



MINDSET
SCHOLARS
NETWORK

Mindset Science: New Findings, Future Directions

October 4, 2016

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MEETING AGENDA

Raikes Foundation - 2157 N. Northlake Way, #220, Seattle, WA 98103

12:00 p.m. Welcome and introduction

Jeff Raikes, trustee of the Raikes Foundation

Lisa Quay, executive director of the Mindset Scholars Network

12:15 p.m. Professor Carol Dweck on the past, present, and future of mindset science

1:00 p.m. Early insights from Mindset Scholars Network's first flagship initiatives

College Transition Collaborative: Prof. Greg Walton, Stanford University & Natasha Krol, executive director of the College Transition Collaborative

National Study of Learning Mindsets: Prof. David Yeager, University of Texas at Austin & Prof. Barbara Schneider, Michigan State University

2:00 p.m. Break

2:15 p.m. The next frontier: How learning environments convey mindsets to students

Prof. Mary Murphy, Indiana University

- How organizations and educators convey mindset messages to students

Prof. Tanner LeBaron Wallace, University of Pittsburgh & Prof. Geoffrey Cohen, Stanford

- How students experience the mindset messages educators are sending

Prof. Jason Okonofua, University of California, Berkeley

- How educators can learn to create positive mindset environments

Prof. Thomas Dee, Stanford University

- How policies can create a more positive mindset environment for students

3:15 p.m. Points of connection: How mindset science and practice are shaping each other to change student outcomes in K-12 and higher education

Dr. Camille Farrington, University of Chicago Consortium on School Research

- Cultivating learning relationships between researchers and practitioners

Prof. Ronald F. Ferguson, Harvard University and co-founder, Tripod Education

- Creating measurement tools for educators that draw on mindset science

Dr. Rachel Beattie, Carnegie Foundation for the Advancement of Teaching

- Employing networked improvement communities to build and scale practices for cultivating learning mindsets and student agency

Dr. Dave Paunesku, executive director of PERTS at Stanford University

- Scaling interventions from mindset science and using theoretical insights to inform program design and evaluation in education

4:15 p.m. Applications of mindset science to educational policy

Bethany Little, Principal at Education Counsel

4:45 p.m. Surfacing implications for educational funders

Discussion led by Zoë Stemm-Calderon, Raikes Foundation's director of education

5:30 p.m. Reception

What We Know About Learning Mindsets from Scientific Research

BY LISA QUAY & CARISSA ROMERO

JULY 2015

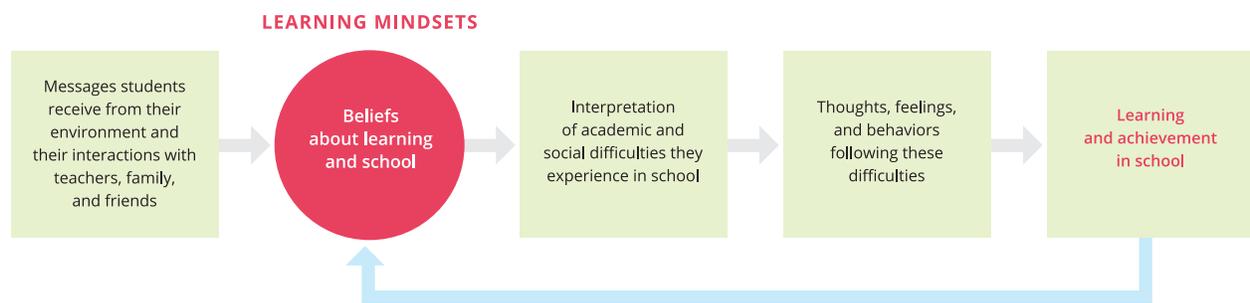
LEARNING MINDSETS

Mindsets are students' beliefs about learning and school. Students with learning mindsets are more motivated to take on challenging work, persist in the face of setbacks, and achieve at higher levels.

Research shows that the following learning mindsets play a role in students' persistence and achievement in school.

- **Growth Mindset:** The belief that intelligence can be developed
- **Belonging:** The belief that one is respected and valued by teachers and peers, and fits in culturally in one's learning environment
- **Purpose & Relevance:** The belief that one's school work is valuable because it is personally relevant and/or connected to a larger purpose

The role of learning mindsets in shaping academic outcomes



CHALLENGES ARE AN IMPORTANT PART OF THE LEARNING PROCESS

Learning mindsets shape the way we respond to challenges—whether we engage with them or retreat. It's important to engage with challenges, because that's when people learn the most.

Many of us have been taught that learning should come easy, getting the right answer the first time is most important, and that failure is bad for children's self-confidence. But research tells us that we maximize our learning—and gain the most satisfaction—when we persist in solving the challenging problem that stumped us initially.¹

Neuroscientists have shown that our brains operate like a muscle. When we go to the gym, we put in hard work lifting weights that make our muscles struggle—because that's what will make them stronger. The same is true of our brains. Research tells us that our brains strengthen the most not when we get a question correct, but rather when we get a question wrong and work through our mistake. We build stronger connections between the neurons in our brain when we wrestle with a problem, reflect on why we got it wrong, and try different strategies. With the proper support and guidance from others, these so-called failures are often the very opportunities that make us smarter and expand our capabilities. These productive struggles also can yield a greater sense of satisfaction for the learner.

**MINDSET
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NETWORK**

Hosted at the Center for Advanced Study in the Behavioral Sciences at Stanford University, the Mindset Scholars Network is a group of leading social scientists dedicated to improving student outcomes and expanding educational opportunity by advancing our scientific understanding of students' mindsets about learning and school.

Learning mindsets come into play right at the point at which we begin to struggle or face a challenge. How we interpret this adversity affects our motivation to remain engaged with the task at hand.

Learning mindsets come into play right at the point at which we begin to struggle or face a challenge. How we interpret this adversity affects our motivation to remain engaged with the task at hand. If we don't remain engaged, we lose out on the cognitive benefits of working through a challenge.

LEARNING MINDSETS AFFECT STUDENTS' INTERPRETATIONS OF CHALLENGES AND ADVERSITY

Learning mindsets affect whether or not students engage with challenges because they affect the way in which students understand the larger meaning of those challenges. These mindsets can be thought of as lenses through which students interpret their day-to-day experiences in school, particularly experiences of adversity.

For example, two students receiving the same exact low score on an assignment may have very different responses depending on their respective mindsets. If a student believes intelligence is fixed at birth, she may see it as a judgment on her ability in the subject, withdrawing effort and steering clear of future challenges to avoid failure. In contrast, a student who knows that intelligence is malleable may see the test score as an indication that she simply hasn't mastered the material yet, redoubling her efforts, asking for help, and trying different strategies.

Mindsets about learning and school that are maladaptive set in motion a negative, self-reinforcing cycle

A student who believes intelligence is a fixed trait sees the poor grade as a judgment on her ability in the subject. Since she believes she is not good at the subject, she writes it off as not worth her time. She studies less hard for the next test and does even worse, confirming her hypothesis that she's not smart at the subject. She is now caught in a negative, self-reinforcing cycle: the worse she does, the more

she withdraws, and the more she confirms her belief that she's not smart.

Learning mindsets spark a positive, self-reinforcing cycle

In contrast, a student who believes it's possible to develop one's intelligence merely interprets the poor grade as a sign she didn't work hard enough or used the wrong strategies, and hasn't yet mastered the material. So she puts in more effort before the next test, tries different strategies, or seeks advice from her peers or teacher. She performs better, and this triggers a positive cycle: the better she does, the more evidence she receives that her intelligence can be developed, and the more she is motivated to continue working hard.

Schools and teachers respond to students' performance—reinforcing positive, or negative, cycles

Furthermore, the learning environment will also react to these students. While the first student may be treated like a failure, the second student may be elevated: given more attention in class, harder tasks and more challenging course placement, and so on. Because students' mindsets can start recursive cycles that are reinforced by the self and the environment, their impact can compound over time.

STUDENTS' MINDSETS ARE SHAPED BY THEIR DAY-TO-DAY EXPERIENCES, INTERACTIONS, AND OBSERVATIONS

Mindsets are not fixed traits. They come from messages students learn from society, their interactions with others, and their experiences in school.

Even when students receive the same curriculum and the same instruction from the same teacher, their personal experience of that classroom differs depending on their beliefs about the nature of ability, their belonging in school, and the purpose and relevance of their schoolwork. Above

Mindsets are not fixed traits. They come from messages students learn from society, their interactions with others, and their experiences in school.

all, these beliefs are entirely reasonable from the point of view of the student—and are rational responses to their prior observations and interactions—and they can be self-reinforcing. If you believe people can grow, you may notice yourself growing more.

But certain mindsets can also hamper students' ability to perform. Crucially, even when a student has intellectual ability and access to adequate learning opportunities, she may not perform at her best if her mindsets about learning and school undermine her ability to take advantage of them.

When a student is told, "it's okay, some people just aren't 'math people,'" she can come to believe that math ability is a fixed quantity. She withdraws effort or worries about how to avoid "looking dumb."

Aware of the stereotypes that math professors may have about women, a math major may question whether she is respected and valued, and may be on the alert for cues that others think she doesn't belong.

And when the connection between a student's daily schoolwork and her life and long-term goals isn't clear, she understandably has little incentive to remain engaged when the work is boring, frustrating, or challenging.

STUDENTS CAN ADOPT LEARNING MINDSETS WHEN THEY RECEIVE DIFFERENT MESSAGES

The good news is that mindsets can be transformed, sometimes with seemingly small changes. Recent studies have shown that students adopt learning mindsets when they receive certain messages from their learning environments, either through what adults communicate or through targeted programs. Changes in mindsets can alter students' academic behaviors in ways that can lead to sustained improvements in performance.

Similar to removing logs blocking a stream running downhill, when we free students from their concerns, they are better able to take advantage of the learning opportunities available to them, performing better and gaining momentum over time.

Altering the environment in which students learn changes the messages they receive

Students constantly receive messages from the environment that shape their mindsets—from the way their parents talk to them about homework to their teachers' grading policies and how they are tracked into different course pathways by schools. Recent studies suggest that it is possible to change messages students receive from the environment in ways that encourage learning mindsets.²

We can also deliver new messages to students through carefully-targeted programs

Researchers have shown that you can deliver new messages directly to students through brief online programs.³ When students receive well-crafted messages that target specific beliefs, they come to adopt learning mindsets and do better in school.

The opportunity now is two-fold: figuring out where mindset programs are most effective and how to optimize them for different students and settings, and how to change the messages students receive on a day-to-day basis from their environment. The Mindset Scholars Network is making inroads in both of these areas.

Fostering learning mindsets can lead to sustained academic growth

In education, early success begets future success. When we help students develop learning mindsets, this has a direct effect on their motivation. When we can increase students' motivation to study, learn, and build academic skills, they are better prepared to learn and perform in the future. As students feel more comfortable in school, they build stronger relationships with their peers and teachers, which supports greater achievement in the future. As students perform better, they may be placed in more challenging, higher-level courses. Such courses bring with them higher expectations and higher-achieving peers—all of which coalesce to put students on a better academic trajectory.⁵

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This brief was edited by David Yeager, Co-Chair of the Mindset Scholars Network.

¹ Yeager, D.S., Henderson, M., Paunesku, D., Walton, G., Spitzer, B., D'Mello, S., & Duckworth, A.L. (2014). Boring but important: A self-transcendent purpose for learning fosters academic self-regulation. *Journal of Personality and Social Psychology, 107*, 559-580.

² Hulleman, C. S., & Harackiewicz, J. M. (2009). Promoting interest and

performance in high school science classes. *Science, 326*(5958), 1410-1412.

³ Yeager, D.S., Henderson, et al., 2014.

⁴ Paunesku, D., Gripshover, S., Romero, C., Beaubien, J., Yeager, D.S., Walton, G.M. & Dweck, C.S. *Manuscript in preparation.*

⁵ Yeager, D. S., Paunesku, D., Walton, G., & Dweck, C. S. (2013). How can we instill productive mindsets at scale? A review of the evidence and an initial R&D agenda. White paper prepared for the White House meeting on "Excellence in Education: The Importance of Academic Mindsets."

NETWORK MEMBERSHIP

CO-CHAIRS

Barbara Schneider	John A. Hannah Chair and Distinguished Professor of Education and Sociology	Michigan State University
David Yeager	Assistant Professor of Psychology	University of Texas at Austin

SCHOLARS

Andrei Cimpian	Associate Professor of Psychology	New York University
Angela Duckworth	Professor of Psychology	University of Pennsylvania
Ben Castleman	Assistant Professor of Education and Public Policy	University of Virginia
Bridget Terry Long	Academic Dean & Saris Professor of Education and Economics	Harvard University
Camille Farrington	Senior Research Associate & Managing Director	University of Chicago Consortium on School Research
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Ronald F. Ferguson	Adjunct Lecturer in Public Policy	Harvard University
Sidney D'Mello	Assistant Professor of Psychology and Computer Science	University of Notre Dame
Steph Fryberg	Associate Professor of American Indian Studies and Psychology	University of Washington
Thomas Dee	Professor of Education	Stanford University
Timothy Wilson	Sherrell J. Aston Professor of Psychology	University of Virginia

NATIONAL STUDY OF LEARNING MINDSETS

The first flagship study of the Mindset Scholars Network is the National Study of Learning Mindsets, which is led by network co-chair David Yeager.

CONTEXT FOR THE STUDY

The original learning mindset programs were carried out in person, face-to-face. But recently scholars have found that online versions of these programs amazingly still have the desired effect on students. This innovation means that interventions that had previously been delivered by researchers under careful, precise conditions in laboratory-like settings can now be delivered inexpensively in real-world classroom settings with a high degree of fidelity—the make or break factor in scaling effective programs in education.

The National Study of Learning Mindsets was designed to understand which kinds of students, in which kinds of classrooms, and which kinds of schools are most likely to benefit from these online exercises designed to foster learning mindsets. The study accomplishes this by randomly assigning half of the ninth graders in a group of randomly selected schools nationwide to receive an online learning mindset program during the first 10 weeks of high school; the other ninth graders in these high schools received a placebo in the control condition. Since the treatment and control groups are identical in all regards except for the content of the program they receive, this means that any difference observed in outcomes between the groups can be attributed to the program itself.

This study is one of the only studies in the history of the social and behavioral sciences to use the gold standard for testing cause and effect (a randomized experiment) with the gold standard for making claims about a population of schools (a random sample).

INTERVENTION

The learning mindset program used in this study incorporates both ‘growth mindset’ and ‘sense of purpose’ mindset messages. Growth mindset messages convey to students that they can grow their intelligence. Sense of purpose messages help students make connections between their schoolwork and a larger, prosocial purpose. The program was developed using a rigorous R&D approach that combined insights from psychological theory with user-centered product design. The researchers drew on early interventions from the scientific literature, combined with input from educators and students.

SAMPLE

The study is an individual-level randomized experiment conducted with ninth grade students in a national probability sample of 76 regular U.S. public high schools.

Survey data collection occurred between August 2015 and March 2016; schools will provide data on students' academic outcomes this winter.

MEASURES

The study will assess the effects of the program on learning mindsets, hypothetical challenge-seeking behavior, and multiple academic outcomes (e.g., grades, test scores, attendance, discipline referrals). The study is also collecting a variety of data on the student, classroom, and school contexts that will enable researchers to create a detailed picture of the mindset climate as reported by adults and experienced by students.

STUDY OUTPUTS

At the end of the study, the team will have developed and tested a learning mindset program that can be delivered in any regular U.S. public high school, and they will know which kinds of schools and which kinds of students will benefit the most. The program will be offered to schools at no cost through scaling partners.

In addition, the research team will have answered several critical questions:

- Will students in the lowest-performing schools benefit from a learning mindset program, or will it only be effective in higher-performing schools?
- What happens when a student comes to develop a growth mindset and sense of purpose from participating in the program, and then enters a classroom where a teacher communicates the opposite messages through his or her instruction?
- What kinds of instructional practices can make a learning mindset program more effective, and what practices weaken its effects?
- Will previously unmotivated students benefit from a learning mindset program, or will the program be unable to overcome a lack of motivation due to other factors?

The researchers have also taken steps to ensure that the full dataset from the study will be made freely available to any scientist who wishes to analyze it; given the study's rare design and comprehensive collection of student-, classroom-, and school-level measures, this dataset will be an invaluable resource that can provide countless insights about learning mindsets and the learning environment for years to come.

PARTICIPATING MINDSET SCHOLARS NETWORK MEMBERS

David Yeager, Principal Investigator

Barbara Schneider

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Chris Hulleman

Dave Paunesku

Greg Walton

Rob Crosnoe

Ronald F. Ferguson

Timothy Wilson



COLLEGE TRANSITION COLLABORATIVE

The Mindset Scholars Network helped launch the College Transition Collaborative (CTC) and continues to work closely with the organization.

The CTC was founded on the belief that all post-secondary students are capable of thriving in college and graduating if they receive the right institutional supports. Everyone struggles at times in college. CTC works to ensure that, in these moments, all students feel they can persevere and that their school supports their success. This is particularly important for students from underrepresented groups, students from low-income backgrounds, and first-generation college students who tend to graduate at lower rates than their peers.

The CTC brings together pioneering social psychologists, education researchers, and higher education practitioners to create learning environments that produce more equitable higher education outcomes. It conducts applied research to develop and rigorously test evidence-based approaches that place the student experience at the center of student success initiatives and convey to all students they are valued, respected, and can excel.

CTC's interventions and institutional change strategies have long-lasting effects on student outcomes, are cost-effective, provide high return on investment, and are designed to be implemented at scale in diverse educational settings with diverse student populations.

CURRENT INITIATIVES

CTC's initiatives are inspired by insights from scientific theory and CTC's over two-dozen school partners—a varied group of institutions across the U.S. and Canada. Its approach utilizes both user-centered design principles and the most rigorous scientific methods.

Social Belonging



Even with identical high school credentials, students from underrepresented backgrounds drop out of college at higher rates and earn worse grades than their peers. Research suggests that this disparity is partly attributable to students' concerns about fitting in at college. Importantly, research also suggests that brief, targeted efforts can mitigate these concerns. The CTC is conducting ongoing research to understand how effective such efforts can be for different student groups in varied academic settings. In its current multi-site field trial, CTC is working with administrators and students at 23 institutions to customize an intervention designed to cultivate a sense of social belonging. CTC has delivered it to over 25,000 first-year students in this trial, and plans to make it available broadly after its conclusion.

Academic Standing



Almost all colleges have an academic probation process to notify students who are not making satisfactory progress. While it is meant to help students return to good standing and keep them on track to graduate, little research exists on how students experience probation and how effective different approaches are. The CTC is addressing this gap by conducting a descriptive study of probation practices and conducting a randomized controlled trial with school partners to evaluate how targeted revisions to the probation notification process can improve student outcomes.

PARTICIPATING MINDSET SCHOLARS NETWORK MEMBERS

Mary Murphy, CTC PI

Geoff Cohen, Advisor

Chris Hulleman, Collaborator

Greg Walton, CTC PI

Carol Dweck, Advisor

Dave Paunesku, Collaborator

David Yeager, CTC PI

CTC'S CURRENT AND FORMER SCHOOL PARTNERS



MINDSET SCHOLARS NETWORK RFP: THE MINDSET ENVIRONMENT

This fall, the Mindset Scholars Network will invite proposals for innovative, inter-disciplinary research projects that advance scientific and practical understanding of how learning environments can foster greater motivation for learning and expand educational opportunity.

OVERVIEW

Interest in how learning environments promote (or hinder) the development of learning mindsets was a clear theme of the Mindset Scholars Network's first convening in October 2015. It has also emerged as a priority for practitioners and policymakers.

As a field, we need to better understand how we can adjust learning environments so they convey to students our belief in their potential for growth, a sense of belonging and fit, and the relevance of their schoolwork to their lives. This will likely require not only developing new strategies based on theoretical insights, but also identifying elements of existing approaches or program models that are already improving academic outcomes in part by changing the mindset messages students receive at school. In doing so, we believe that research can inform the design of educational systems that encourage more motivating learning experiences and produce more equitable outcomes.

The aim of this RFP is to facilitate interdisciplinary research on how learning environments can foster greater motivation for learning and close persistent achievement gaps in K-12 and post-secondary education. These insights should both inform practice and policy, and offer promising ideas for new collaborative studies that could be launched later in 2017 with the support of the Mindset Scholars Network.

RESEARCH TOPICS

The Network's grant portfolio will focus broadly on addressing the following research question: ***What learning environments foster greater motivation for learning and expand educational opportunity? Applications that relate to one or more sub-questions from the following list will be prioritized for funding.***

K-12 Priority Topics

Environment-level: School	<ul style="list-style-type: none"> ➤ Which school policies and practices promote learning mindsets? How does this vary by student and cultural context? ➤ How can learning mindsets or the conditions that foster learning mindsets be measured within a classroom or school in ways that enable continuous improvement? ➤ What effect do certain school-level reforms (e.g., de-tracking, small schools, community schools, trauma-informed schools, school discipline reforms, parent involvement) have on the development of learning mindsets?
Environment-level: Classroom	<ul style="list-style-type: none"> ➤ Which teacher behaviors and classroom features promote mindsets? How does this vary by student and cultural context? ➤ What effect do certain classroom-level reforms (e.g., mixed ability or grade-level classes, looping, small classes) have on the development of learning mindsets?
Task-level	<ul style="list-style-type: none"> ➤ How can learning mindsets be promoted in each of the respective disciplines taught in school? How can they transfer across domains in school? ➤ What effect do certain task-level reforms (e.g., culturally relevant curriculum, project based learning, deeper learning approaches, IB, bilingual education, personalized learning) have on the development of learning mindsets?
External context / Learner-level	<ul style="list-style-type: none"> ➤ What aspects of individual students and their experiences outside of school affect their mindsets about learning and school?

Post-Secondary Priority Topics

Environment-level: Campus	<ul style="list-style-type: none"> ➤ Which campus policies and practices (both academic and non-academic) promote learning mindsets? How does this vary by student, context, or institutional type? ➤ How can learning mindsets or the conditions that foster learning mindsets be measured in ways that enable campus-level diagnosis and continuous improvement? ➤ What effect do certain reforms (e.g., programs that combine real-world training and academic instruction) have on the development of learning mindsets? ➤ How might we embed a focus on learning mindsets into efforts to improve student success (e.g., re-structuring financial aid, mentoring programs for first-generation students, orientation and first-year transition programs, academic advising, outreach to under-represented students in high school, changes to developmental coursework)?
Environment-level: Classroom	<ul style="list-style-type: none"> ➤ What course-level practices and instructor behaviors promote learning mindsets? How does this vary by student and context (e.g., 2- vs. 4-year; college type; academic discipline)?
Task-level	<ul style="list-style-type: none"> ➤ How can learning mindsets be promoted in specific academic disciplines / programs? How can they transfer across domains in post-secondary settings? ➤ What effect do certain task-level reforms have on the development of learning mindsets (e.g., process-oriented guided inquiry learning)?
External context / Learner-level	<ul style="list-style-type: none"> ➤ What aspects of students' identities and background, their academic preparation prior to college, and their experiences beyond the academic realm (both on and off campus) affect their mindsets about learning and school?



Opportunity or Setback? Parents' Views on Failure Influences Children's Mindsets About Intelligence

BY JESS HENNESSEY

RESEARCH SUMMARY | JULY 2016

How do parent practices affect children's mindsets? Kyla Haimovitz and Mindset Scholar [Carol Dweck](#) designed multiple studies to explore how the way parents view failure influences their children's views on intelligence.

Viewing intelligence as malleable benefits children and adults, increasing motivation, persistence on challenging tasks, and academic achievement.^{1,2} Many things can influence the beliefs people develop about intelligence, but studies have shown no clear link between parents' mindsets about intelligence and the mindsets their children hold.

Why is there no relationship between parents' and children's mindsets? If parents' views of intelligence do not affect those of their children, what other signals do children receive from parents that foster their perceptions about the nature of ability? And if simply possessing a growth mindset isn't enough to affect their children's perspectives, how can parents help their children develop a more malleable view of intelligence?

Kyla Haimovitz and Mindset Scholar [Carol Dweck](#) designed multiple studies to explore these questions. The researchers predicted that parents' views of failure, or their *failure mindset*, might be more easily perceived by children through recurring parenting practices than parents' intelligence mindset, and could thus influence children's own views on intelligence.

This research summary highlights findings from the following paper: Haimovitz, K., & Dweck, C. S. (2016). What predicts children's fixed and growth intelligence mind-sets? Not their parents' views of intelligence but their parents' views of failure. *Psychological Science*, 27, 859-869.

MAIN FINDINGS:

- Parents who perceived failures as debilitating worried about their child's abilities and focused on their child's performance rather than what they learned from the failure
- Parents' beliefs about failure affected parenting practices and predicted their children's mindset about intelligence
- Parents' behavioral responses to their children's failures can be influenced

Haimovitz and Dweck defined two potential mindsets about failure: *failure-is-enhancing* or *failure-is-debilitating*. Parents with a *failure-is-enhancing* view believe that struggles are a helpful experience, one that is vital for facilitating learning and growth. Meanwhile, parents with a *failure-is-debilitating* perspective believe that failure inhibits learning and is a roadblock on the pathway to improved performance.

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MindsetScholarsNetwork.org

IS THERE A RELATIONSHIP BETWEEN PARENTS' FAILURE MINDSETS AND CHILDREN'S MINDSETS ABOUT INTELLIGENCE?

In the first study, the researchers explored whether there was a relationship between parents' failure mindsets and children's beliefs about intelligence.

73 pairs of parents and their fourth- or fifth-grade children were surveyed about their respective intelligence mindsets. Parents also reported on their failure mindsets and perceptions about their children's competency in school. Children answered questions about their parents' learning and performance orientations (e.g., "My parents would be pleased if I could show that school is easy for me"; "My parents think how hard I work in school is more important than the grades I get").

Parents with a failure-is-debilitating mindset had children who were more likely to hold a fixed view of intelligence.

Their children were also more likely to label their parents as concerned about performance and grades rather than learning and improvement. Similar to findings from previous studies, no relationship was found between parents' and children's intelligence mindsets. These results suggest that there is a relationship between parent's views of failure and children's views of intelligence. But what is the underlying cause of this trend?

HOW DO PARENTS' VIEWS OF FAILURE AFFECT THEIR CHILDREN'S PERSPECTIVES ON INTELLIGENCE?

In order to better understand *how* parents' mindsets about failure influence their children, the researchers next examined whether a parent's view of failure affected parenting practices in the face of setbacks.

160 parents completed a survey about their failure mindsets, intelligence mindsets, and their perception of their child's competence. They were also asked to respond to a hypothetical scenario in which their child came home with a failing grade.

Parents' beliefs about failure predicted their responses to the failing grade scenario.

Parents with failure-is-debilitating mindsets were more likely to express concerns about their child's abilities and less likely to focus on their child's learning and improvement. This suggests a connection between the way parents view failure and behavioral patterns they display when their children face setbacks.

CAN PARENTS' FAILURE MINDSETS AND RELATED PRACTICES BE CHANGED?

The researchers' third study focused on whether parents' perspectives on failure could be influenced.

A group of 132 parents were randomly assigned to receive different versions of an online survey. Half the parents received a survey that asked them questions designed to put them into a *failure-is-debilitating* mindset (e.g., "Experiencing failure can lead to negative feelings, like shame or sadness, that interfere with learning"). The other half received a survey designed to foster a *failure-is-enhancing* mindset (e.g., "Experiencing failure can improve performance in the long run if you learn from it"). Participants then answered an open-ended response question about how they would think, feel, and what actions they would take after their child received a failing grade on a math test.

Parents in the failure-is-debilitating condition were more likely to voice concerns about their child's ability and performance after taking the survey.

This finding suggests that a short, biased survey was enough to influence the way parents would react to their child's behavior in a hypothetical failure situation, providing evidence that both parents' views *and* practices can be changed.

IMPLICATIONS OF THIS RESEARCH

These studies provide evidence on the importance of the way that parents view failure. Their perspectives on failure affect the ways they respond to difficulties their children face, and these behavioral differences influence their children's beliefs about ability. Fortunately, this self-reinforcing relationship can be influenced. Finding ways of targeting parents' failure mindsets could be beneficial, helping their children to adopt a growth mindset. Further research can continue to explore the relationships found in these studies while also testing approaches that may change parents' mindsets about failure.

Failing is unavoidable and essential to learning. However, the way individuals respond to these experiences is something that can be controlled. The ability to positively frame setbacks, viewing them as opportunities to improve and grow is an imperative skill that will be beneficial throughout life—and a valuable lesson parents can pass on to their children.

This brief was edited by Lisa Quay, Managing Director of the Mindset Scholars Network.

¹ 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.

² Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science, 26*, 784–793.



NEW EVIDENCE OF GROWTH MINDSET'S POSITIVE EFFECT ON ACHIEVEMENT ON A NATIONAL SCALE—ESPECIALLY FOR LOW-INCOME STUDENTS

David Bowermaster, July 2016

The links between growth mindset and achievement received important new validation from a first-of-its-kind study by Mindset Scholars Carol Dweck and Dave Paunesku and Stanford education researcher Susana Claro.

Numerous studies in recent years, by members of the Mindset Scholars Network and others, have found that students who have been taught to believe that intelligence can grow over time (a growth mindset) perform better in school than students who have been taught to believe that intelligence is a fixed trait that is determined at birth (a fixed mindset).

One limitation of the early growth mindset research was that many of the studies were performed with relatively small groups of students. The samples have grown substantially in size and diversity in recent years, but they still have never included the rarest, most prized sample in research: a nationally representative sample. Such samples enable researchers to generalize their findings to the population as a whole.

But the field of growth mindset research now has its first such study at a national scale.

The links between growth mindset and achievement received important new validation from a first-of-its-kind study by Mindset Scholars Carol Dweck and Dave Paunesku and Stanford education researcher Susana Claro. A research brief summarizing the article, which was published this week in the [*Proceedings of the National Academy of Sciences*](#), is available [here](#).

By examining test scores and survey responses from all the 10th graders in the country of Chile (over 168,000 students in total), the researchers found that students who endorsed a growth mindset about intelligence consistently outperformed their peers who endorsed a fixed mindset about intelligence.

The researchers then went a step further and examined the relationship between students' family income, mindsets about intelligence, and test scores.

The result? The positive correlation between growth mindset and achievement held true at all income levels. In other words, whether looking at students from wealthy families or students from poor families, students who endorsed a growth mindset performed better than students who endorsed a fixed mindset.

Significantly, the benefit of a growth mindset was highest for students from low-income families; the performance gap between students who held a growth mindset and those who held a fixed mindset was twice as large among students in the lowest income decile compared to those in the highest income decile.

The findings suggest that students from low-income backgrounds have the most to gain from schools and teachers who adopt policies and practices that convey to students that they can get smarter and excel academically.

Further, the study found that students from lower-income backgrounds were considerably less likely to endorse a growth mindset than students from high-income backgrounds.

Taken together, these findings suggest that education systems that aspire to close equity gaps should pay close attention to the messages about intelligence that their policies and practices send to low-income students in particular, to ensure that these students know that the adults in their schools believe they can grow and that they will provide them with the supports and guidance to excel.

MINDSET SCHOLARS NETWORK'S EFFORTS TO ENCOURAGE EVIDENCE-BASED ESSA IMPLEMENTATION

Over the past several months, the Mindset Scholars Network has been sharing what we know from research with policymakers and other stakeholders to inform the design of state accountability systems under the new *Every Student Succeeds Act* (ESSA).

CONTEXT FOR THE MINDSET SCHOLARS NETWORK'S INVOLVEMENT

The new law requires states to choose multiple measures for use in accountability frameworks that will be used to identify schools or districts in need of supports.

States' new accountability frameworks must include four academic indicators and, for the first time, they must also include one or more 'nonacademic' indicators. These can include measures of student engagement, educator engagement, access to and completion of advanced coursework, postsecondary readiness, or school climate and safety. This so-called 'fifth indicator' has led to significant discussion about which measures are appropriate for inclusion at this time.

A wide variety of measures have been proposed for these purposes. Some of these measures include questionnaire items that ask students to report on their beliefs or skills—many of which were designed by network members for use in their scientific research.

As such, these measures were designed for a very different use than public reporting or accountability. In research, measures are used only once or twice and do not have any stakes attached to them for participants. In contrast, measures used for educational purposes may be applied multiple times, often in short succession, and can have a variety of stakes attached to them (actual or perceived). Moreover, measures in scientific studies were not designed to be used for formative (e.g., continuous improvement) or summative purposes (e.g., diagnosing students or evaluating teachers or schools). These contrasts in contexts—between measures used for research and measures used for practice—raises the question of whether these measures can, and should be used for educational purposes.

USING SCIENCE TO IMPROVE POLICY VIA MULTIPLE CHANNELS

As states began the process of designing their new accountability frameworks and public reporting systems, many policymakers had questions about what measures would be valid for these purposes. The MSN was first asked in May by the Learning Policy Institute and the Council of Chief State School Officers to present a summary of what we know from research on this topic on a webinar for states that are members of its Innovation Lab Network.

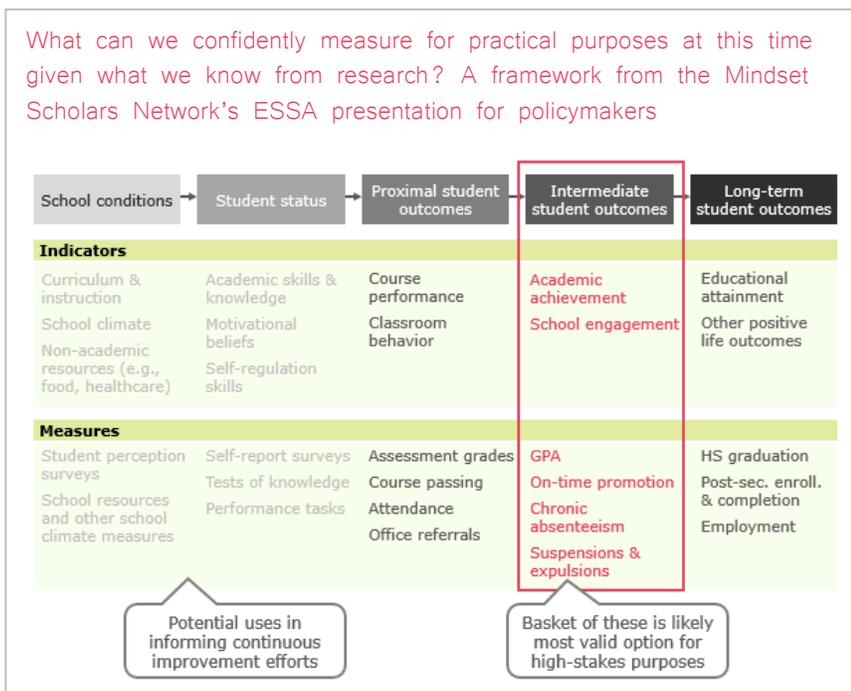
Since then, the network has presented this information in other venues, including a meeting of policy experts convened by Education Counsel, as well as a webinar for the Education Funder Strategy Group. (See figures for examples of content from this presentation.)

The network has been sharing these insights with key decision makers and influencers through other channels, as well. Network members and staff have been asked to join national working groups on measurement, provide feedback on position papers, and advise practitioner-facing intermediaries, policy advocates, and funders.

A summary comparison of different types of measures from the Mindset Scholars Network's ESSA presentation for policymakers

	Student status measures		School conditions measures	
	Self-report questionnaire	Performance task (automated)	Student perception survey	School resources, other climate measures
				
Situational influences?	Lower	Higher	Lower	Lower
Faking potential?	Higher	Varies	Higher	Lower
Reference bias risk?	Higher	Lower	Lower	Lower
Practice effects?	✗	✓	✗	✗
Cost?	\$	\$	\$	Varies
R&D stage?	Mid	Nascent	Varies	Varies

What can we confidently measure for practical purposes at this time given what we know from research? A framework from the Mindset Scholars Network's ESSA presentation for policymakers



BARBARA SCHNEIDER

John A. Hannah Chair and Distinguished
Professor of Education and Sociology
Michigan State University

AREAS OF EXPERTISE

Assessment, measurement, and evaluation;
family, community, and schools; educational policy

BIO

Barbara has used a sociological lens to understand societal conditions and inter-personal interactions that create norms and values that enhance human and social capital for the past thirty years. Her research focuses on how the social contexts of schools and families influence the academic and social well-being of adolescents as they move into adulthood. Barbara is the Principal Investigator on the College Ambition Program—a model that encourages adolescents to pursue science, technology, engineering, and math (STEM) majors in college and occupations in these fields. Recently, she was awarded the National Science Foundation’s first-ever Partnerships for International Research and Education award with a STEM education research focus. Her project is focused on increasing engagement in secondary science classrooms in Michigan and Helsinki.

NEW IDEA

Barbara is interested in enhancing secondary science teachers’ skill in promoting engaging classroom activities that yield what she calls ‘optimal learning moments.’ Rather than thinking about engagement as a “general trend,” optimal learning moments conceptualize engagement as “a behavioral activity that is temporal in quality” (Schneider et al., 2016, 401). In an optimal learning moment, students are fully engaged in a learning task: they are interested in the task, possess a relevant skill set to engage in the task, and are aroused by an appropriate level of challenge. This definition builds on Csikszentmihalyi’s idea of ‘flow’ and Dweck’s concept of ‘growth mindset’: students lose track of time and experience satisfaction from wrestling with developmentally appropriate challenges.

Barbara hypothesizes that optimal learning moments can motivate students to seek similar experiences in the future and thus can lead to sustained interest in science and positive science outcomes. But carefully regulating learning experiences for this ideal mix of interest, skill, and challenge is not a skill in which many science educators are expert (although it is likely to become key to the successful roll out of the *Next Generation Science Standards*). Barbara is collaborating with educators and researchers in Michigan and Finland to design real-time measures of this type of engagement using mobile devices (as compared to traditional, retrospective survey questionnaires asking students to report on more general engagement) and to learn how science educators can better foster optimal



learning moments. A key aspect of this work is exploring the classroom messages and instructional tasks in classrooms that have discouraged women, underrepresented minorities, and individuals with special needs from pursuing careers in STEM fields.

MEDIA FEATURES & KEY PUBLICATIONS

Bryk, A., & Schneider, B. (2002). *Trust in schools: A core resource for improvement*. Russell Sage Foundation.

Cook, K. (2015). MSU researchers look to put a spark in science ed. *WKAR*.

Neighmond, P. (2011). Working moms multitask, and stress, more than dads. *NPR*.

Schneider, B (2016). *Crafting Engagement in Science Environments*. FinnSight2016 Building the Future of Finland through Knowledge, Know-How and Education, Presidential Address, Academy of Science, Helsinki, Finland.

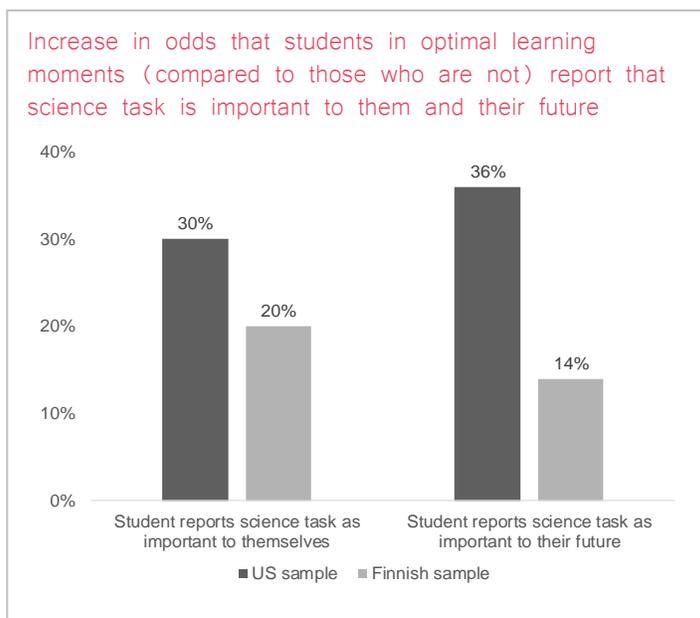
Schneider, B. (2016). *Providing Opportunities for Post-Secondary Education Among Under-Represented Groups*. Presented at the OECD International Roundtable on *Equity and Quality on Higher Education: From the Right of Access to the Challenge of Graduation* at the University of Chile.

FINDING OF NOTE

Early results from Barbara's American/Finnish collaboration show that students who feel challenged in their classes and equipped with relevant skills are more likely to report feeling confident, happy, and successful during science classes.

When students experience a greater number of optimal learning moments in science classes, they are more likely to see science as important to them and their futures. However, these early data also show that females report being more stressed than their male counterparts in science classes.

Source: Schneider, B., Krajcik, J., Lavonen, J., Salmela-Aro, K., Broda, M., Spicer, J., ... & Viljaranta, J. (2016). Investigating optimal learning moments in US and Finnish science classes. *Journal of Research in Science Teaching*, 53, 400-421.



CAMILLE FARRINGTON

Senior Research Associate and Managing Director
University of Chicago Consortium on School Research



AREAS OF EXPERTISE

Teacher practice, non-cognitive success factors and measurement, adolescence, educational equity

BIO

Camille Farrington is a national expert on the role of “noncognitive” factors in academic performance, with a particular interest in understanding how learning environments provide opportunities for positive developmental experiences, how young people make sense of their experience in school, and how school structures and teacher practices shape students’ beliefs, behaviors, performance, and development. Camille is a member of the National Commission on Social, Emotional, and Academic Development and its Council of Distinguished Scientists; and the National Assessment of Educational Progress (NAEP) Questionnaire Standing Committee. Throughout her work, Camille draws on fifteen years’ experience as a public high school teacher and National Board Certified Teacher Mentor.

NEW IDEA

Compelling research on mindsets has provided educators with another potential explanation for a common frustration. The story is simple: poorly performing students must have a “wrong” mindset that impedes their academic success; if only teachers could make them “right,” these students would do better in school.

Camille believes that this is an overly simplistic understanding of mindsets, and one that can erroneously locate the “fix” inside a student’s head rather than attending to all the external factors (e.g., school culture, instructional practice, relationships with teachers and peers) that can profoundly influence students’ attitudes and beliefs. She describes mindsets not as “things” that can be “gotten,” but rather as perceptual frames that humans use to interpret the world. Mindsets related to learning are intricately tied to the stories students tell themselves about what school is like, how competent they are, how teachers feel about them, and their likelihood of academic success—they are, in a sense, how students experience school. Research on mindsets demonstrates the centrality of the student experience to any educational endeavor. As such, mindset research provides an opportunity to move away from a mechanistic model of schooling as the “filling of empty vessels,” toward a more complex, interactive, holistic model of human learning that focuses on

context, human relationships, opportunities for development, and the narratives that frame students' perceptions and engagement.

MEDIA FEATURES & KEY PUBLICATIONS

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). Teaching adolescents to become learners: The role of non-cognitive factors in shaping school performance—A critical literature review. *University of Chicago Consortium on School Research*.

Haithcock, W. & Underwood, D. (2015). Fostering a culture of growth and college readiness. *Education Week*.

Nagaoka, J., Farrington, C. A., Ehrlich, S. B., & Heath, R. D. (2015). Foundations for Young Adult Success: A Developmental Framework. *University of Chicago Consortium on School Research*.

Tough, P. (2016). How kids learn resilience. *The Atlantic*.

FINDING OF NOTE

The *Becoming Effective Learners* (BEL) Student Survey seeks to understand how classroom contexts affect students' mindsets and other noncognitive factors, and in turn, how learning mindsets and other factors predict course grades. To do this, students are asked to reply to survey items in the context of specific classes they are currently taking (e.g., *How likely are you to complete your homework for Algebra II before doing other things you enjoy more?*).

Camille finds that students assess their own mindsets, perseverance, and behaviors differently, depending on which of their classes they are asked to think about on the survey. In higher-rated classrooms (based on their classmates' survey responses about classroom characteristics such as teacher support, organization, and goals), students are more likely to report adaptive learning mindsets, greater perseverance, and better academic behaviors than they do in lower-rated classes. These improvements in mindsets and other noncognitive factors in higher-rated classrooms are associated with higher end-of-semester course grades. In short, the average student reports significantly more positive mindsets, more engaged behaviors, and greater motivation to succeed in a higher-rated classroom than he or she does in a lower-rated classroom—and these differences in self-reported noncognitive factors predict differences in course grades earned by the student.

CAROL DWECK

Lewis and Virginia Eaton Professor of Psychology
Stanford University



AREAS OF EXPERTISE

Mindsets and their role in motivation and self-regulation

BIO

Carol Dweck is one of the world's leading researchers on motivation and mindsets. Her research demonstrates the critical role of mindsets in students' achievement, and shows how a focus on intelligence or talent can undermine their motivation and learning. She and her colleagues have used their research findings to develop and test programs aimed at enhancing students' motivation and learning and at narrowing achievement gaps. Carol has addressed the United Nations on their global development agenda, has been elected to the American Academy of Arts and Sciences and the National Academy of Sciences, and has won nine different lifetime achievement awards for her work. Her best-selling book *Mindset* has been translated into over 30 languages.

NEW IDEA

As the science of growth mindset has advanced, the concept has gained increasing popularity. Millions have read *Mindset* (2006) and watched Carol's TED talk; media coverage has burgeoned; and educators' interest in mindsets is at a peak. However, in the past two years, it has become clear that many teachers do not easily grasp the concept at a deep level, nor do they readily transmit it to their students. Given the demonstrated importance of creating growth-mindset learning environments for students, this points to a critical need.

Carol sees the need for a full set of professional development materials for teachers to solve the research-to-practice translation problem in the field of growth mindset. These materials would include a valid survey for assessing teachers' mindsets and changes in mindsets over time; an effective program for guiding teachers to adopt a deeper, more stable, and more generalized growth mindset; and a comprehensive, step-by-step curriculum that leads teachers through the process of establishing and maintaining a growth mindset culture in their classrooms.

MEDIA FEATURES & KEY PUBLICATIONS

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.

Dweck, C. (2015). Carol Dweck revisits the 'Growth Mindset'. *Education Week, 35*, 20.

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

Schwartz, K. (2016). A growth mindset could buffer kids from negative academic effects of poverty. *KQED Mind/Shift*, July 26, 2016. Accessed online on Sept. 4, 2016.

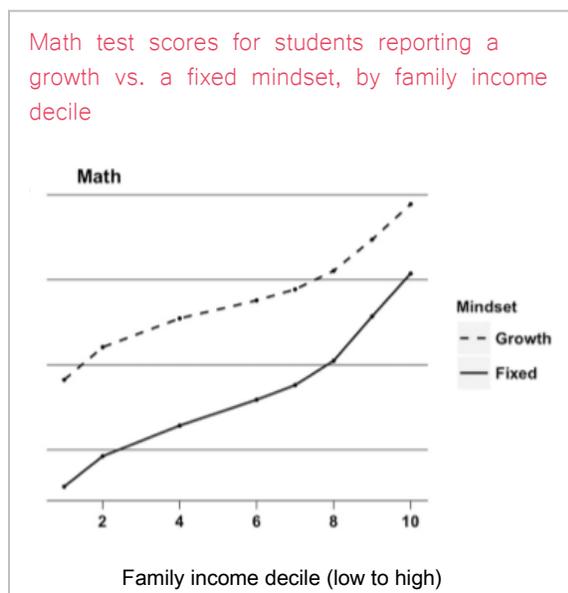
FINDING OF NOTE

Carol and her colleagues recently analyzed test scores and survey responses from all the 10th graders in the country of Chile (over 168,000 students in total). At all levels of income, students who endorsed a growth mindset about intelligence consistently outperformed their peers who endorsed a fixed mindset about intelligence.

But the benefit of a growth mindset was greatest for students from low-income families; the performance gap between students who held a growth mindset and those who held a fixed mindset was twice as large among students in the lowest income decile compared to those in the highest income decile (see figure). However, students from low-income backgrounds were considerably less likely to endorse a growth mindset than students from high-income backgrounds.

These findings suggest that education systems that aspire to close equity gaps should pay close attention to the messages about intelligence that their policies and practices send to low-income students in particular, to ensure that these students know that the adults in their schools believe they can grow and will provide them with the supports and guidance to do so.

Source: Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the effects of poverty on academic achievement. *Proceedings of the National Academy of Sciences, 113*, 8664-8668.



DAVE PAUNESKU

Co-Founder & Executive Director
PERTS at Stanford University

AREAS OF EXPERTISE

Scale up and evaluation of learning mindset programs

BIO

Dave Paunesku is co-founder and executive director of PERTS, a Stanford University center that scales up evidence-based innovations in order to advance educational equity. Dave's work integrates learning sciences research, low-cost technologies, and strategic partnerships because he believes this integrated approach is critical to scaling up innovations to reach the millions of students who need them most.



In 2010, Dave pioneered a new methodology for the large-scale, cost-effective implementation and evaluation of mindset programs. His research showed for the first time that mindset programs can raise student achievement, even when administered using low-cost, easy-to-scale web modules. This approach has been widely imitated since, and Dave continues to push the field's boundaries: He plays a key role in nearly all of the largest ongoing mindset program evaluations, and he has led partnerships that have disseminated mindset programs to millions of students.

NEW IDEA

Pressure is mounting on educators to make research-based decisions and to collect evidence to show that their decisions are making an impact. At the same time, evidence is mounting that mindset programs can measurably improve educational outcomes on a large scale and at a low cost. This confluence is rapidly increasing demand for learning mindset resources, and it presents an unprecedented opportunity: An opportunity to directly benefit millions of students and to radically transform the way innovations are scaled in education.

In the next three years, PERTS aims to grow its marketing and web development infrastructure in order to help hundreds of colleges implement mindset programs and simultaneously measure the impact of those programs as they scale. This integrated approach could directly benefit countless students while growing a body of evidence that drives further demand and improvement. In this way, Dave aims to jumpstart a virtuous cycle of impact and evidence that benefits millions of students and provides a new paradigm for scaling education innovations in the 21st Century.

MEDIA FEATURES & KEY PUBLICATIONS

Kirp, D.L. (2016). Conquering the Freshman Fear of Failure. *The New York Times*.

Chen, I. (2014). How a Bigger Purpose Can Motivate Students to Learn. *KQED Mind/Shift*.

Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26, 784-793.

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., ... & Gomez, E. M. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 201524360.

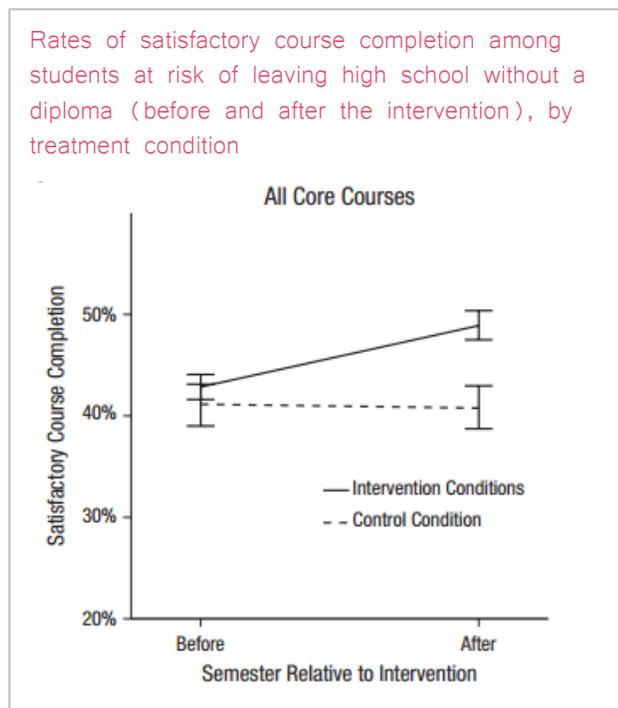
FINDING OF NOTE

Dave and his colleagues conducted a randomized controlled trial with 1,594 students in 13 high schools to assess the effect of brief, online growth mindset and sense of purpose interventions on students' performance in their core courses.

These interventions first use scientific research and trusted sources, such as older peers, to convey learning mindset messages to students (e.g., they can get smarter; success at school will help them lead more fulfilling lives). Then, they help students internalize these messages by leveraging techniques from persuasion research.

Dave and his colleagues found that both the growth mindset and purpose interventions, and a combined growth mindset/purpose intervention improved students grade point average (GPA) and course passing rates in their core courses. The effects were particularly strong for students at risk of leaving high school without a diploma. On average, the learning mindset interventions raised these students' core course GPA by 0.13 points and increased their course passing rates by 6.4 percentage points.

Source: Paunesku et al., 2015.



DAVID YEAGER

Assistant Professor of Psychology
University of Texas at Austin

AREAS OF EXPERTISE

Adolescent development, social psychology, stress and coping, intervention development, psychological measurement, and survey sampling



BIO

David is a developmental psychologist specializing in adolescence. He primarily conducts field experiments, because this is a useful method for simultaneously understanding the causes of youths' trajectories and producing novel interventions. Prior to becoming a researcher, he was a middle school teacher in Tulsa, Oklahoma. He is committed to helping schools implement the insights of learning mindset research well—through better intervention design, through better measurement, and through consideration of how classroom, school, and neighborhood conditions matter.

NEW IDEA

Is there a wiser way to promote adolescent behavior change? David's newest research is looking at what makes adolescents especially likely to view a health or social-emotional learning program as a disrespectful imposition on their autonomy, and what distinguishes programs that allow them to feel like a high status person, even as they make healthy, future-oriented choices. An exciting possibility is that a key consequence of pubertal development—levels of testosterone—might make adolescents hyper-sensitive to the disrespectful implications of traditional behavior change efforts, but also especially likely to be influenced by wiser interventions that honor and respect adolescent values of autonomy, competence, acceptance, and meaning/purpose.

MEDIA FEATURES & KEY PUBLICATIONS

Ripley, A. (2016, September 21). Can teenage defiance be manipulated for good? *The New York Times*.

Sparks, S. D. (2016, April 19). Scholars: Better gauges needed for 'mindset,' 'grit'. *Education Week*.

Yeager, D. S., Walton, G., Brady, S., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., ... & Dweck, C. S. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 113, E3341-E3348.

Yeager, D. S., Lee, H. Y. & Jamieson, J. (2016). How to improve adolescent stress responses: Insights from an integration of implicit theories and biopsychosocial models. *Psychological Science*, 27, 1078-1091.

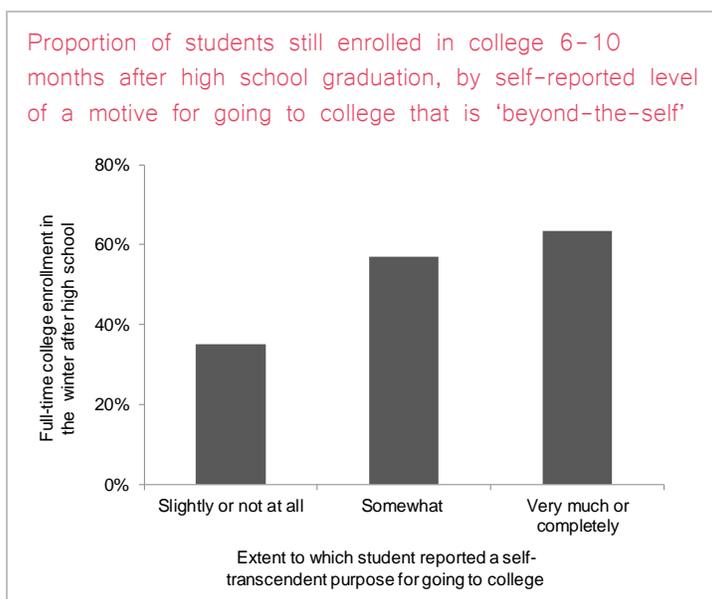
FINDING OF NOTE

David's research has explored whether a larger sense of purpose makes people use greater self-regulation when they are learning—especially subjects and tasks they find boring or tedious. In correlational, experimental, and longitudinal studies involving roughly 2,000 high school and college students, David and his colleagues have found that this type of 'self-transcendent' or prosocial purpose for learning predicted or caused more effective academic self-regulation in the immediate term and over time.

In one of these studies, David and his colleagues tested whether a larger purpose for learning correlated with greater perseverance and other elements of self-regulation. The researchers asked 1,364 college-bound, low socioeconomic status seniors at 17 urban high schools to rank a list of reasons why they wanted to go to college. Included were self-oriented motives such as "I want to become an independent thinker," and self-transcendent motives such as "I want to become an educated citizen that can contribute to society."

The results showed that those who expressed more of a self-transcendent purpose for learning also viewed tedious activities (such as boring math problems) as more personally meaningful and had greater academic self-regulation. These students did not find the material more interesting—all students reported that the problems were, indeed, quite boring. But those who reported a larger purpose for their learning were more likely to continue toward their stated goal of going to college (see figure). Only 30% of students with the lowest-ranking 'purpose' orientation were actively enrolled at college in the fall following high school graduation, compared with 64% of students who scored highest on the purpose scale. All these effects were independent of cognitive ability. In contrast, a self-oriented, intrinsic motive for learning on its own did not significantly predict the number of tedious math problems solved and it was a significantly weaker predictor of reported grit and self-control compared to a purpose for learning.

Source: Yeager, D.S., Henderson, M., Paunesku, D., Walton, G., Spitzer, B., D'Mello, S., & Duckworth, A.L. (2014). Boring but important: A self-transcendent purpose for learning fosters academic self-regulation. *Journal of Personality and Social Psychology*, 107, 559-580.



GEOFF COHEN

Professor of Psychology and James G. March Professor of Organizational Studies in Education and Business
Stanford University



AREAS OF EXPERTISE

Intervention development, self-affirmation theory, social identity threat, motivation

BIO

Geoff's research examines processes related to identity maintenance and implications for social problems. One primary aim of his research is the development of theory-driven, rigorously-tested interventions that advance our understanding of the processes underpinning social problems and that offer solutions to alleviate them. He is also interested in how and when seemingly brief interventions, attuned to underlying psychological processes, produce large and long-lasting psychological and behavioral change.

NEW IDEA

Geoff's current interest is in how to apply the lessons of mindset research to create classroom cultures that promote students' sense of belonging and potential. He wants to go beyond the one-shot intervention strategies to think critically and innovatively about how to weave key psychological messages into students' daily experience of the classroom, so that their belonging and potential are taken for granted. This topic harks back to classic research by social psychologist Kurt Lewin on leadership and group dynamics. His notion is that leaders can, through subtle and dynamic actions targeted at key processes, cultivate dramatic shifts in the climate of a classroom, its culture. Cultural transformation in the classroom, by changing the paradigm teachers use in understanding and intervening on student behavior, is the ultimate objective of this work.

MEDIA FEATURES & KEY PUBLICATIONS

Cohen, G. L., Garcia, J., Apfel, N., & Master, A. (2006). Reducing the racial achievement gap: A social-psychological intervention. *Science*, *313*, 1307-1310.

Cohen, G. L., Steele, C. M., & Ross, L. D. (1999). The mentor's dilemma: Providing critical feedback across the racial divide. *Personality and Social Psychology Bulletin*, *25*, 1302-1318.

Gehlbach, H. (2015). Small K-12 interventions can be powerful. *Education Week*.

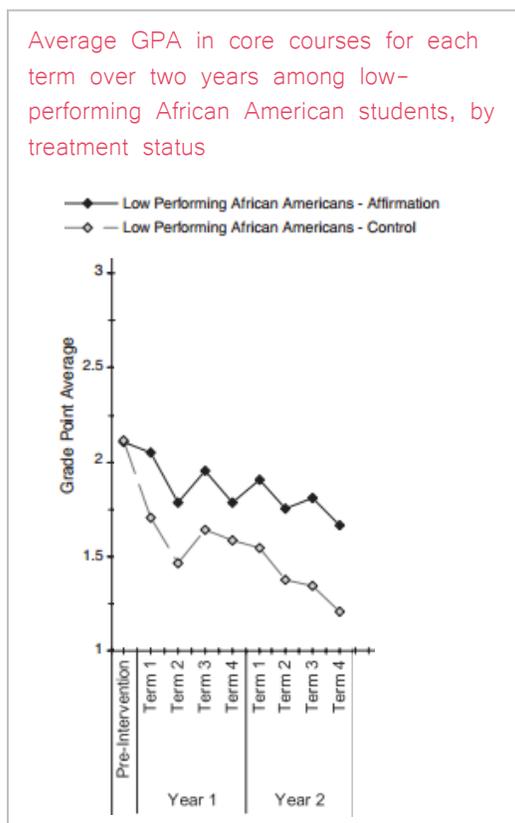
Sparks, S. D. (2016). One key to reducing school suspension: A little respect. *Education Week*.

FINDING OF NOTE

Geoff and his colleagues created a ‘self-affirmation’ intervention that asks students to write about values that are important to them personally. By reaffirming students’ self-integrity and bolstering their self-worth, such interventions can alleviate stress that arises in certain performance contexts in which negative stereotypes are salient.

In a suburban northeastern middle school, this self-affirmation intervention raised the grades of low-performing African American students compared to their peers in a control group who received a placebo. The control students’ grades continued to drop term after term over the next two years—a pattern that was significantly mitigated for their peers who had received the self-affirmation intervention. The intervention reduced the achievement gap in this student population by 40%.

Source: Cohen et al., 2006.



GREG WALTON

Associate Professor of Psychology
Stanford University

AREAS OF EXPERTISE

Intervention development, social identity threat, belonging, social cognition, field experiments



BIO

Greg is a leading expert in the design of psychological interventions. His work is driven by his interest in how basic social-psychological processes contribute to social problems and, thus, the opportunity to alter these processes to address such problems. He is especially interested in processes that contribute to educational inequality—and how these processes can be mitigated to help all students succeed.

NEW IDEA

Greg showed that one of the most powerful sources of influence on students' motivation is their sense of belonging: their feeling of membership in the social community and the belief that they are valued and respected. However, this sense of belonging can be at risk for students from groups that are negatively stereotyped and/or underrepresented in academic environments.

This insight led Greg to develop the pioneering social-belonging intervention. Using information and stories from older students, incoming students see that common challenges—like getting criticized, or feeling lonely—are normal experiences that tend to improve with time, not necessarily evidence that “I don’t belong.”

Following successful early field trials, the social-belonging intervention was translated into an online module that has been delivered to tens of thousands of new college students in dozens of institutions across the country on a randomized basis. To conduct this work, Greg, Christine Logel, Mary Murphy, and David Yeager launched the College Transition Collaborative (CTC)—an R&D organization—with the support of the Mindset Scholars Network and college and university partners.

Through this work, Greg and his colleagues at CTC observed multiple institutional practices that could convey to students that they belonged on campus—or, too often—that they may not. CTC researchers are now working side-by-side with colleges to modify these practices and evaluate their effectiveness. For example, CTC and its partners are revising the content of academic probation letters to reduce the shame and stigma that can be unintentionally conveyed. An initial trial found that the modified letter increased the odds that students

successfully returned from probation a year later, rather than dropping out or being suspended, from 48% to 79%.

Greg is also working with Jason Okonofua and Dave Paunesku on an intervention that helps teachers take an empathic rather than punitive mindset about misbehaving students. Initial tests showed the exercise halved suspension rates, and the researchers are now refining it with users in advance of a large-scale trial.

MEDIA FEATURES & KEY PUBLICATIONS

Walton, G. M. (2014). The new science of wise psychological interventions. *Current Directions in Psychological Science*, 23, 73-82.

Yeager, D. S. & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81, 267-301.

Yeager*, D. S., Walton*, G. M., Brady, S., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., ... & Dweck, C. S. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 113, E3341-E3348. (*The first 2 authors contributed equally to this work.)

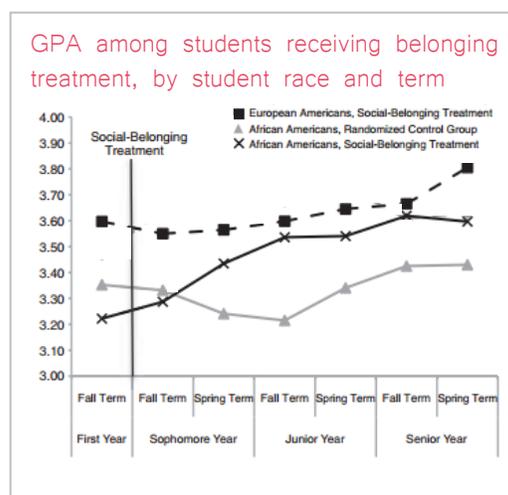
Kirp, D. L. (2016, August 21). Conquering the freshman fear of failure. *New York Times*.

Tough, P. (2014, May 15). Who gets to graduate? *The New York Times Magazine*.

FINDING OF NOTE

The first belonging intervention was given to students at the end of their first year at a selective university in 2003. Students were randomly assigned to receive the exercise or a control condition. Greg and his colleagues tracked their grades through senior year.

The intervention raised African American students' grade point average (GPA) over this period—halving the achievement gap with European American students—because it prevented them from seeing daily adversities on campus as indicative of a lack of belonging, leading them to build stronger relationships on campus. At the end of college, African American students earned higher grades and reported greater well-being and better health. These effects have persisted: these students also report higher life and career satisfaction 3-5 years after graduation due to greater mentorship in college.



Source: Walton, G. M. & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331, 1447-1451.

JASON OKONOFUA

Assistant Professor of Psychology
University of California, Berkeley

AREAS OF EXPERTISE

Stereotyping, threat, scalable psychological interventions, implicit bias, criminal justice



BIO

Jason is interested in how the effects of one person's stereotyping and another person's experience of stereotype threat reverberate and escalate over time. He currently researches this interest in the context of education and criminal justice. He asks how stereotypes about stigmatized children can shape how they interact with teachers, administrators, and police officers. He also develops theory-based psychological interventions geared to mitigate societal issues (e.g., the school-to-prison pipeline) on a large scale.

NEW IDEA

There is growing consensus that the use of punitive school discipline is excessive and problematic—but what can be done to change the practice? Jason and his colleagues Dave Paunesku and Greg Walton decided to focus on the quality of relationships between students and teachers. Research has shown that mutual respect between individuals and authority figures motivates people to follow rules, particularly during times of conflict. In a preliminary set of studies, they found that an exercise that increased teachers' empathy for their students fostered more trusting teacher/student relationships and decreased teachers' use of suspensions.

This first 'proof-of-concept' was conducted with math teachers in five middle schools. The next step is to work with educators to refine the content and look-and-feel of the exercise using a series of prototypes and A/B tests. Once completed, the exercise will be tested in a multi-site randomized controlled trial to determine where, for whom, and under what conditions the approach is effective.

MEDIA FEATURES & KEY PUBLICATIONS

Harris-Perry, M. (2015). Race Talk. *MSNBC*.

Herbert, W. (2015). Two strikes and you're out (but only if you're black). *The Huffington Post*.

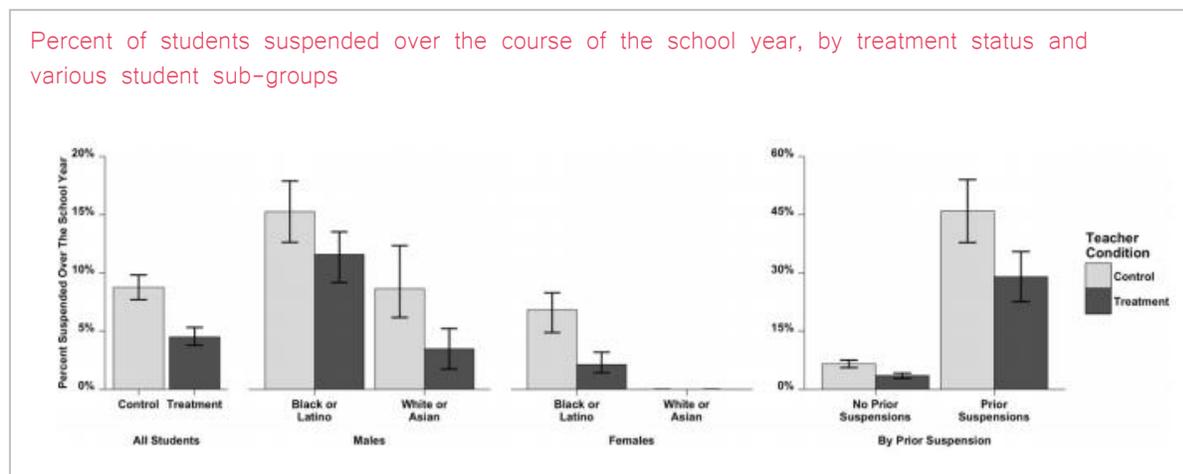
Okonofua, J. A., Paunesku, D., & Walton, G. M. (2016). Brief intervention to encourage empathic discipline cuts suspension rates in half among adolescents. *Proceedings of the National Academy of Sciences*, 113, 5221-5226.

Okonofua, J. A., Walton, G. M., & Eberhardt, J. L. (2016). A Vicious Cycle: A social-psychological account of extreme racial disparities in school discipline. *Perspectives on Psychological Science*, 11, 381-398.

FINDING OF NOTE

At the beginning of the school year, math teachers at five ethnically-diverse middle schools in California were randomly assigned to complete a brief ‘empathic mindset’ exercise or a control condition. Jason and his colleagues tracked the suspensions these teachers gave their students over the remainder of the school year. Students whose math teacher completed the empathic mindset exercise were half as likely to be suspended over the school year—an effect that remained significant after controlling for student race, gender, and prior-year suspension status.

Source: Okonofua, Paunesku, & Walton, 2016.



MARY MURPHY

Associate Professor of Psychology
Indiana University



AREAS OF EXPERTISE

Organizational and educational mindset cultures; self and social identity threat; stereotyping and prejudice; intergroup dynamics.

BIO

Mary is a world expert on how mindset cultures are created and communicated in organizations and classroom settings—and their implications for students and workers. She and Carol Dweck discovered organizational mindsets and have examined how companies and schools can create growth mindset cultures that boost people’s motivation, agility, resilience, and performance at work and school.

NEW IDEA

Mary is the early stages of examining how elementary school teachers’ mindsets are communicated to students and how they shape students’ motivation, persistence, and performance in school. This summer, she developed a curriculum with over 100 teachers to help them create growth mindset cultures in their classrooms and she is excited to examine how it will shape students’ and teachers’ outcomes. She is pursuing similar work with college faculty—creating an intervention to help STEM faculty communicate a growth mindset classroom culture. She believes this will have positive effects on all students—but particularly, among women and racial/ethnic minority students in STEM.

Following up her research with the Fortune 1000, Mary has also begun to explore how entrepreneurs’ and startup founders’ mindsets influence the mindset cultures they create and how those cultures influence employees’ experiences, fundraising, and company success.

MEDIA FEATURES & KEY PUBLICATIONS

Elfman, L. (2015). Psychologists find answers to issues in STEM. *Diverse Education*.

Emerson, K.T.U., & Murphy, M.C. (2015). A company I can trust? Organizational lay theories moderate stereotype threat for women. *Personality and Social Psychology Bulletin*, 41, 295-307.

Harvard Business Review Staff. (2014). How companies can profit from a “growth mindset.” *Harvard Business Review*.

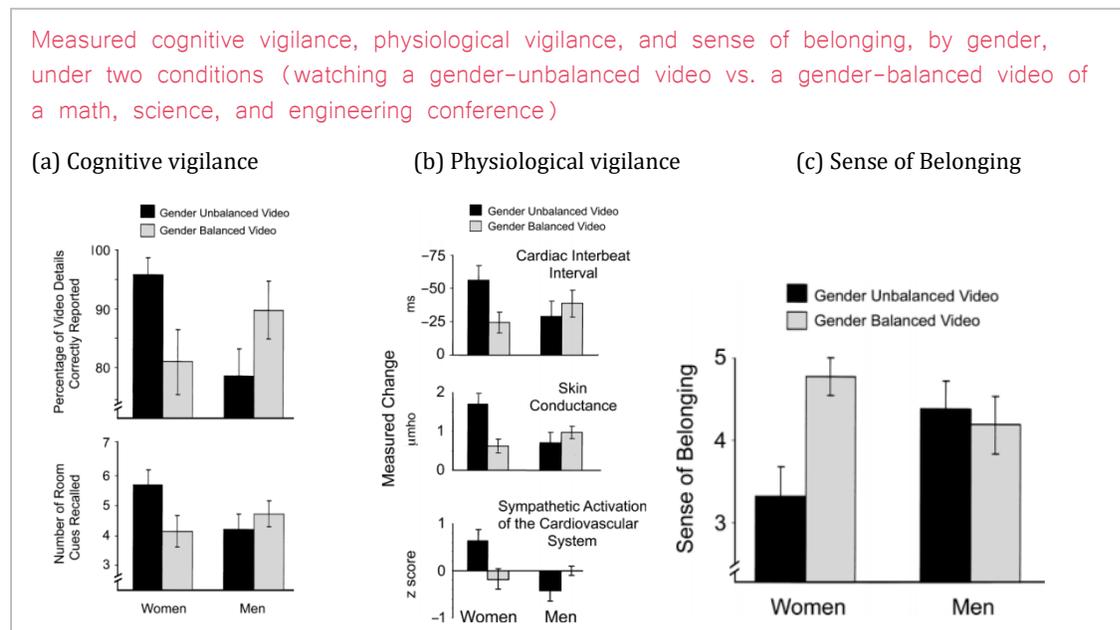
Murphy, M.C. & Zirkel, S. (in press). Race and belonging in school: How anticipated and experienced belonging affect choice, persistence, and performance. *Teachers College Record*.

FINDING OF NOTE

Dozens of studies have shown that social identity threat—the concern that one may be judged negatively on the basis of one’s group membership (e.g., gender, race, ethnicity)—can cause depressed cognitive performance. But Mary’s research revealed that the extent to which members of stigmatized groups experience social identity threat depends on the *cues* they perceive in the environment.

In a seminal study, Mary and her colleagues Claude Steele and James Gross asked women and men in math, science, and engineering (MSE) majors to view a video about a conference in MSE—a domain in which women are subject to negative stereotypes. The only thing that varied in the video was the gender ratio. In one condition, the video revealed equal women and men (gender balance); in the other, it was skewed to show more men than women (gender unbalance).

Women viewing the gender unbalanced video showed signs of being cognitively and physiologically vigilant. They also reported a lower sense of belonging and diminished desire to participate in the conference. In contrast, women viewing the gender balanced video and men in both conditions showed far less cognitive and physiological stress and a greater sense of belonging in that environment.



Source: Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science*, 18, 879-885.

RACHEL BEATTIE

Director of Productive Persistence
Interim Director of the Student Agency Improvement
Community
Carnegie Foundation for the Advancement of Teaching



AREAS OF EXPERTISE

Translation of research into practice; improvement science; networked improvement communities; reading, language, and mathematical development

BIO

Rachel is the director of productive persistence and interim director of the Student Agency Improvement Community (SAIC) at the Carnegie Foundation. Productive Persistence refers to the combination of tenacity and good strategies that is necessary to help more students successfully complete their academic goals. Before coming to the Carnegie Foundation, Rachel was a postdoctoral researcher at the Ohio State University where she supported cognitive neuroimaging research on reading, language, and mathematical development.

NEW IDEA

With founding support from the Raikes Foundation in 2014, the Carnegie Foundation has brought together leading scholars in psychology, five K-12 networks of educators, and one post-secondary network to innovate and test changes to educator practice and school systems to better address the psycho-social factors that affect student motivation, engagement and therefore, learning. The Carnegie Foundation ensures that the members of this network are equipped with the methodology of improvement science to effectively integrate promising interventions into their contexts in order to make sustained change.

After two years of working together as a community, the SAIC 'network of networks' built an initial set of tested classroom routines and activities that develop mindsets and learning strategies as well as an associated measurement system that assesses the impact of these changes on student agency. In the third year of the SAIC, the team is adaptively integrating this set of change ideas and measures in a variety of educational contexts to start learning how to promote student agency reliably at scale.

MEDIA FEATURES & KEY PUBLICATIONS

Edwards, A. R., Esmonde, I., Wagner, J. F., Beattie, R. L. (In press). Learning mathematics. Chapter in the *Handbook for Research on Learning and Instruction*, 2nd edition.

Korby, H. (2016). Belonging and believing: Transforming Remedial Math at Community Colleges. *KQED Mind/Shift*, July 13, 2016. Accessed online on September 15, 2016.

Edwards, A. R. & Beattie, R. L. (2015). Promoting student learning and productive persistence in developmental mathematics: Research frameworks informing the Carnegie Pathways. *NADE Digest*, 9. 30-39.

Nadworny, E. & Kamenetz, A. (2014). Who needs algebra? New approach to college math helps more pass. *NPR Ed*.

FINDING OF NOTE

Measuring when students are not productively persisting is an increasingly important practice within the Carnegie Math Pathways network within the Student Agency Improvement Community. Academic and social mindsets around productive persistence are currently measured in the Carnegie Math Pathways through a series of short, context sensitive self-report items given to students in the first and fourth weeks of the course (see Yeager, Bryk, et al., 2013, for a description of the development of these self-report measures). Recent efforts to create behavioral measures stemming from online learning system data were intended to supplement pre-existing self-report measures within an overall measurement system. When using online learning system data, there are few standardized processes for going from *clicks* to *constructs*. The relative newness of using online learning system data necessitated the identification of an approach that gives “communicable meaning” to behaviors operationalized using system log data (Provost & Murray, 2011).

For productive behaviors, Rachel and her colleagues developed a measure that captured the degree to which students availed themselves of multiple types of activities within a given session. Another productive behavior entailed reading and practicing before taking an assessment for the first time. Both behaviors, when engaged in across multiple sessions, were related to higher performances on the summative assessment. While these two behaviors are potentially productive, the researchers also developed measures of potentially less productive behaviors, such as logging into the online system and only taking assessments, whereby students who consistently engaged in this behavior did less well than students who did not. To capture aspects of student persistence, they measured the degree to which students ended a session on a score of 60% or lower without engaging in any further activity. Students who were consistently less persistent, did less well, on average, on the summative assessment than students who demonstrated persistence on a more consistent basis.

Source: Krumm, A.E., Beattie, R.L., Takahashi, S., D’Angelo, C., Feng, M., & Chung, B. (Accepted). Practical Measurement and Productive Persistence: Strategies for Using Digital Learning System Data to Drive Improvement. *Journal of Learning Analytics*.

RONALD F. FERGUSON

Faculty Director, the Achievement Gap Initiative at Harvard University
Co-Founder, Tripod Education Partners, Inc.
Adjunct Lecturer in Public Policy, Harvard Kennedy School of Government



AREAS OF EXPERTISE

Racial achievement gaps, measurement, youth development, community and economic development, educational policy

BIO

Ron Ferguson is an MIT-trained economist. He joined the faculty at Harvard's Kennedy School of Government in 1983. After 31 years on the full-time faculty at Harvard, he co-founded Tripod Education Partners in 2014 and shifted into an adjunct role.

Millions of students have participated in Tripod surveys since 2001. Beginning in 2009, Tripod provided the student voice component of the Bill & Melinda Gates Foundation Measures of Effective Teaching (MET) project. MET concluded in 2010 that student perceptions of teaching quality measured with Tripod surveys reliably predict learning gains. Ron's 2015 report, *The Influence of Teaching Beyond Standardized Test Scores: Engagement, Mindsets, and Agency*, shows how components of teaching quality also predict student engagement and agency-related factors.

NEW IDEA

Most mindset and identity measures focus on identity status—in other words, they measure the type of person a respondent is or the types of beliefs they hold. However, outside the context of randomized experimental trials, status measures have limited value for isolating the contribution of experiences in particular settings to the development of those mindsets and identities. Ron has begun developing survey items focused on individuals' perceptions of how strongly experiences in particular settings contribute to their development in particular mindset and identity domains. These measures can be combined with others collected for non-experimental statistical analyses to begin isolating the features of settings that foster changes in the focal domains. Findings can help educators identify and focus on practices that have the most leverage to produce desired mindset and identity changes.

MEDIA FEATURES & KEY PUBLICATIONS

Cadwallader, M. (2015). What about measuring beyond math and reading scores? *The Boston Globe*.

Nadworny, E. (2016). What young men of color can teach us about the achievement gap. *NPR Ed*.

Ferguson, R. F. (2003). Teachers' perceptions and expectations and the Black-White test score gap. *Urban Education*, 38, 460-507.

Ferguson, R. F., with Phillips, S. F., Rowley, J. F., & Friedlander, J. W. (2015). The influence of teaching beyond standardized test scores: Engagement, mindsets, and agency. *The Achievement Gap Initiative at Harvard University*.

Ferguson R. F. (2016). Aiming Higher Together: Strategizing Better Educational Outcomes for Boys and Young Men of Color. *Washington DC: The Urban Institute*.

FINDING OF NOTE

Teaching has multiple elements, each of which plays a distinct role in the types of outcomes children achieve. Ron has studied the contributions of “academic support,” on the one hand, and “academic press,” on the other hand, to classroom outcomes. Components of academic support entail emotional responsiveness, the design and delivery of engaging lessons, and helping students to understand and remember lessons. Academic press entails insisting that students do their part: think hard to understand their lessons, work hard and persist even in the face of difficulty, and remain on task until they complete their work.

Ron’s findings indicate that support and press have different roles in production of educational outcomes. Support is most important for setting the emotional climate of the classroom and for shaping student aspirations for future achievement such as going to college. However, its effects on achievement gains are small in the absence of press. Achievement gains are strongly predicted by press, but press is at best a weak predictor of happiness and high aspirations.

The implication is that teachers need to excel at both support and press in order to have happy students who set high aspirations for the future and learn a great deal in the present. Support without press, or press without support, is insufficient.

Source: Ferguson R. F. with C. Dannielson (2014). “How Framework for Teaching and Tripod 7Cs Evidence Distinguish Key Components of Effective Teaching.” In Thomas J. Kane, Kerri A. Kerr, and Robert C. Pianta, eds, *Designing Teacher Evaluation Systems: New Guidance from the Measures of Effective Teaching Project*. Hoboken, NJ: Jossey-Bass Publishers.

TANNER LEBARON WALLACE

Associate Professor of Psychology in Education
University of Pittsburgh



AREAS OF EXPERTISE

Adolescent perceptions of what teachers say and do as data sources for advancing theories of effective teaching

BIO

Tanner is a fourth-generation teacher. Her research agenda aims to shift the current discourse around effective teachers to focus more explicitly on adolescent learning as the basis for effective teaching. Her research has shown that teachers' actions often have very different meanings to students than to outside adult raters, and these differences in perceptions have critical consequences for student learning. She develops methods to identify interactional 'hot spots,' or pivotal moments during instruction, that explain why adolescents, particularly students of color, extend or withdraw trust in classrooms or perceive they do or do not belong. She has used these findings to develop relationship-based classroom management training, *Attentional Teaching Practice*. She was awarded a Measures of Effective Teaching Early Career Award through the National Academy of Education for her work.

NEW IDEA

Adolescents spend thousands of hours in school, most of which are in classrooms in front of teachers. As a result, what teachers say and do is a valuable target for potential intervention. Such is the case with the recent interest in translating mindset research to teaching practice. Based on her extensive experience in schools and professional development trainings with teachers, Tanner believes such scale-up efforts are likely to fail if adolescents' 'insider' perspectives are ignored. A working assumption of the teaching-as-the-site-of-intervention approach is that if a teacher says or does a certain amount of a particular behavior, then his or her students have been "exposed" to a particular "dosage" of an intervention.

Yet, at least two features of adolescent meaning-making complicate the translation of research to practice in an education context. Adolescent meaning making around whether a teacher "has his or her back," or is a trusted ally, will influence whether a student is open to receiving and processing what a teacher says or does in ways that could be transformative in terms of student learning. This is particularly relevant for adolescents ascribed a nondominant racial status. At the same time, adolescents are engaged in numerous relationships with a diverse set of adults in the school setting and beyond. Adolescents thus

interpret the implicit and explicit messages a teacher communicates, positive and negative, relative to their experiences with other adults.

Tanner's innovations in measurement move the field beyond merely counting instances of teacher behavior as evidence of effective implementation to account for the comparative meaning-making processes in which adolescents naturally engage.

MEDIA FEATURES & KEY PUBLICATIONS

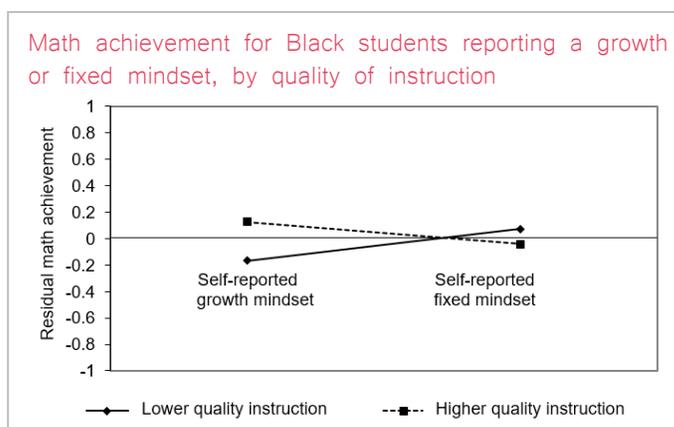
Wallace, T. L., & Sung, H. C. (2016). Student perceptions of autonomy-supportive instructional interactions in the middle grades. *Journal of Experimental Education*.

Williams, J. D., Woodson, A. N., & Wallace, T. L. (2016). "Can we say the n-word?": Exploring psychological safety during race talk. *Research in Human Development*, 13, 15-31.

Wallace, T. L., & Chhuon, V. (2014). Proximal processes in urban classrooms: Engagement and disaffection in urban youth of color. *American Educational Research Journal*, 51, 937-973.

FINDING OF NOTE

Tanner is collaborating with Geoff Cohen, Hannah Sung, and Rip Correnti in analyzing the Measures of Effective Teaching dataset to examine how students' mindsets influence learning in particular instructional contexts. Using a subsample of nearly 8,000 middle school students in 396 math classrooms across five districts, Tanner and her colleagues discovered higher quality mathematics instruction seemed to benefit Black students who believed intelligence is malleable but not those Black students who believed intelligence is fixed. This finding suggests a differential sensitivity to instructional quality based upon the invisible, but powerful, interpretive frameworks students possess. It reminds us that defining and measuring effective teaching on the basis of observable aspects of instruction alone may result in misleading conclusions. Next generation measures of effective teaching must better account for students' psychological experiences related to learning.



Source: Sung, H. C., Wallace, T. L., Correnti, R., & Cohen, G. L. (2016). Hidden but powerful: The effects of psychological experiences on math achievement among middle school students. (manuscript in preparation).

THOMAS DEE

Professor of Education
Stanford University

AREAS OF EXPERTISE

Economics of education, educational policy, high-stakes testing



BIO

Tom Dee is Professor of Education at Stanford University and Director of the Stanford Center for Education Policy Analysis. Tom is also a Research Associate in the Programs on Economics of Education, Health Economics and Children at the National Bureau of Economic Research and a Senior Fellow at the Stanford Institute for Economic Policy Research. His research focuses largely on the use of quantitative methods (e.g., panel data techniques, instrumental variables, and random assignment) to inform contemporary policy debates. Examples include econometric evaluations of incentive and accountability-based reforms and an analysis of recent, stimulus-funded, school-turnaround initiatives.

NEW IDEA

Practitioners have long advocated culturally relevant pedagogy (CRP) as a solution to under-performance of students from underrepresented racial and ethnic groups. But the body of evidence on CRP is almost entirely qualitative, making causal claims of its effect on student outcomes impossible. There are multiple explanations for why CRP like ethnic studies courses may be beneficial. Tom posits that CRP uses many of the “active ingredients” that scientists have found to be particularly beneficial for students from underrepresented, marginalized social groups. For example, psychologists have shown that people can underperform relative to their true ability in evaluative contexts because of a fear of confirming negative stereotypes about their group’s intellectual ability. CRP may also signal belongingness in the academic setting by affirming students’ cultural identity in school.

MEDIA FEATURES & KEY PUBLICATIONS

Dee, T. S. (2004). Teachers, race, and student achievement in a randomized experiment. *Review of Economics and Statistics*, 86, 195-210.

Dee, T. S., & Jacob, B. (2011). The impact of No Child Left Behind on student achievement. *Journal of Policy Analysis and Management*, 30, 418-446.

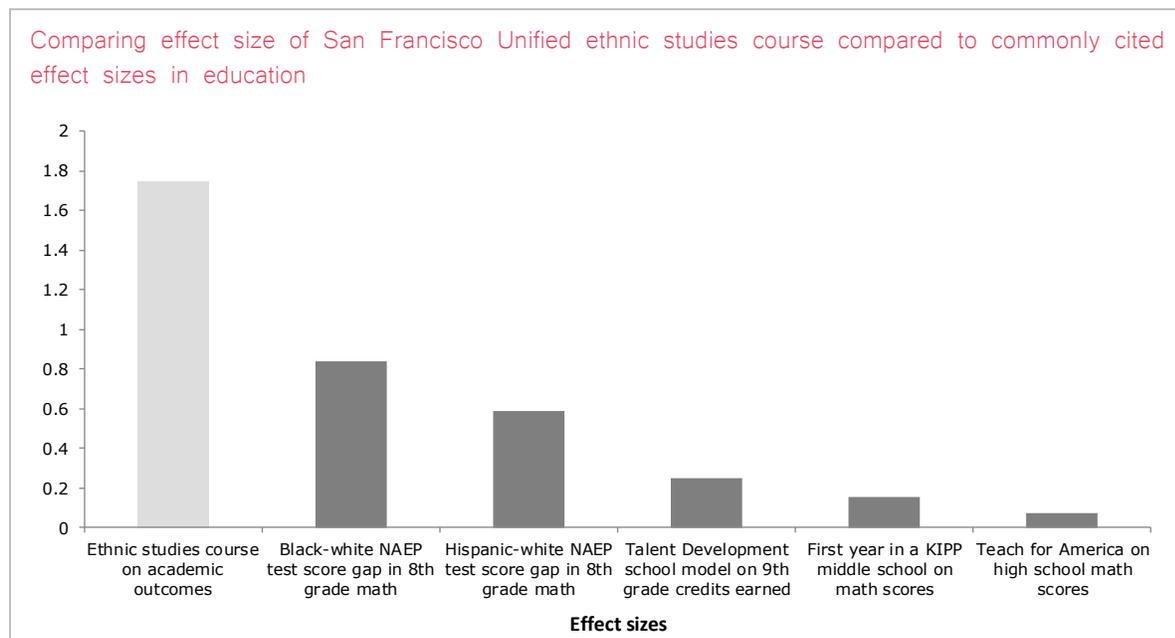
Rich, M. (2015, April 11). Where are the teachers of color? *New York Times*.

Rosenberg, E. (2016, January 14). At-risk students improve when they take a race and ethnicity class – study. *The Guardian*.

FINDING OF NOTE

In a recent study, Tom and his colleague Emily Penner report the first-ever study examining the causal effect of CRP (in this case, ethnic studies classes) on ninth grade academic outcomes. The researchers found large, positive effects of a ninth grade ethnic studies course targeted at academically at-risk students in San Francisco Unified School District. The program improved key predictors of graduation, including attendance, grades, and credit accumulation in ninth grade. The course disproportionately benefited male students, Latinos, and to a lesser degree, Asian students.

The impact of taking the ethnic studies course on academic outcomes was very large in comparison to the effect of other commonly cited educational interventions targeting this population of students. The ethnic studies course examined in this particular study increased ninth grade student attendance by 21 percentage points, raised GPA by 1.4 grade points (the equivalent of moving from a C- to a B), and increased credits earned in ninth grade by the equivalent of roughly four courses. The equivalent effect sizes (1.5 to 2.0 standard deviations) are very large compared to racial/ethnic achievement gaps and many educational interventions (see figure).



Source: Dee, T. & Penner, E. (2016). The causal effects of cultural relevance: Evidence from an ethnic studies curriculum. *NBER Working Paper*.