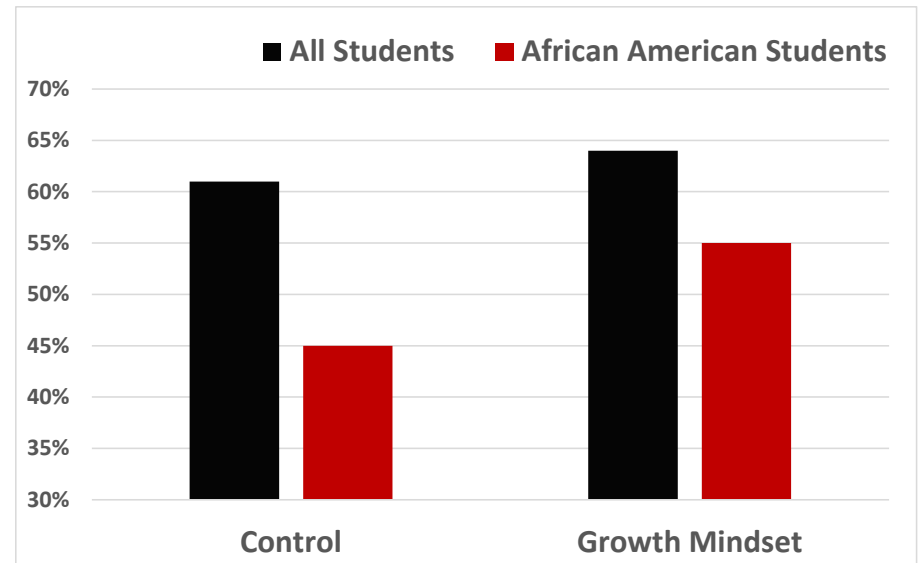
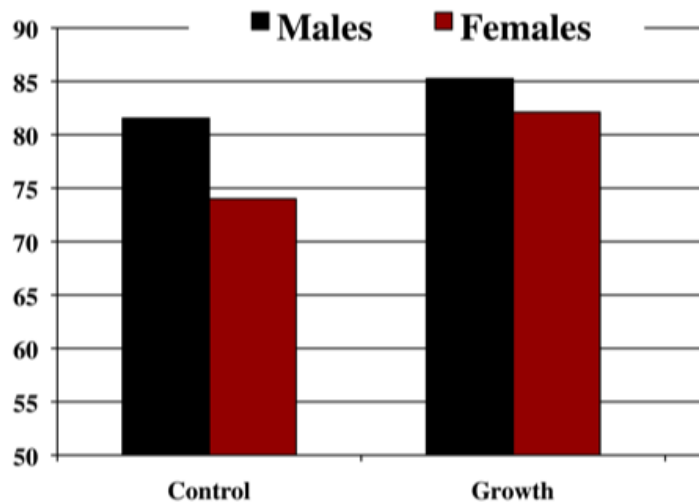
***Finding 1: SRI Scores Before & After Brainology**



***Finding 2: SRI Gains as a Function of Program Completion**



Equity: Growth Mindset Decreases the Achievement Gap



63% reduction in achievement gap.

Good, C., Aronson, I., & Inzlicht, M. (2003.). "Improving Adolescents' Standardized Test Performance: An Intervention to Reduce the Effects of Stereotype Threat." *Journal of Applied Developmental Psychology*, 24, 6, 645-662.

Yeager D., Dweck C., College intervention, submitted

Mindset helps close the success gap

ISSUES & ANSWERS

REL 2009–No. 076

REL
SOUTHEAST
Regional Educational Laboratory
At SERVE Center UNC, Greensboro

Reducing stereotype threat in classrooms: a review of social-psychological intervention studies on improving the achievement of Black students

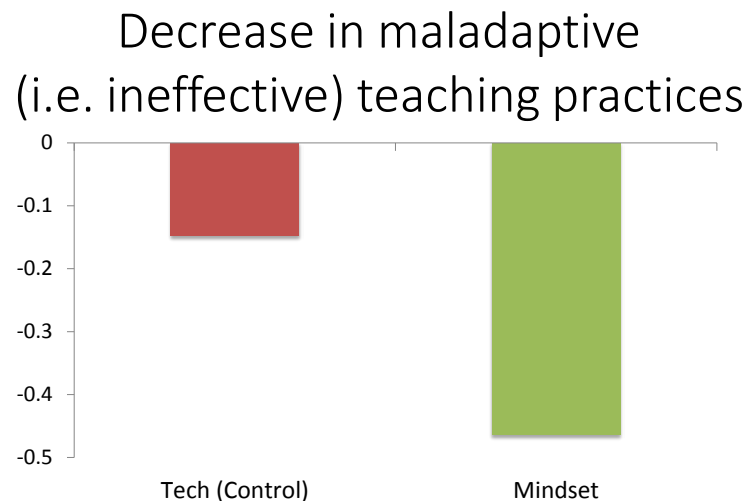
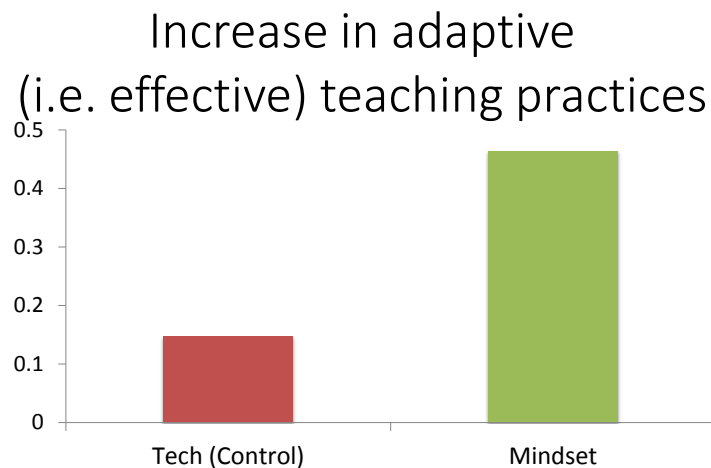
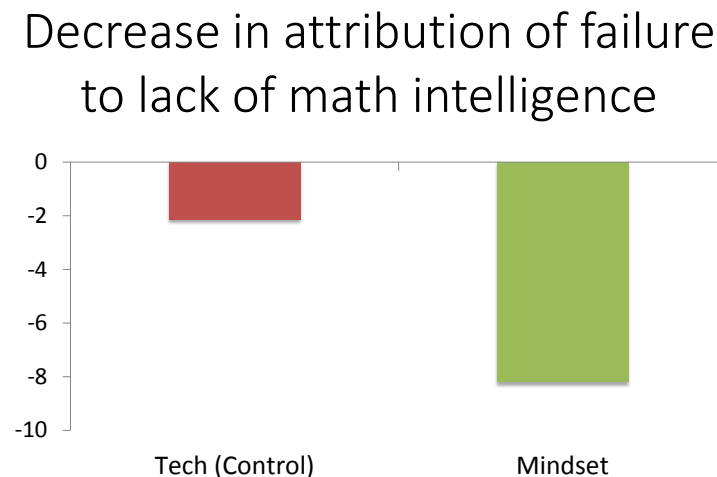
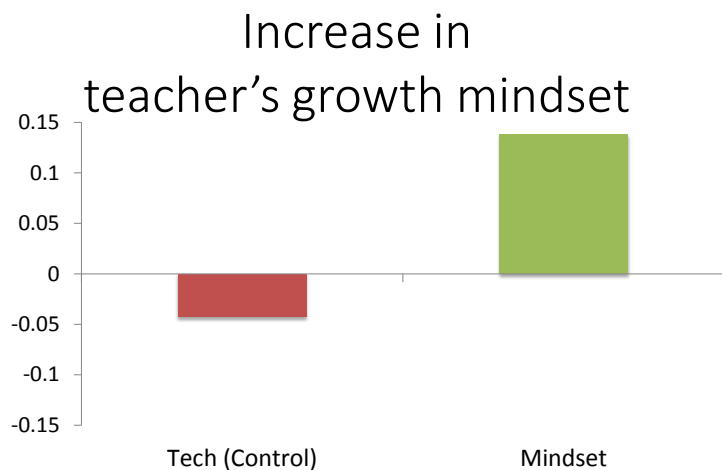


- Aronson, J., Cohen, G., McColskey, W., Montrosse, B., Lewis, K., and Mooney, K. (2009). *Reducing stereotype threat in classrooms: a review of social-psychological intervention studies on improving the achievement of Black students* (Issues & Answers Report, REL 2009–No. 076). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from

<http://ies.ed.gov/ncee/edlabs>

**NATIONAL CENTER FOR
EDUCATION EVALUATION
AND REGIONAL ASSISTANCE**
Institute of Education Sciences
U.S. Department of Education

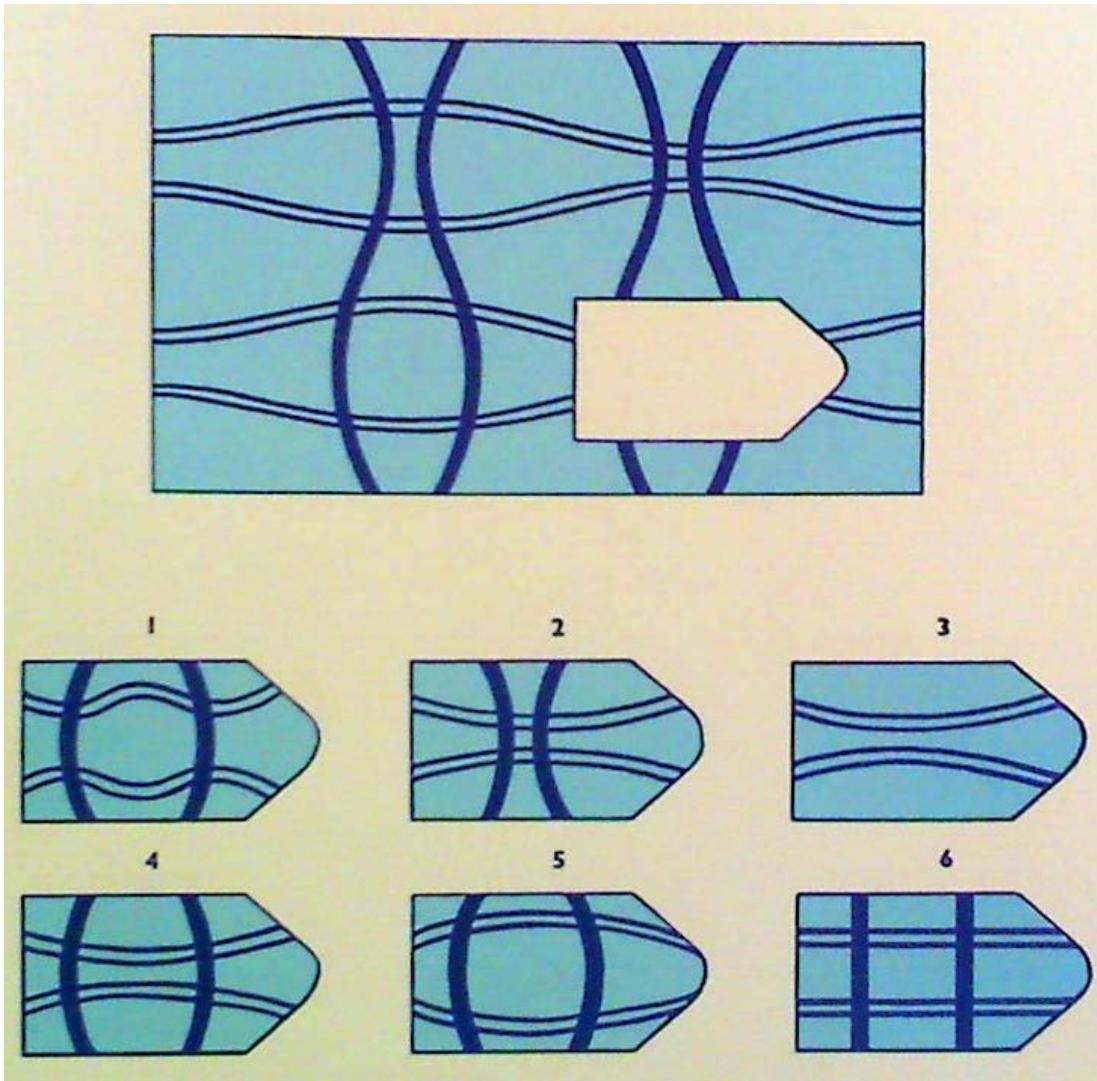
EducatorKit Teacher GM Training



Practices measure: Manual for the Patterns of Adaptive Learning Scales (Midgley C., et. al, 2000)

How to foster a growth mindset

Part 2: Everyday Supports



Praise Upon Finishing Set 1

Intelligence Praise

“Wow, that’s a really good score. You must be smart at this.”

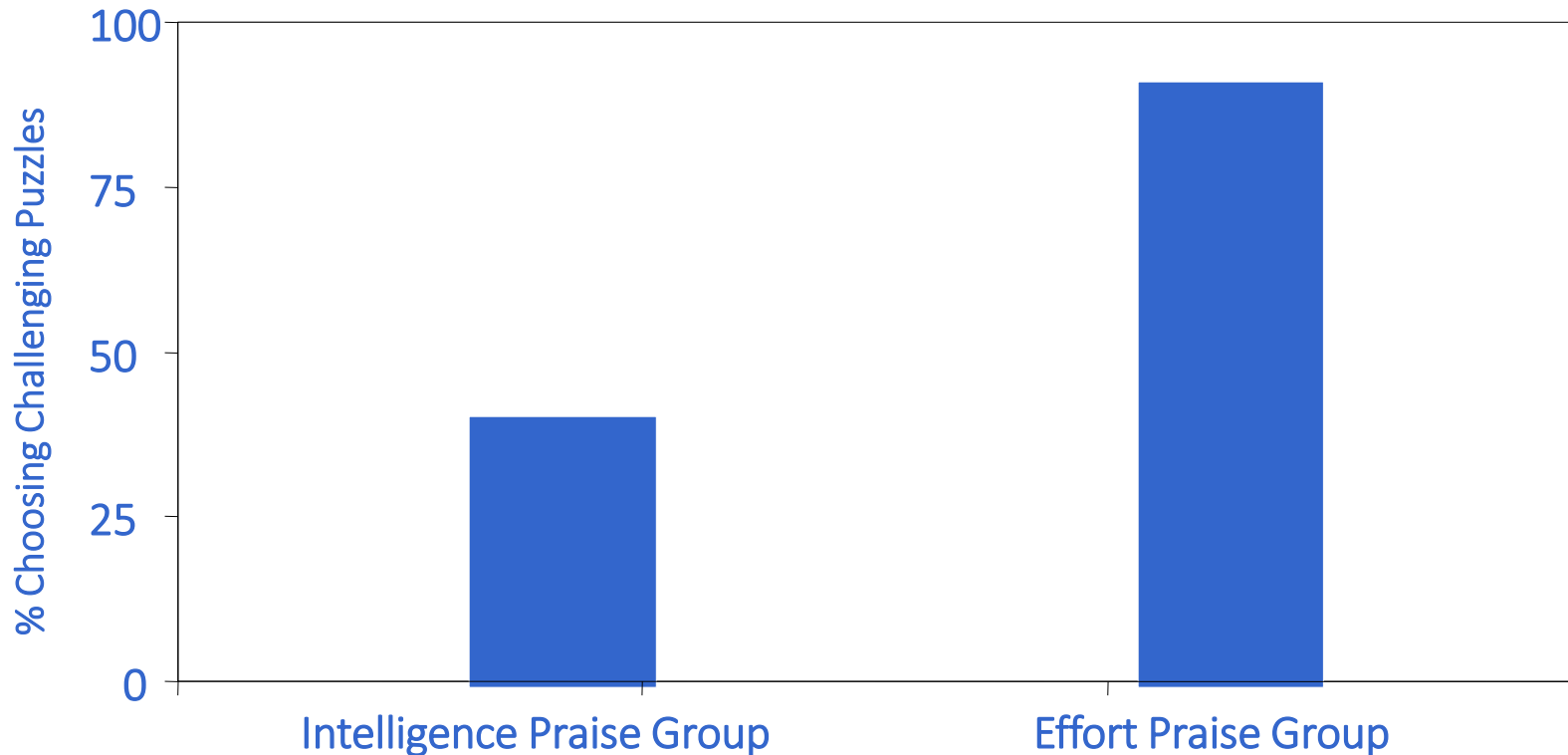
Process Praise

“Wow, that’s a really good score. You must have tried really hard.”

Study on How Mindsets Are Communicated. From: Mueller, C. M. & Dweck, C. S. (1998). Intelligence praise can undermine motivation and performance. Journal of Personality and Social Psychology, 75, 33-52.

Choosing Learning

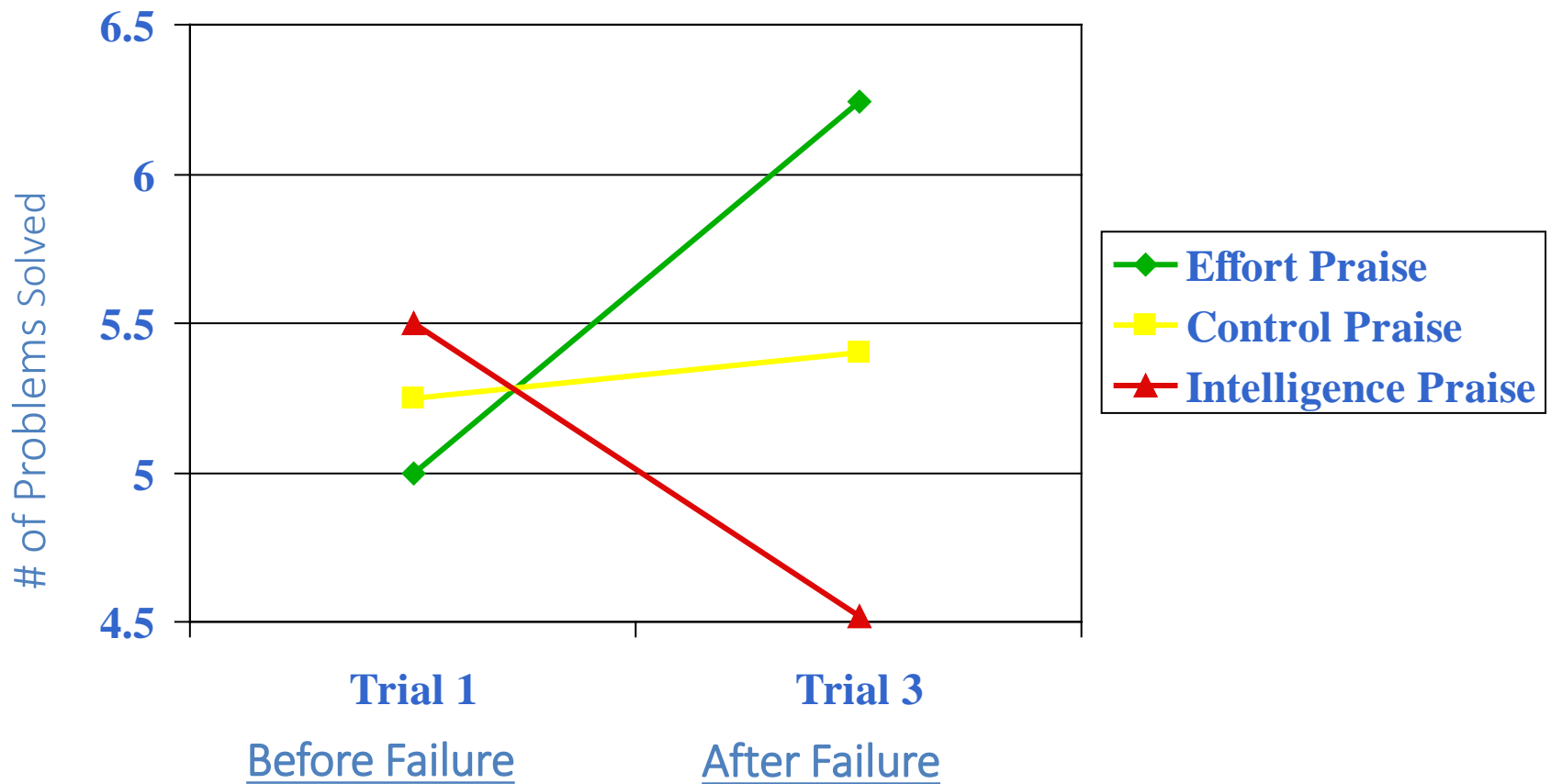
"problems that I'll learn a lot from, even if I won't look so smart"
vs.
"problems that aren't too hard, so I don't get many wrong"



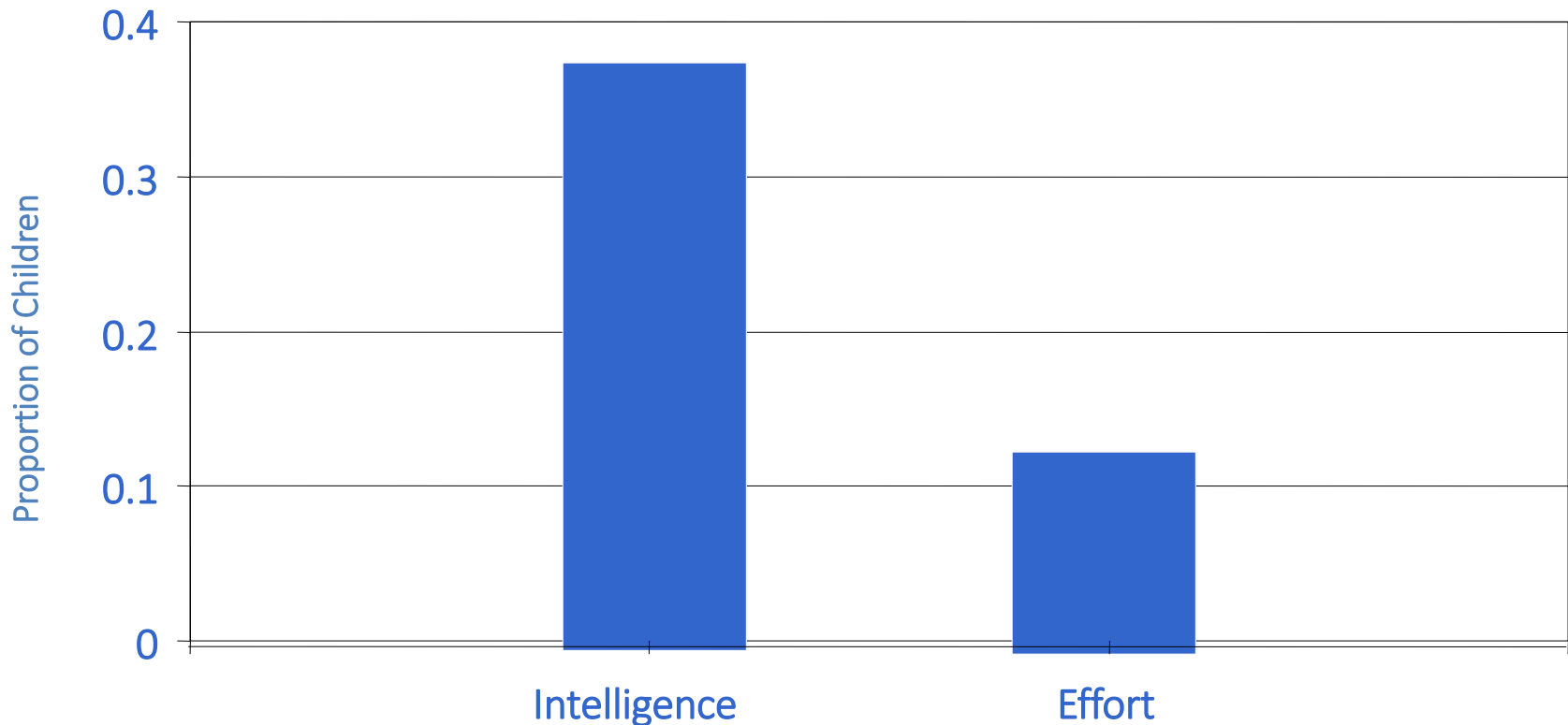
Study on How Mindsets Are Communicated. From: Mueller, C. M. & Dweck, C. S. (1998). Intelligence praise can undermine motivation and performance. Journal of Personality and Social Psychology, 75, 33-52.

Struggled in Set 2

Number of puzzles solved by each group after Trial 2 struggle



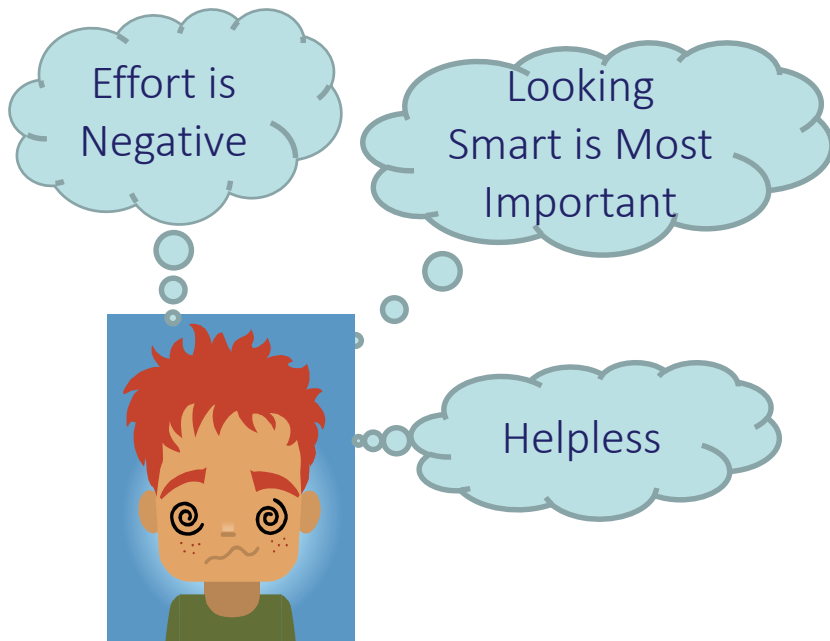
Lying: Students who misrepresented their scores



Mindset Effect on Motivation

Fixed Mindset

Intelligence (or an ability) is a fixed trait



Growth Mindset

Intelligence (or an ability) can be developed



“You must be smart at this”

“You’re a born artist”

“You’re the creative one”

What can we say?

- When they succeed with strong effort
- When they don't make progress despite strong effort
- When they succeed easily without effort

See *Growth Mindset Framing* and *Growth Mindset Feedback* tools, available at:

<http://www.mindsetworks.com/free-resources/>

Modeling Lifelong Learning & Making it Visible



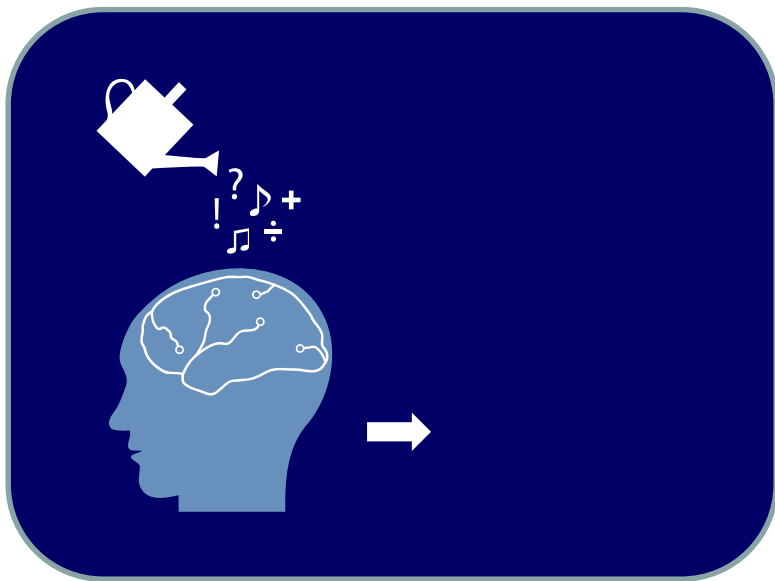
Photo credit: [Denise Krebs](#)



Photo credit: [Denise Krebs](#)

Growth Mindset

I can always improve to help students succeed



Observing,
Experimenting,
→ Reflecting, → Growth
Changing

**When you're feeling
stuck, remember,
"Yet"**

In Growth Mindset Organizations:

- **Adults model learning.**
 - Asking questions, not just having all the answers
 - Having & sharing learning goals
 - Soliciting, receiving, & giving feedback
 - Learning from mistakes, & sharing lessons learned
 - Making learning process visible
- **All structures support learning**
 - Assessments, feedback, measures of progress, language, routines, feedback, teaching malleability of abilities and learning & self-mgmt. strategies, continuous improvement...
- **Results matter. Learning is for real improvement, not theoretical improvement.**

Why do this?

We can develop in students:

(among other things)

- ✓ Basic skills
- ✓ Higher order competencies
- ✓ Motivation & efficacy as lifelong learners



by [John LeGear](#)



Photo credit: [Paul Inkles](#)

Resources

- Happy to share these slides and to connect & support – ebriceno@mindsetworks.com
- Book: *Mindset*, by Carol Dweck, Ph.D.:
<http://www.amazon.com/Mindset-Psychology-Success-Carol-Dweck/dp/0345472322/>
- Growth Mindset TEDx talk video:
<http://www.youtube.com/watch?v=pN34FNbOKXc>
- Mindset Works teacher training & curricula:
<http://www.mindsetworks.com/offerings/>
- Mindset Works newsletter:
<http://community.mindsetworks.com/newsletter>
- Your colleagues!

Key Takeaways

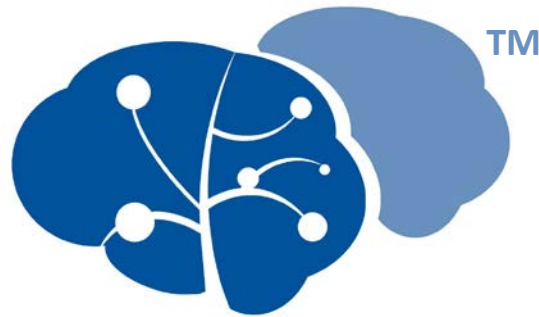
- ✓ Developing motivated & effective lifelong learners is the most important thing we can do
- ✓ There is now a significant body of knowledge showing how to do so rigorously & systematically
- ✓ We can:
 - teach that abilities can be developed
 - teach effective learning strategies
 - model lifelong learning

Heart Head Hands



by [Oregon Department of Transportation](#)

Thank you!



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community.mindsetworks.com/newsletter