

The Influence of Teaching

Beyond Standardized Test Scores: Engagement, Mindsets, and Agency

A Study of 16,000 Sixth through Ninth Grade Classrooms



**Ronald F. Ferguson with
Sarah F. Phillips, Jacob F. S. Rowley, and Jocelyn W. Friedlander**

October 2015



The Achievement Gap Initiative at Harvard University
Excellence with Equity



A Letter from the Raikes Foundation

The Raikes Foundation was pleased to commission this report from the Achievement Gap Initiative (AGI) at Harvard University. We welcome its release and anticipate a wide readership. The analysis by Ron Ferguson and his colleagues of over 300,000 Tripod surveys across 16,000 sixth and ninth grade classrooms offers an unparalleled opportunity to learn from what's working in teachers' classrooms. In their identification of *agency dampers* and *agency boosters*, the authors provide a nuanced picture of the balance of challenge and support behaviors teachers can employ to develop agency.

The report will inform our work at the Raikes Foundation where we are focused on empowering teachers to help their students develop learning mindsets and skills. This is a priority because research and experience in all kinds of classrooms have shown that empowering students with learning mindsets and skills can unlock their potential to grow in any subject, at any age. The Raikes Foundation is working with educators, parents and leading researchers to develop an evidence-based, teacher-tested toolkit of practical resources to help students cultivate important beliefs and abilities.

We are grateful for the Achievement Gap Initiative's leadership and so pleased that Ron Ferguson is among the 22 researchers participating in the Mindset Scholars Network, www.mindsetscholarsnetwork.org. The Network conducts original interdisciplinary research, builds capacity for high quality mindset scholarship, and disseminates the latest scientific knowledge through outreach to education stakeholders.

Thank you for your own commitment to this important work!

Best,

A handwritten signature in black ink, appearing to read 'Zoe Stemm-Calderon', with a long, sweeping horizontal stroke at the end.

Zoe Stemm-Calderon
Director, Education Strategy
Raikes Foundation
www.raikesfoundation.org

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This report is available for download at
<http://www.agi.harvard.edu/publications.php>

FOREWORD

Three years ago, the Consortium on Chicago School Research (CCSR) issued a report entitled, *Teaching Adolescents to Become Learners—the Role of Noncognitive factors in Shaping School Performance: A Critical Literature Review*.¹ The CCSR report asserted a “need for more research on the role of school and classroom context in students’ development and demonstration of noncognitive factors” (p. 75).

Officials at the Raikes Foundation sponsored the CCSR report. They commissioned this report as one response to the CCSR call for more research on how classroom contexts affect noncognitive factors.

In June 2015, as the present report was nearing completion, the CCSR issued a new report entitled, *Foundations for Young Adult Success: A Developmental Framework*.² It resulted from an extensive literature review and a great deal of consultation with researchers and expert practitioners. In the new report, the authors describe features of an extensive research agenda focused on how institutions, including schools, foster development.


This report presents evidence concerning the influence of teachers on the development of what the first CCSR report called noncognitive factors and what their most recent report calls *foundational components and key factors*, prominent among which is *agency*.

About Tripod

Data from classroom-level Tripod student surveys have made this report possible. The Tripod Project for School Improvement (Tripod) emerged fifteen years ago from the first author’s work with K-12 educators in Cleveland Ohio’s racially diverse eastern suburbs. Since then, Tripod surveys have been continually refined and completed by students and teachers in thousands of schools across the United States. Tripod was the student survey used in the Measures of Effective Teaching (MET) project, sponsored by the Bill & Melinda Gates Foundation. Tripod data have also been used in U.S. Department of Education sponsored studies conducted by Mathematica, American Institutes for

1 Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012.

2 Nagaoka, Farrington, Ehrlich, & Heath, with Johnson, Dickson, Turner, Mayo, & Hayes, 2015.



Research, and Basis Policy Research. School systems commission the surveys and educators receive online reports to help with goal setting and school improvement. The work with school systems is based at Tripod Education Partners, Inc., a research and education firm located in Cambridge, Massachusetts. Rob Ramsdell and Ron Ferguson, the first author of this report, are co-founders and co-owners of Tripod. See www.tripoded.com for more information.

About The Achievement Gap Initiative

The Achievement Gap Initiative (AGI) at Harvard University is a university-wide effort based at the Harvard Graduate School of Education and the Malcom Wiener Center for Social Policy at the Harvard Kennedy School. Its mission is to bridge research and practice by framing important issues, producing and disseminating new research, and distilling implications for action by decision makers.

The AGI promotes excellence with equity as the defining goal. Not only should there be group proportional equality—where group-level characteristics such as race or socioeconomic status do not predict an individual’s achievement—there should also be excellence. Hence, the AGI is focused on scholarship, public education, and outreach activities to support governmental, civic, and private sector mechanisms aimed at raising achievement levels for all children while closing gaps between racial, ethnic, and income groups. Ron Ferguson, the first author of this report, is the AGI faculty co-chair and director. See www.agi.harvard.edu for more information.

This is an AGI report, commissioned by the Raikes Foundation.



ACKNOWLEDGMENTS

We express our sincere thanks to the Raikes Foundation and former program officer Craig Wacker for commissioning this report and for ongoing support as we have worked to complete it. In addition, we thank colleagues who invited us to present at seminars and the participants who provided helpful feedback. These include Gordon Berlin and researchers at MDRC in New York City, former Dean Deborah Vandell and faculty at the University of California at Irvine School of Education, and members of the National Mindset Collaborative, convened by Doug Yeager, Carol Dweck, and Greg Walton. Helpful feedback from public school teachers and administrators has come from participants in America Achieves, the Teacher Union Reform Network, and the American Association of School Administrators Collaborative. Educators in Bedford, New York, Ossining, New York, Tarrytown, New York, and Omaha, Nebraska also provided helpful feedback. Julie Hackett, superintendent of the Taunton, Massachusetts Public School District, was especially helpful. In addition, Ann Ballantine provided insightful advice and support on content, editing, and presentation.

Finally, we express our gratitude to the thousands of teachers and students whose perspectives and experiences are reflected in the data upon which this report relies.



EXECUTIVE SUMMARY

Today in the United States, producing higher scores on standardized tests of academic skills is the dominant goal of teacher professional development, the primary gauge of teacher productivity, and the almost single-minded focus of educator accountability. Certainly, reading, computing, and reasoning well are critically important to success as parents, citizens, and economic actors. Therefore, testing these skills in elementary and secondary schools to make sure that students learn them is warranted. At the same time, there is growing agreement that scores on standardized tests of academic skills are incomplete measures of the important things that students learn from their teachers. A major challenge facing educators, policy makers, and advocates is to achieve a better balance across the educational goals that we prioritize.

We present new evidence in this report that untested learning outcomes are measurable and that specific components of teaching influence them in nuanced and interesting ways. As targets for improved teaching and learning, these outcomes can supplement academic skills and knowledge as intentionally cultivated developmental foundations for school and life success.

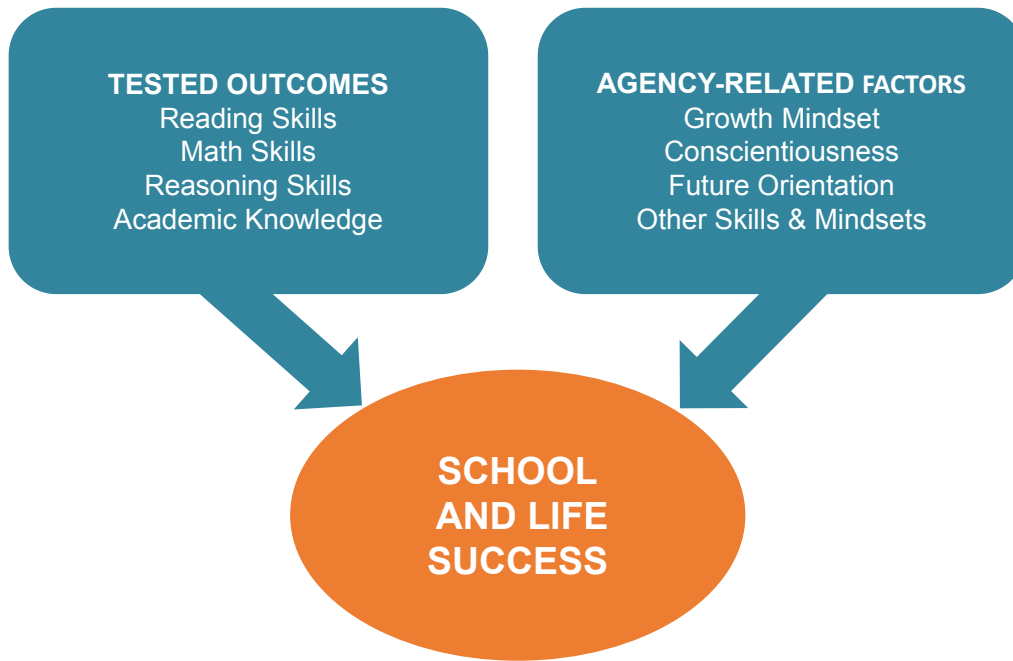
The report relies upon data from over 300,000 Tripod student surveys administered in more than 16,000 sixth to ninth grade classrooms, 490 schools, 26 districts, 14 states, and in all major regions of the nation during the 2013-14 school year.

The Central Question

The report concerns the influence of teaching on emotions, motivations, mindsets, and behaviors that we associate with agency. We ask, “How do distinct components of teaching influence the development and expression of agency-related factors in sixth to ninth grade classrooms?” Agency is the capacity and propensity to take purposeful initiative—the opposite of helplessness. Young people with high levels of agency do not respond passively to their circumstances; they tend to seek meaning and act with purpose to achieve the conditions they desire in their own and others’ lives. The development of agency may be as important an outcome of schooling as the skills we measure with standardized testing (Exhibit 1).

Exhibit 1

The Influence of Teaching



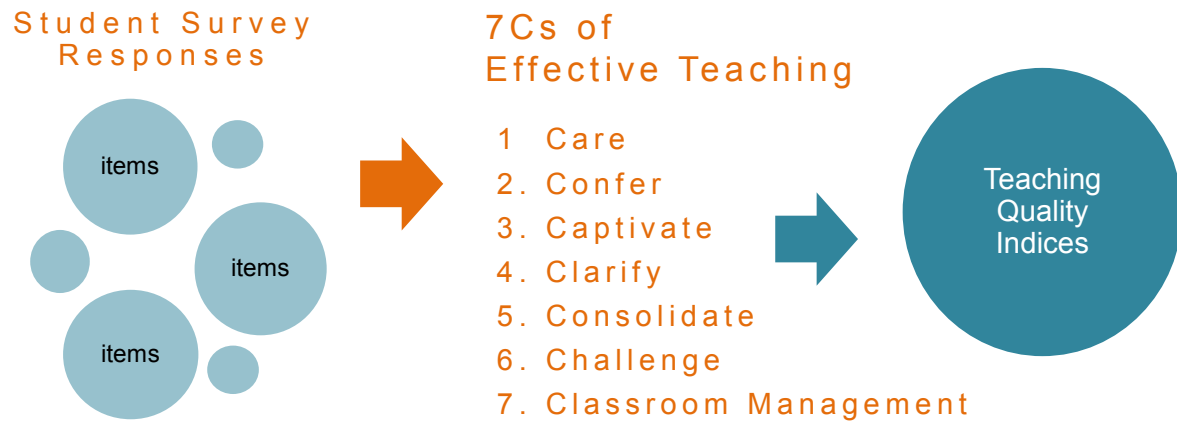
We examine how seven distinct components of teaching influence a number of agency-related factors, other things equal. Conventional wisdom would predict that the aspects of teaching we feature are positively associated with all types of learning outcomes. The empirical findings are mostly consistent with this prediction. However, there are caveats. For example, some of the ways that teachers strive to be helpful and caring can be *agency dampers*, serving to reduce rather than bolster agency, other things equal. In addition, some teaching components that tend to be *agency boosters* have the potential to be stressful in ways that can threaten an otherwise ambitious teacher's resolve. The report raises issues for teacher training and professional support as well as for individual educators who are striving to be reflective practitioners.

Key Concepts

The data come from student responses to Tripod surveys. When a student responds to a Tripod survey, his or her responses are

Exhibit 2

Tripod 7Cs Framework



focused on *one designated classroom*. The items that measure teaching are conceptualized using the Tripod 7Cs™ framework as illustrated in Exhibit 2. In this framework, seven research-based components of teaching are represented using multi-item indices. The seven are:

1. *Care*—Teachers who *care* are emotionally supportive and interested in students.
2. *Confer*—Teachers who *confer* talk with students as well as welcome and respect student perspectives.
3. *Captivate*—Teachers who *captivate* make learning interesting and relevant.
4. *Clarify*—Teachers who *clarify* explain things clearly, provide informative feedback, and clear up confusion in order to make lessons understandable
5. *Consolidate*—Teachers who *consolidate* summarize and integrate learning.

6. *Challenge*—Teachers who *challenge* students press them to think rigorously and to persist when experiencing difficulty.
7. *Classroom Management*—Effective *classroom management* entails developing a respectful, cooperative classroom climate with on-task behavior.

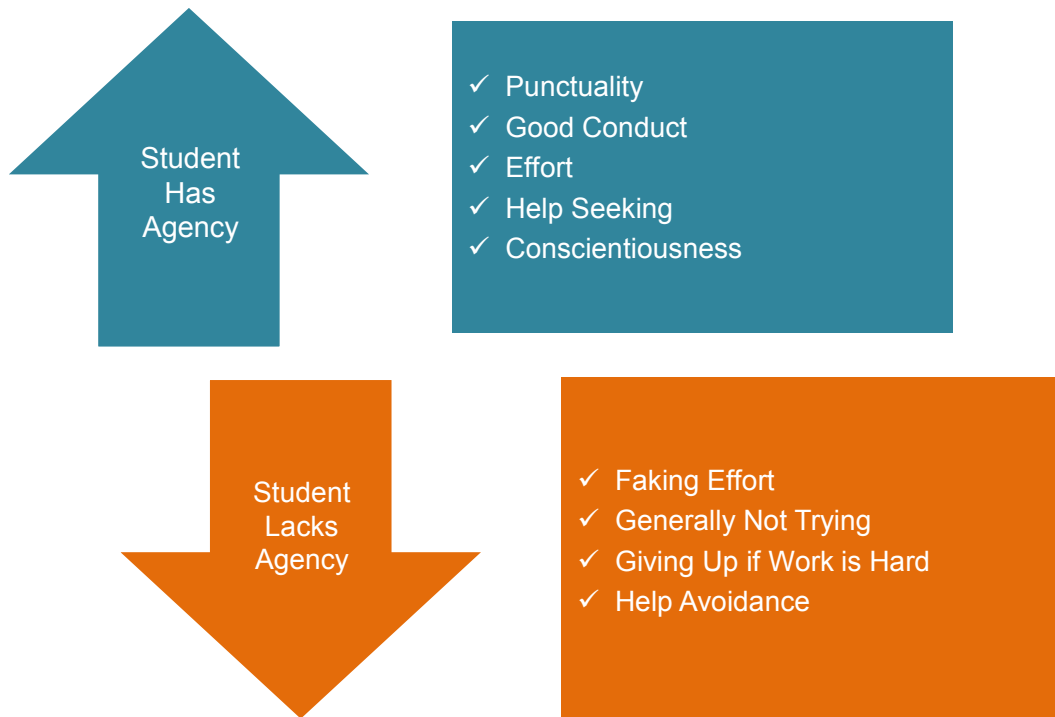
In addition, *clarify* has sub-components pertaining to *lucid explanations*, *informative feedback*, and *clearing up confusion*. *Challenge* has sub-components associated with *requiring rigor* and *requiring persistence*. Each 7Cs component and sub-component is represented by an index composed of multiple survey items.

The report examines how 7Cs components of teaching quality predict individual-level behaviors that express agency and a number of emotions, motivations, and mindsets that awaken and support the growth of agency. Most are associated with classroom engagement. Indices for the behavioral expression of agency, illustrated in Exhibit 3, include the following:

- ▶ *Punctuality*—The student tries hard to arrive to class on time.
- ▶ *Good Conduct*—The student is cooperative, respectful, and on task.
- ▶ *Effort*—The student pushes themselves to do their best quality work.
- ▶ *Help Seeking*—The student is not shy about asking for help when needed.
- ▶ *Conscientiousness*—The student is developing a commitment to produce quality work.
- ▶ Disengagement Behaviors (that are the opposite of agency):
 - *Faking Effort*—The student pretends to be trying hard when they actually are not.
 - *Generally Not Trying*—The student is generally disengaged, exerting little effort.
 - *Giving Up if Work is Hard*—The student fails to persist in the face of difficulty.
 - *Avoiding Help*—The student does not ask for help even when they know they need it.

Exhibit 3

Student Expressions of Agency



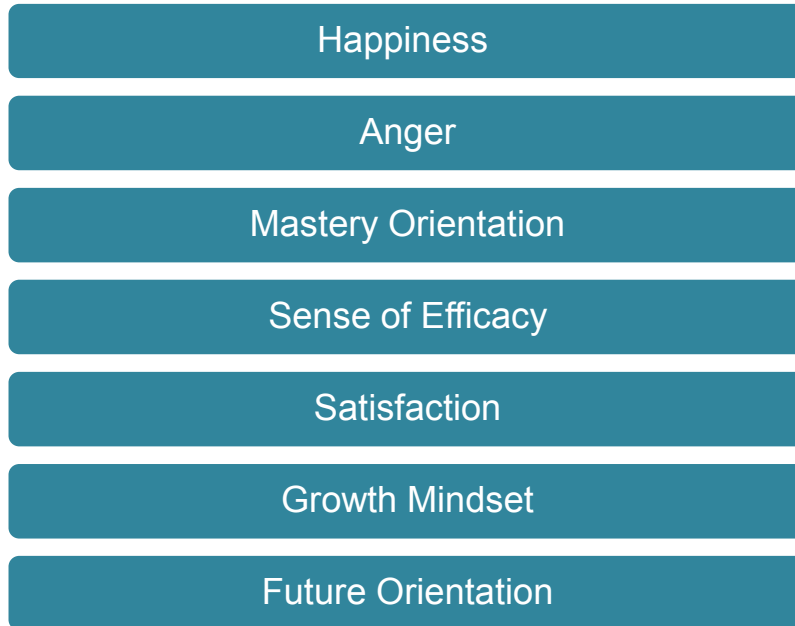
All of the above pertain to the specific classrooms in which students complete surveys. It seems likely that each has implications as well for how students express agency in other settings. For conscientiousness, in particular, we address not only whether the student is learning to be more conscientious in the surveyed classroom, but also whether they consider themselves generally to be a conscientious person. We are interested in the degree to which teaching affects both learning of conscientiousness and changes in identity self-perceptions of conscientiousness.

Indices representing emotions, motivations, and mindsets that may awaken and support the growth of agency (Exhibit 4) include:

- ▶ *Happiness*—The student regards the classroom as a happy place to be.
- ▶ *Anger*—The student experiences feelings of anger in class (which may boost or dampen agency).

Exhibit 4

Emotions, Motivations, and Mindsets Associated with Agency




- ▶ *Mastery Orientation*—The student is committed to mastering lessons in the class.
- ▶ *Sense of Efficacy*—The student believes they can be successful in the class.
- ▶ *Satisfaction*—The student is satisfied with what they have achieved in the class.
- ▶ *Growth Mindset*—The student is learning to believe they can get smarter.
- ▶ *Future Orientation*—The student is becoming more focused on future aspirations (e.g., college).

The report grounds these concepts in the research literature and embeds them in organizing frameworks.

Methodology for Teaching Quality

An important methodological feature is in the way we use student responses to represent instructional quality. Each Tripod 7Cs teaching



quality component is measured using a classroom-level average of student responses. However, we make an important adjustment. Specifically, each classroom average for a teaching quality measure excludes the 7Cs teaching quality responses of the individual student whose emotion, motivation, mindset, or behavior is being predicted. This is important because it makes the teaching quality measure for each student more objective.

Findings and Interpretations

Empirical results show that each agency-related factor is predicted by a distinct pattern of 7Cs components. Furthermore, each 7Cs component and subcomponent plays an interesting role in the total story that emerges. It is a story in which students' emotions, motivations, mindsets, and agency-expressive behaviors are predicted by what teachers *ask* of them as well as by what teachers *give*. In the education research literature, what we call *asking* is associated with academic and behavioral *press*, while what we call *giving* is associated with social and academic *support*.

Agency Dampers and Agency Boosters

Our analysis identifies *agency dampers* as teaching practices that tend to reduce or dampen agency-related factors, and *agency boosters* as teaching practices that tend to increase them. *Agency dampers* appear mainly in relationship to *care*, *confer*, and the subcomponent of *clarify* called *clear up confusion*.

Other things equal, the effects of *care*, *confer*, and *clear up confusion* are statistically significant in the *undesirable* direction for some agency-related variables. The negative findings seem to indicate imbalances between what teachers *give* students (i.e., supports), on the one hand, versus what they *ask* of students (i.e., press), on the other hand. Specifically:

- ▶ *Care* may sometimes entail coddling (e.g., in an effort to be emotionally supportive, some teachers may be especially accommodating and this may depress student conduct as well as academic persistence);

- ▶ *Conferring* may sometimes lack clear purposes (e.g., *confer* may operate primarily as a way of *caring*, *clarifying*, and *challenging*. When all of the other 7Cs components are being held constant, *confer* cannot be serving as a way of carrying them out and may therefore lack a clear purpose; conversations without clear purposes may undermine student effort and reduce time on task);
- ▶ *Clearing up confusion* may sometimes occur too automatically (e.g., too much teacher problem solving or clearing up confusion can deny students adequate incentive and opportunity to diagnose and correct their own misunderstandings, ultimately diminishing effort and conscientiousness).


Each of these *agency dampers* involves ways that support for students may inadvertently lower levels of press for performance.

An important category of *agency boosters* involves asking students to think more rigorously by striving to understand concepts, not simply memorize facts, or by being able to explain their reasoning. We find that when teachers challenge students to think more rigorously, they show:

- ▶ Greater mastery orientation (i.e., personal commitment to learning);
- ▶ Increased effort;
- ▶ Increased growth mindset (i.e., belief that effort grows ability);
- ▶ More conscientiousness; and
- ▶ Higher future aspirations (e.g., interest in going to college).

In these ways, requiring rigor is an *agency booster*. However, we find that when teachers insist on rigorous thinking they risk at least slightly diminishing students' happiness in class, feelings of efficacy, and satisfaction with what they have achieved.

These slightly dampened emotions in the short-term seem small prices to pay for the motivational, mindset, and behavioral payoffs we predict to result from requiring rigorous thinking. Combinations of teaching practices—for example, appropriately differentiated assignments, lucid explanations of new material, and curricular



supports to accompany demands for rigor—seem quite relevant in this context.

Annual Gains Versus Aspirations

An interesting and important contrast concerns the combination of Tripod 7Cs components that most strongly predicts annual learning gains versus an increased interest in going to college.

Prior research by the Bill & Melinda Gates Foundation Measures of Effective Teaching (MET) project has shown that annual achievement gains on standardized tests are predicted most strongly by aspects of academic press, specifically the Tripod 7Cs components for *challenge* and *classroom management*.³ The component for *challenge*, with its subcomponents for *require rigor* and *require persistence*, asks students to think hard and work hard. The component for *classroom management* asks students to behave themselves and stay on task. Thinking rigorously, sustaining effort, and staying on task may be sufficient to produce substantial learning gains, even if the teacher-student relationship is not what it should be and the interest and relevance of the material is relatively low.

However, being pressed to learn and experiencing learning growth may not produce a love of learning or a desire to continue learning over a lifetime. We find that the strongest predictors of increased college aspirations (future orientation) are the 7Cs components for *care* and *captivate*. When teachers connect with students in personal ways and make lessons fascinating, aspirations for future learning tend to rise.

The point is *not* that there is a trade-off between annual learning gains and higher aspirations. Instead, the point is that the most important *agency boosters* for each are different. A balanced approach to instructional improvement will prioritize *care* and *captivate* to bolster aspirations, and *challenge* and *classroom management* to strengthen the skills that standardized tests measure. Certainly, without the skills that tests measure, college aspirations might be futile. But in turn, without college aspirations, the payoffs to those skills may be limited.

3 Visit www.metproject.org to find MET project reports.

Ten Practical Implications for Teaching to Develop Agency

Based upon the findings above, we have distilled the following ten implications for teaching list in Exhibit 5 and described below:

1. **Care:** Be attentive and sensitive but avoid coddling students in ways that hold them to lower standards for effort and performance and may thereby undermine agency. At the same time, express interest in students' lives, activities, and aspirations so they will feel known and inspired to follow your example.
2. **Confer:** Encourage and respect students' perspectives and honor student voice but do so while remaining focused on instructional goals. Avoid extended discussions that have no apparent purpose and thereby fail to model self-discipline and effective agency.
3. **Captivate:** Strive to make lessons stimulating and relevant to the development of agency. If some students seem unresponsive, do not assume too quickly that they are disinterested. Some students—and especially those who struggle—purposefully hide their interest and their effort.
4. **Clarify with lucid explanations :** Strive to develop clearer explanations—especially for the material that students find most difficult. Also, related to both *clarify* and *captivate* and consistent with the themes in this report, develop lucid explanations of how the skills and knowledge you teach are useful in the exercise of effective agency in real life.
5. **Clarify by clearing up confusion:** Take regular steps to detect and respond to confusion in class but do so in ways that share responsibility with students. Strike a balance between keeping hope alive for struggling students, on the one hand, versus pressing them to take responsibility for their own learning, on the other hand.

Exhibit 5

Implications for Teaching Across the 7Cs to Develop Agency

1. CARE	Be attentive and sensitive, but don't coddle.
2. CONFER	Encourage and respect students' perspectives, but don't waste class time with idle chatter.
3. CAPTIVATE	Make lessons stimulating and relevant while knowing that some students may hide their interest.
4. CLARIFY: <ul style="list-style-type: none">- Clear up Confusion- Lucid Explanations- Instructive Feedback	Take regular steps to detect and respond to confusion, but don't just tell students the answers.
5. CONSOLIDATE	Regularly summarize lessons to help consolidate learning.
6. CHALLENGE: <ul style="list-style-type: none">- Require Rigor- Require Persistence	Anticipate some resistance but persist.
7. CLASSROOM MANAGEMENT	Achieve respectful, orderly, and on task student behavior by using clarity, captivation, and challenge instead of coercion.

6. **Clarify with instructive feedback:** Give instructive feedback in ways that provide scaffolding for students to solve their own problems. Through instructive feedback, you provide the type of support that enables students to develop and express agency by correcting their own work, solving their own problems, and building their own understandings.
7. **Consolidate:** Regularly summarize lessons to remind students what they have learned and help them encode understanding in memory, even when they seem reticent or disinterested. Consolidation helps to solidify student learning.
8. **Challenge by requiring rigor:** Press students to think deeply instead of superficially about their lessons. Set and enforce learning goals that require students to use reasoning and exercise agency in solving problems. Expect some pushback from students who might prefer a less stressful approach. Try increasing *captivation* and *care* in combination with rigor in order to help mitigate the tension and make the experience more enjoyable.
9. **Challenge by requiring persistence:** Consistently require students to keep trying and searching for ways to succeed even when work is difficult. Emphasize the importance of giving their best effort to produce their best work as a matter of routine. Be confident that few things could be more important for helping your students to develop agency.
10. **Classroom Management:** Strive to achieve respectful, orderly, on task student behavior in your class by teaching in ways that clarify, captivate, and challenge instead of merely controlling students through intimidation or coercion.

CHAPTER 1: WHY PRIORITIZE AGENCY?

Success in life requires the capacity and propensity to take purposeful action. In other words, it requires *agency*.⁴ Sociologists identify constraints on agency in the form of structural conditions that limit opportunities.⁵ Nonetheless, we all know that agency is critically important. Quoting Albert Bandura:

*Through agentic action, people devise ways of adapting flexibly to remarkably diverse geographic, climatic and social environments; they figure out ways to circumvent physical and environmental constraints, redesign and construct environments to their liking . . . By these inventive means, people improve their odds in the fitness survival game.*⁶

Theorists Steven Hitlin and Glen Elder Jr. distinguish four overlapping conceptions of agency. First, there is the general notion that all human beings have free will. This is what Hitlin and Elder call “existential agency.” It is an “existential capacity for exerting influence on our environments.”⁷

Second, while much of human behavior involves habits or simply following routines, there are frequently instances in which routine behaviors are inadequate responses to the circumstances that present themselves. Responding involves what Hitlin and Elder call “pragmatic agency.” For example, a student misses the school bus and expresses pragmatic agency to find alternative transportation.

Third, humans develop commitments to social identities—constellations of things that we believe or want to believe about ourselves or the ways that we wish to be perceived by others. The actions that we take to maintain, develop, or communicate our identities are expressions of what Hitlin and Elder term “identity agency.” For example, a student receives a bad grade, then tries to influence classmates to believe that the reason was low effort, not low ability. The student is trying to sustain a social identity as smart.

And finally, the actions that we take to affect future outcomes are what Hitlin and Elder call “life-course agency.” For example, working

4 Bandura, 2001, p. 2.

5 See references on this point in Hitlin & Elder, 2007.

6 Bandura, 2001, p. 22.

7 Op. cit., p. 175.

hard to accumulate job-relevant skills, striving for grades that will qualify for college admission, exploring college and career options, and preparing for college entrance exams, are all expressions of life-course agency for secondary school students.


Young people from every background deserve teaching that enhances their agency. Looking past existential agency, we focus in this report on the ways that components of teaching affect pragmatic, identity, and life-course agency. Because the latter three are often overlapping and difficult to distinguish observationally, most references in the text are simply to agency. However, following the literature, we distinguish having a *sense of agency*—defined as a belief that personal actions will effectively achieve the outcomes we desire—from actually *expressing agency* to achieve those outcomes.⁸ In addition, we acknowledge that agency may sometimes be directed toward negative ends, but our focus in this report is on agency that is healthy and positive.

Parents and teachers help to inspire, enable, and focus both a sense of agency and expression of agency by the opportunities, instruction, and guidance they provide. For example, Kristen and Jarrell are hypothetical eighth graders.

Kristen is academically passive. She feels indifferently about most of her assignments and does not seem to care whether she arrives on time to classes. She feels uncertain about her ability and resists setting goals for academic performance. Her effort in school is sporadic and she almost never asks for help. Even when she works hard, she hides her effort and pretends to be disinterested. When work is challenging, she tends to give up. She worries about her future, but feels powerless to chart her own path.

Jarrell was once like Kristen, but his teachers helped him develop agency. Now in eighth grade, he arrives to classes on time and pays attention. Still lagging many of his peers academically, he stays focused on his own goals and progress, not others'. When confused, he seeks help, expecting that confusion will be temporary. He looks

8 These are standard distinctions. See Hitlin & Elder or Bandura, op. cit.



forward to high school and is optimistic about the future. Jarrell anticipates finding a career in which he can be successful and someday raising a family.

Our findings concern how distinct components of teaching can help adolescents become more like Jarrell than Kristen.

Emphasis on the non-academic outcomes of schooling has increased over the past few years. Books by journalist Paul Tough (2012) and economists James Heckman, John Eric Humphries, and Tim Kautz (2014) are recent examples of how journalists and scholars alike now insist that cultivating success-oriented mindsets and behaviors should be priorities alongside academic skills. Authors of various intellectual orientations refer variously to noncognitive factors,⁹ character,¹⁰ grit,¹¹ growth mindset,¹² and soft skills.¹³ All agree that a narrow focus on skills that standardized tests measure is an imbalance that needs correcting.¹⁴

Awareness that success in life requires agency is not new. However, we have tended as a society to treat its development as mostly a family and community responsibility, not a focus for policymakers, curriculum developers, or teacher preparation programs. Even experienced teachers are mostly on their own in finding ways to understand, develop, and support agency. We propose in this report that developing agency-related factors should be a unifying theme of education policy and practice.

The central question in the report is, *“How do distinct components of teaching influence the development and expression of agency-related factors in sixth to ninth grade classrooms?”*

The analysis distinguishes seven major components of teaching and finds that the combination most important for predicting any given agency-related factor is distinctive. Teaching quality components are highly correlated with one another, but with many thousands of

9 Farrington et al., 2012.


10 Heckman, Humphries, & Kautz, 2014; Tough, 2012.

11 Duckworth, Peterson, Matthews, & Kelly, 2007; Tough, 2012.

12 Dweck, 2007.

13 Duncan & Dunifon, 2012.

14 Our emphasis on agency and associated measures is not intended to downplay academic knowledge or the skills that standardized tests measure.

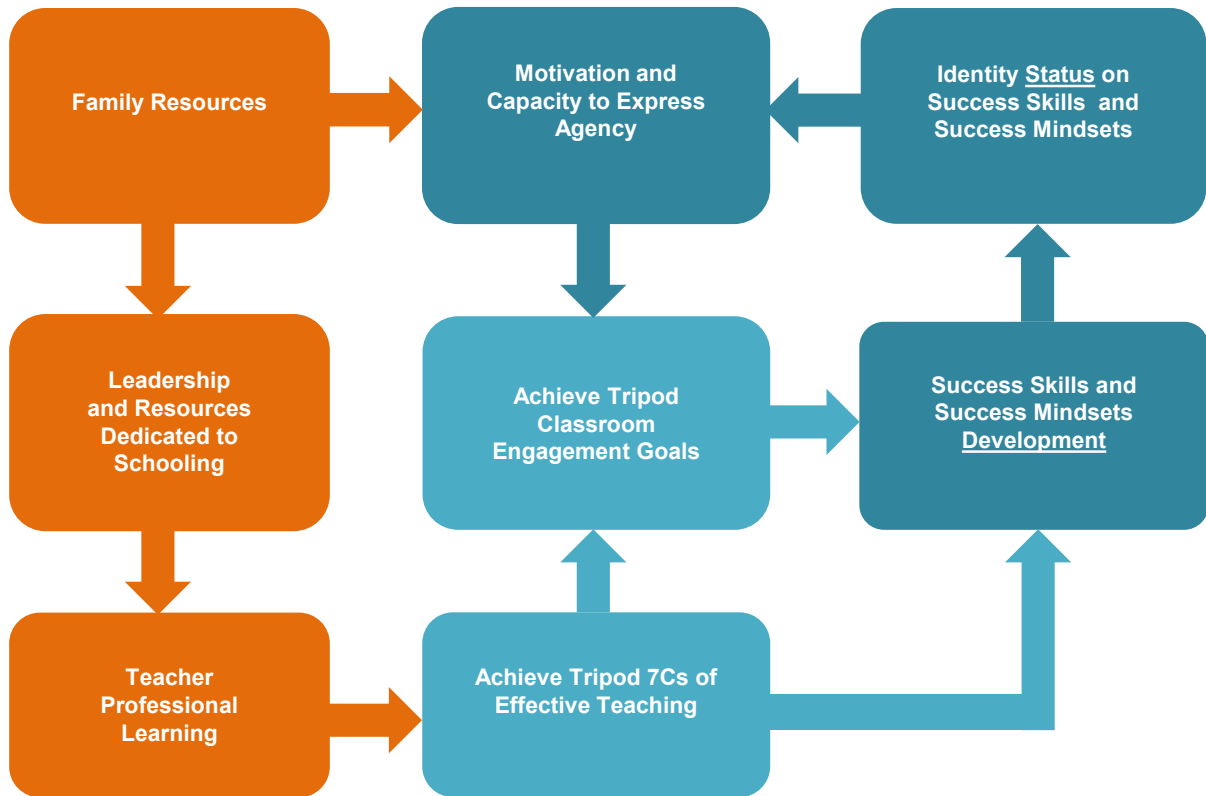


classrooms, we have the statistical power to disentangle a nuanced story. We show estimated results separately for three grade-point average (GPA) ranges: A range students; B range students; and students with GPAs of C and below. However, most of the story applies in similar ways to all three groups. There are statistical controls for race/ethnicity, gender, subject, class size, and several family background measures. Empirical findings in the report are mostly consistent with what conventional wisdom would predict, but with some important caveats. There are implications for teacher training and professional supports as well as for reflective practitioners.

Multiple frameworks provide conceptual structure for the analysis. First, we use the Tripod 7Cs™ of Effective Teaching to conceptualize instruction. Second, the Tripod Engagement Goals framework is our way of conceptualizing classroom engagement. The third cluster of concepts combines what we call success skills and mindsets. The 7Cs effective teaching components, engagement goals, success skills, and mindsets can be understood as building blocks in a classroom, school, and community system for developing agency. As a summary illustration, Exhibit 6 suggests that community resources and leadership can foster improved professional learning for educators. Resulting improvements in teaching quality can increase classroom engagement and the development of success skills and mindsets. These, in turn, enhance the levels (status) of such skills and mindsets that students have for increasing student agency. In addition, the exhibit suggests that agency is affected directly by home and community factors that operate outside of schools. The latter are beyond the scope of this report, but important to include in our thinking.

Exhibit 6

Developing Agency in a Classroom, School, and Community System



CHAPTER 2: THE TRIPOD 7CS OF EFFECTIVE TEACHING

The Measures of Effective Teaching Study

The Bill and Melinda Gates Foundation project on Measures of Effective Teaching (MET) is the most ambitious study of teaching quality ever conducted. From 2009-2013, many measures of instructional quality—including multiple observational protocols, test-score gains from multiple years, and several administrations of Tripod student surveys—were used to study almost 3,000 classrooms from schools in Charlotte-Mecklenburg, North Carolina; Dallas, Texas; Denver, Colorado; Hillsborough County (including Tampa), Florida; Memphis, Tennessee; and New York City, New York. Value-added test-score gains were the learning-outcomes upon which the study focused.¹⁵

The central finding of the first MET report in 2010 was that Tripod student ratings of teaching quality were good predictors of value-added test score gains.¹⁶ Later reports showed they also were correlated with classroom observation ratings by trained professionals.¹⁷

MET found that Tripod student ratings of teaching quality were more reliable than either value-added test score gains or classroom observations by trained professionals. Exhibit 7 is based on a table in the first MET report.¹⁸ It shows that student ratings were consistent between different classrooms (with different groups of students) taught by the same teacher.¹⁹ Each 7Cs component of the Tripod survey, as well as the overall Tripod 7Cs composite, was roughly twice as stable between classrooms as the value-added measures.

The present report uses a slightly updated version of the Tripod metrics that MET used.

15 In addition, a few Tripod engagement items provided the basis for limited attention to student engagement.

16 See: Kane, McCaffrey, & Staiger, 2010.

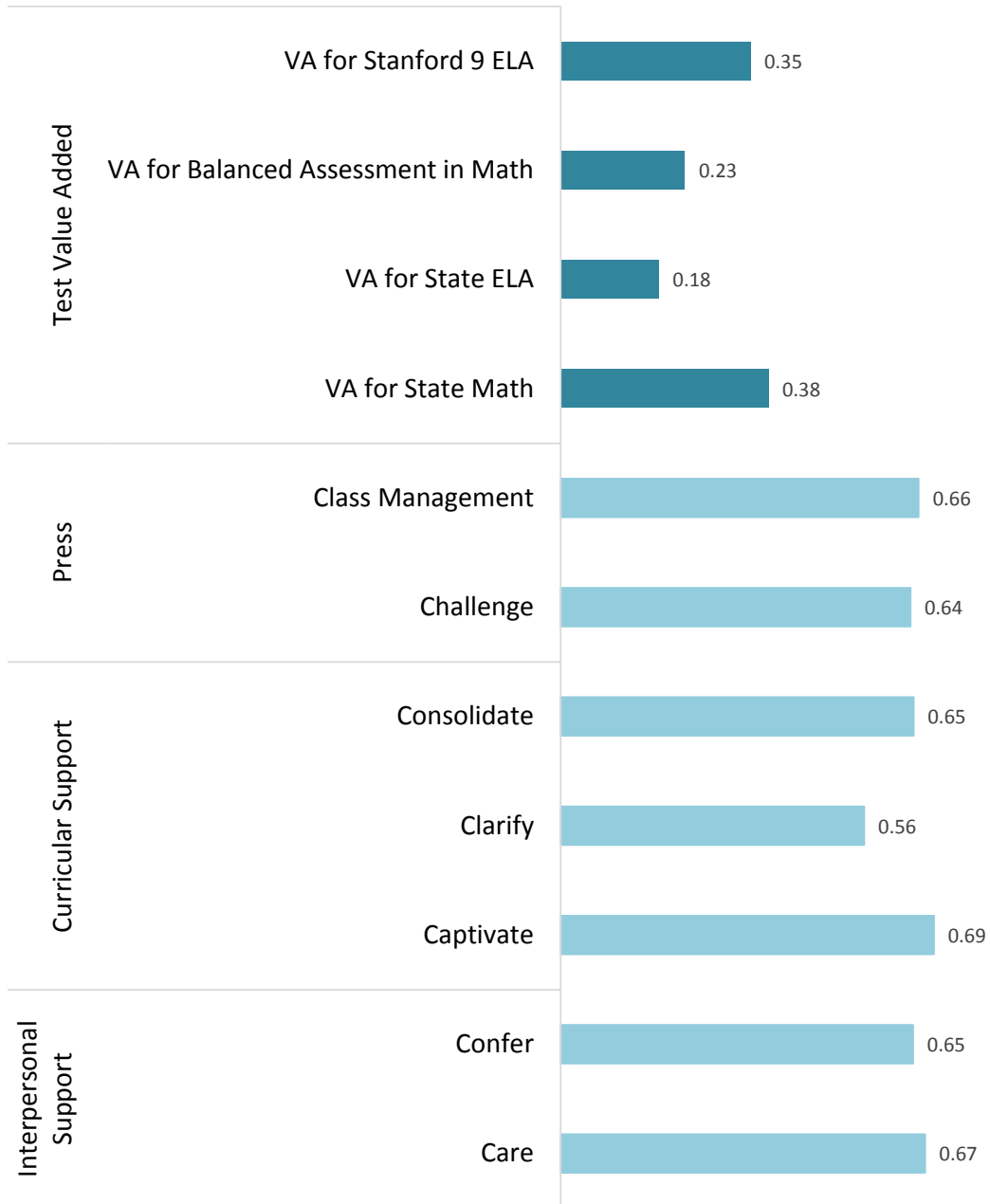
17 See the various reports at www.metproject.org. Also see Ferguson with Danielson, 2014 and various chapters in Kane, Kerr, & Pianta, 2014.

18 Kane et al., 2010, pg. 22.

19 One set of exams were the participating districts' standard accountability exams for math and English language arts (ELA). The other math measure was the Balanced Assessment in Math and the other ELA measure was the Stanford 9. The BAM and Stanford 9 were included in MET to make sure that findings were generalizable beyond accountability tests.

Exhibit 7

Stability of Value-Added vs. Tripod 7Cs Teaching Effectiveness Measures (Within-Teacher, Between-Classroom Correlations, 2009–10)*



The Tripod 7Cs Components

The first five components of the Tripod 7Cs framework—*care*, *confer*, *captivate*, *clarify*, and *consolidate*—are elements of student support. *Care* and *confer* provide *personal support*, while *captivate*, *clarify*, and *consolidate* provide *curricular support*. The final two components are *challenge* and *classroom management*. Both constitute *press*.²⁰ *Press* entails requiring students to do what may seem difficult—for example, to persist instead of giving up when work is hard, to think rigorously (for example, to really understand, not just memorize), and to stay on task when they might prefer doing otherwise.

Each 7Cs component has a strong basis in research. Furthermore, as a group, the components cover much of what education research has identified as important to effective teaching.

Personal Support

Care describes teacher behaviors that foster emotional safety. *Caring* teachers are approachable, empathetic, and genuinely interested in the well-being of their students. They listen attentively to students' concerns, providing emotional support and, when appropriate, taking steps to alleviate challenges that students find stressful.²¹ Additionally, *caring* teachers demonstrate interest in students' lives both inside and outside of school.²² Example items include “*My teacher seems to know if something is bothering me,*” and “*My teacher in this class makes me feel that s/he really cares about me.*”

Confer refers to welcoming and valuing students' viewpoints. Teachers who *confer* effectively insist on student participation through the use of such techniques as strategic questioning and discussion-based lessons.²³ They also value students' unique perspectives.²⁴ Believing


20 For more on the 7Cs and the support versus press distinction, see Ferguson with Danielson, 2014.

21 Alder, 2002; Allen, 1995; Ferreira & Bosworth, 2001; Hamre & Pianta, 2005; Hayes, Ryan, & Zsellar, 1994.

22 Allen, 1995; Cothran & Ennis, 2000; Cothran, Kulinna, & Garrahy, 2003; Ferreira & Bosworth, 2001; Hayes et al., 1994; Shouse, 1996.

23 Applebee, Langer, Nystrand, & Gamoran, 2003; Reeve & Jang, 2006; Rubie-Davies, 2007.

24 Allen, 1995; Allen, Pianta, Gregory, Mikami, & Lun, 2011; Cothran & Ennis, 2000; Cothran et al., 2003; Reeve & Jang, 2006; Schacter & Thum, 2004; Schmuck & Schmuck, 1991.



that the teacher values their views provides positive reinforcement for the effort it takes a student to formulate and express a perspective. Further, if students are asked to respond not only to the teacher, but to one another as well, a learning community may develop in the classroom, with all of the attendant social reinforcements. *Conferring* helps a teacher deliver on several of the other Tripod 7Cs components. Example items include: “*My teacher gives us time to explain our ideas,*” and “*My teacher wants us to share our thoughts.*”

Curricular Support

Captivate describes teacher behaviors that make instruction stimulating, instead of boring. *Captivating* teachers select and deliver material in ways that make it interesting, often by connecting it to things about which students already care.²⁵ Example items include: “*My teacher makes lessons interesting,*” and “[*negatively worded*] *This class does not keep my attention--I get bored.*”

Clarify concerns teacher behaviors that promote understanding. Teachers who *clarify* effectively break down complex phenomena into simpler components;²⁶ present material in a logical sequence;²⁷ and work through example problems when appropriate.²⁸ They frequently check for understanding through techniques such as rigorous questioning,²⁹ quizzes,³⁰ and close monitoring of student work.³¹ At the same time, they provide frequent, specific feedback that lets students know what they are doing well, what they need to work on, and how to improve.³² Our statistical analyses treat *clarify* as three multi-item subcomponents:

25 Assor, Kaplan, & Roth, 2002; Bush, Kennedy, & Cruickshank, 1977; Crumpton & Gregory, 2011; Garnett & Tobin, 1988; Hulleman, Godes, Hendricks, & Harackiewicz, 2010; Hulleman & Harackiewicz, 2009; Mottet, Garza, Beebe, Houser, Jurrells, & Furler, 2008.

26 Cruickshank & Kennedy, 1986; Kennedy, Cruickshank, Bush, & Myers, 1978; Wilson & Corbett, 2001.

27 Kennedy et al., 1978; Metcalf & Cruickshank, 1991; Schacter & Thum, 2004.

28 Bush et al., 1977; Cruickshank & Kennedy, 1986; Hines, Cruickshank, & Kennedy, 1985; Metcalf & Cruickshank, 1991; Rodger, Murray, & Cummings, 2007; Schacter & Thum, 2004.

29 Culbertson, 2012; McElhone, 2012; Schacter & Thum, 2004.

30 Culbertson, 2012; Garnett & Tobin, 1988.

31 Hines et al., 1985; Metcalf & Cruickshank, 1991; Schacter & Thum, 2004.

32 Allen, Gregory, Mikami, Lun, Hamre, & Pianta, 2013; Butler, Godbole, & Marsh, 2013; Culbertson, 2012; Elawar & Corno, 1985; Schacter & Thum, 2004.

1. Lucid explanations: e.g., *My teacher explains difficult things clearly.*
2. Instructive feedback: e.g., *The comments that I get on assignments help me understand how to improve.*
3. Clear up confusion: e.g., *If you don't understand something, my teacher explains it another way.*

Consolidate concerns helping students to organize material for reasoning and for encoding in memory. Teachers who *consolidate* effectively review and summarize material in ways that highlight the main points.³³ An example item concerning *consolidate* is: “*My teacher takes time to summarize what we learn each day.*” Teachers who excel at *consolidation* talk about the relationships between ideas and help students to see patterns, especially as related to their everyday lives or things students already understand. *Consolidation* enhances retention.³⁴

Press

Challenge concerns pressing for effort and rigor—making sure that students work hard and think hard. Teachers who *challenge* effectively are good at pushing students academically³⁵ and they tend not to give up when students have trouble.³⁶ They also ask open-ended questions³⁷ and require students to explain,³⁸ justify,³⁹ or expand their answers.⁴⁰ Our statistical analyses treat *challenge* as two multi-item subcomponents:

1. Require rigor: e.g., *My teacher asks students to explain more about the answers they give.*
2. Require persistence: e.g., *My teacher doesn't let people give up when the work gets hard.*

33 Armento, 1977; Bush et al., 1977; Culbertson, 2012; Hines et al., 1985; Kallison, 1986; Kennedy et al., 1978; Metcalf & Cruickshank, 1991; Rodger et al., 2007; Schacter & Thum, 2004; Wright & Nuthall, 1970.

34 Bransford, Brown, & Cocking, 1999.

35 Alder, 2002; Cooper, 2013; Cothran et al., 2003; Lee & Smith, 1999; Shouse, 1996.


36 McElhone, 2012.

37 Applebee et al., 2003; Rubie-Davies, 2007.

38 Wolf, Crosson, & Resnick, 2005.

39 Applebee et al., 2003.

40 McElhone, 2012.



Classroom Management concerns keeping a classroom under control and on task. Teachers who are good at *classroom management* consistently enforce clear and efficient rules, guidelines, and routines.⁴¹ They monitor student behavior and intervene before problems occur or as rapidly as possible once they appear.⁴² Additionally, they minimize distractions and interruptions and maintain students' active participation.⁴³ Survey items for *classroom management* include: “*My classmates behave the way my teacher wants them to,*” and “*Our class stays busy and doesn't waste time.*”

In summary, the Tripod 7Cs components and subcomponents that we use empirically to predict agency-related factors comprise *care*, *confer*, *captivate*, three subcomponents of *clarify*, *consolidate*, two subcomponents of *challenge*, and *classroom management*.

41 Emmer, 1982; Evertson & Emmer, 1982; Evertson, Emmer, Sanford, & Clements, 1983; Matsumura, Slater, & Crosson, 2008; Schacter & Thum, 2004; Wang, Haertel, & Walberg, 1993; Wentzel, 2002.

42 Emmer, 1982; Evertson et al., 1983; Garnett & Tobin, 1988; Kounin, 1970.

43 Alder, 2002; Kounin, 1970; Wang et al., 1993.

CHAPTER 3: AGENCY AND AGENCY-RELATED FACTORS

This report was commissioned partly in response to a 2012 publication from Consortium on Chicago School Research (CCSR), entitled, *Teaching Adolescents to Become Learners – the Role of Noncognitive Factors in Shaping School Performance: A Critical Literature Review*.⁴⁴ The CCSR team identified five categories of noncognitive factors related to academic performance:


1. **Social Skills** (e.g., Empathy, Cooperation, Assertion, Responsibility)
2. **Academic Behaviors** (e.g., Going to Class, Doing Homework, Participating)
3. **Academic Mindsets** (e.g., Sense of Belonging, Growth Mindset, Sense of Efficacy)
4. **Learning Strategies** (e.g., Study Skills, Goal Setting, Self-Regulated Learning)
5. **Academic Perseverance** (e.g., Grit, Tenacity, Self-Control)

Camille Farrington and her co-authors wrote the following:

In addition to content knowledge and academic skills, students must develop sets of behaviors, skills, attitudes, and strategies that are crucial to academic performance in their classes, but that may not be reflected in their scores on cognitive tests. Other researchers have described these factors as noncognitive skills; we broaden the term to noncognitive factors to go beyond a narrow reference to skills and include strategies, attitudes, and behaviors. (p. 2)

The CCSR report distills theories and evidence on ways that noncognitive factors: (1) are related to academic performance; (2) are malleable; (3) might be affected by classroom contexts; (4) link to clear strategies for classroom practice; and (5) could, if changed, significantly narrow gaps in achievement by gender or race/ethnicity. Near the end of their report, they conclude: “While some very interesting and promising work has emerged recently, the state of the research evidence and the development of practice models still lag far behind the high level of interest” (p. 74). They assert a “need for more research on

44 Farrington et al., 2012.



the role of school and classroom context in students' development and demonstration of noncognitive factors" (p. 75).

Based on the evidence they were able to assemble, the CCSR authors concluded tentatively that many of the factors they studied *are* related to academic performance, *are* malleable, *can* be affected by classroom contexts, *do* implicate strategies for classroom practices, and *could*, if changed, narrow gaps in achievement. Patterns in this study support their judgments. Exhibit 8 relates each category of CCSR noncognitive factors to two or more agency-related factors from the present report, all of which are introduced below.

The Tripod Engagement Goals Framework

The Tripod Engagement Goals framework combines elements of *emotional engagement*, *behavioral engagement*, and *motivational mindsets*—each a key construct in educational psychology⁴⁵ that has been shown to predict achievement,⁴⁶ positive development,⁴⁷ and school completion.⁴⁸ We address emotional and behavioral engagement and motivational mindsets in the context of five goals for student engagement, adapted from a classic life-cycle model by Erik Erikson (Exhibit 9). Erikson's model describes life-cycle development in the context of family, school, and society.

An embedded temporal structure in the framework helps in conceptualizing classroom processes. Similar to the life-cycle sequence in Erikson's work—wherein different issues peak in their salience during particular life phases—each Tripod goal tends to peak in relevance during a particular part of the school year but also remains relevant even when not peaking.

The logically intuitive sequence follows a fairly predictable path. Students arrive at the beginning of the term on their best behavior. They are eager but apprehensive and hoping their new teachers will be

45 Connell & Wellborn, 1991; Fredericks, Blumenfeld, & Paris, 2004; Jimerson, Campos, & Greif, 2003; Lawson & Lawson, 2013.

46 Connell, Spencer, & Aber, 1994; Fredericks et al., 2004; Shernoff & Schmidt, 2008; Wang & Holcombe, 2010.

47 Li & Lerner, 2011; Van Ryzin, Gravely, & Roseth, 2009; Wang & Eccles, 2013.

48 Balfanz, Herzog, & Mac Iver, 2007; Fredericks et al., 2004; Janosz, Archambault, Morizot, & Pagani, 2008; Wang & Eccles, 2013.

Exhibit 8

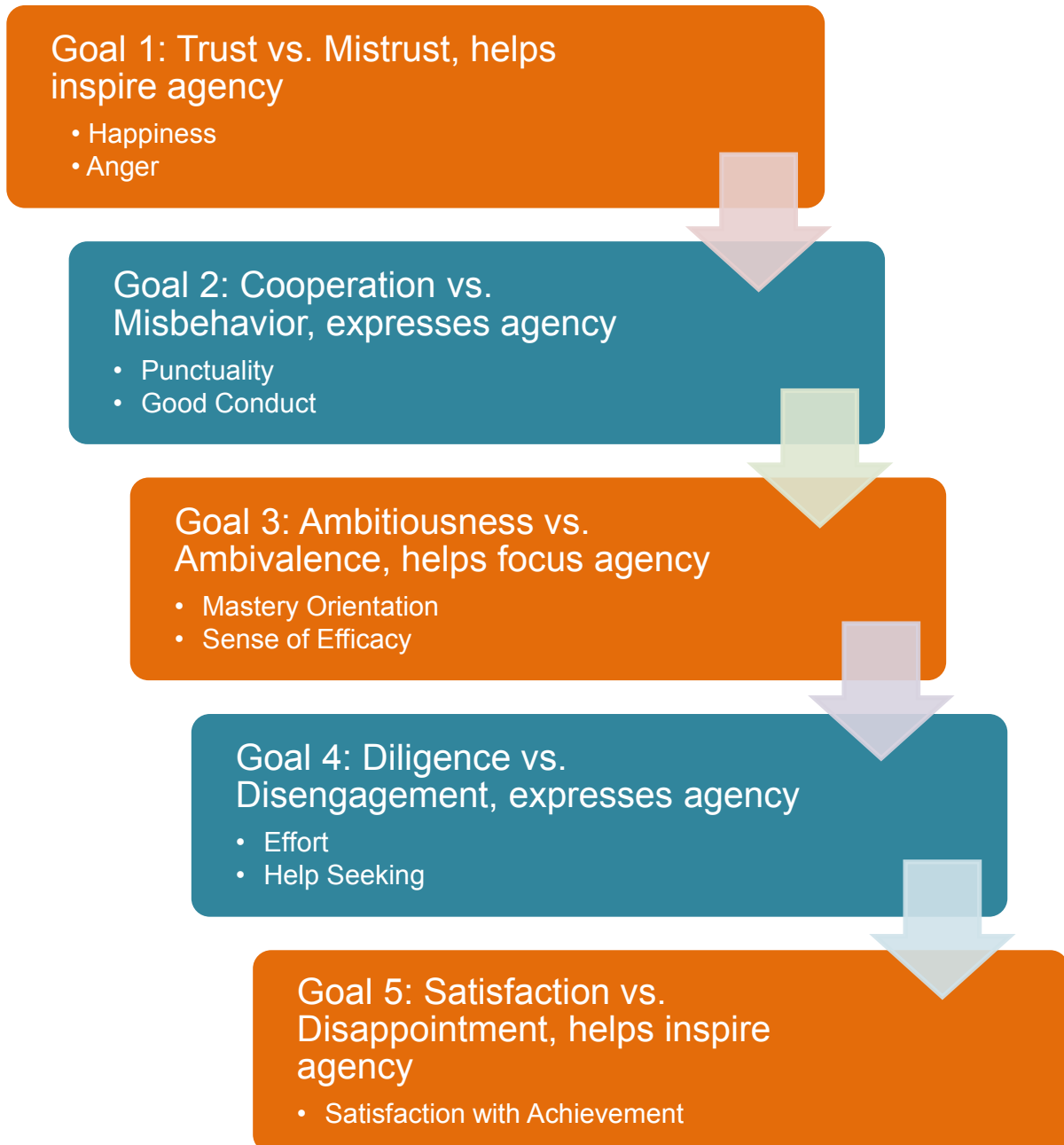
A Crosswalk between CCSR Noncognitive Factors and Tripod Agency-Related Factors

	CCSR NONCOGNITIVE FACTORS				
	1. Social Skills	2. Academic Behaviors	3. Academic Mindsets	4. Learning Strategies	5. Academic Perseverance
TRIPOD: AGENCY-RELATED MINDSETS					
Happiness & Anger in Class					
Mastery Orientation & Efficacy					
Growth Mindset					
Satisfaction with Performance					
TRIPOD: EXPRESSIONS OF AGENCY					
Conscientiousness					
Punctuality					
Future Orientation					
Good Conduct					
Help Seeking					
Effort & Perseverance					
Lack of Disengagement Behaviors					

*Adapted from Kane, McCaffrey, & Staiger, (2010), p. 22.

Exhibit 9

Classroom Engagement Goals and Agency



friendly and reassuring, not mean or intimidating (Tripod Goal 1: Trust vs. Mistrust). After a few days, one or more students decide to break some rules or act out, as if to test whether their teacher is serious about managing conduct (Tripod Goal 2: Cooperation vs. Misbehavior). Gradually, students come to understand the power structure in the class and learn what will be tolerated, or not. If the teacher proves effective at managing conduct, students become appropriately focused on their work. All along, they have been developing aspirations, informal plans, and expectations concerning how much they will learn and what marks they will receive. Their goals for the term come increasingly into focus (Tripod Goal 3: Ambitiousness vs. Ambivalence) as their interest in testing the teacher passes. As weeks and months go by, students try to achieve their performance aspirations, but face challenges that test their resolve. They face decisions to keep striving, or lower their goals (Tripod Goal 4: Diligence vs. Disengagement). As the term nears the end, students take stock of what they have achieved and evaluate their performance (Tripod Goal 5: Satisfaction vs. Disappointment).

Of course, real life is more complex; individual students may experience backsliding and differential rates of progress compared to their peers. Still, the sequence is an important conceptual element of the Tripod Engagement Goals framework and should influence how educators apply what they learn from this report.

Goal 1: Trust vs. Mistrust

The first Tripod goal in the domain of *emotional engagement* is for students to feel psychologically safe. How a student rates on this goal is associated with feelings that researchers often classify under *belonging* or *relatedness*. For example, in their self-system process model, Connell and Wellborn (1991) define relatedness as “the need to feel securely connected to the social surround and the need to experience oneself as worthy and capable of love and respect” (p. 51). Critical dimensions of the concept include the emotional quality of a student’s relationships with important peers and their perceived need for closer relationships. In practice, relatedness is often operationalized as feelings of acceptance and belonging,⁴⁹ which encompass being

49 Connell et al., 1994; Furrer & Skinner, 2003.

included, liked, and respected.⁵⁰ Students are likely to express greater agency in settings where they feel a sense of belonging.

Scholars who focus on student *emotional engagement* often conceptualize it as affective reactions to class or school.⁵¹ Some also assess interest,⁵² positive affect or happiness,⁵³ enjoyment,⁵⁴ boredom,⁵⁵ frustration,⁵⁶ or anxiety.⁵⁷ In the Tripod model, Trust represents the extent to which students feel emotionally positive and psychologically safe in the classroom. We operationalize it here with variables measuring a student's happiness and anger in the specific classroom setting to which the survey applies. The following are examples of items in the Trust vs. Mistrust goal category:

- ▶ Happy in Class: *This class is a happy place for me to be.*
- ▶ Angry in Class: *Being in this class makes me feel angry.* [Reversed.]

Happiness and anger may energize a student in ways that bolster agency or foster complacency in ways that dampen it. For example, feelings of happiness or anger—perhaps about classmates' or teachers' behaviors—may increase or decrease a student's propensity to feel and then act upon a sense of agency aimed at sustaining or changing those behaviors. Generally, the specific ways that emotions awaken and support agency will depend upon how those emotions are related to some of the motivations and mindsets that we address below.

Goals 2 and 4: Cooperation vs. Misbehavior & Diligence vs. Disengagement

We treat cooperation and diligence as distinguishable goals, but both are associated with what school engagement researchers call behavioral engagement. Behavioral engagement is defined as students' physical participation in class or school⁵⁸ and operationalized

50 Goodenow, 1993.

51 Skinner, Wellborn, & Connell, 1990.

52 Connell & Wellborn, 1991; Janosz et al., 2008; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003.

53 Connell & Wellborn, 1991; Ryan, Stiller, & Lynch, 1994.

54 Janosz et al., 2008; Shernoff et al., 2003.

55 Connell et al., 1994; Connell & Wellborn, 1991; Skinner, Marchand, Furrer, & Kindermann, 2008.

56 Furrer & Skinner, 2003; Skinner et al., 2008.

57 Skinner & Belmont, 1993; Skinner et al., 2008.

58 Fredericks et al., 2004.

as conduct,^{59,60} attendance,⁶¹ effort,⁶² and persistence.^{63,64} In Tripod surveys, cooperation assesses the extent to which students attend class regularly and behave appropriately. It is closely related conceptually to the Tripod 7Cs component for *classroom management*. Teachers who are good classroom managers are generally better at eliciting cooperation.

Diligence indicates the extent to which students try to do their best work, seek help when needed, and persist in the face of difficulty, as opposed to avoiding help, hiding effort, or holding back from doing their best. There are reasons to expect multiple 7Cs components to be important predictors of diligence. Ryan, Gheen, and Midgley (1998) write: “The distressing situation where low-efficacy adolescents avoid seeking help more than do their high-efficacy peers is ameliorated when teachers are concerned [according to a teacher survey] with their students’ social-emotional needs. This suggests that warm, supportive relationships empower low-efficacy students to risk asking for help” (p. 533). By “warm, supportive relationships,” they seem to be writing about *care*. However, we would add a caveat (anticipating our findings below): in order to inspire continued diligence, the help received needs to be effective and it needs to come only after the student has made an appropriate effort to decipher the answer on their own.

Examples of items that measure cooperation and diligence are:

- ▶ Conduct: *My behavior is a problem for the teacher in this class.* [Reversed.]
- ▶ Help Seeking: *I would ask the teacher for help if I needed it.*
- ▶ Effort: *I have pushed myself hard to completely understand my lessons in this class.*
- ▶ Hiding Effort: *Sometimes I pretend I’m not trying hard in this class, when I really am.*

59 Finn & Rock, 1997; Janosz et al., 2008; Ryan & Patrick, 2001.


60 Finn & Rock, 1997; Fredericks, Blumenfeld, Friedel, & Paris, 2003.

61 Finn & Rock, 1997; Janosz et al., 2008.

62 Connell et al., 1994; Finn & Rock, 1997; Furrer & Skinner, 2003; Klem & Connell, 2004; Marks, 2000; Patrick, Skinner, & Connell, 1993; Skinner & Belmont, 1993; Skinner et al., 2008; Skinner et al., 1990.

63 Furrer & Skinner, 2003; Patrick et al., 1993; Skinner & Belmont, 1993; Skinner et al., 2008; Skinner et al., 1990.

64 Connell et al., 1994; Connell & Wellborn, 1991; Finn & Rock, 1997; Fredericks et al., 2003; Furrer & Skinner, 2003; Klem & Connell, 2004; Marks, 2000; Patrick et al., 1993; Skinner & Belmont, 1993; Skinner et al., 2008; Vaquera, 2009.

- 
- ▶ Disengagement Behaviors (the opposite of agency):
 - Lack of Persistence: *In this class, I stop trying when the work gets hard.*
 - Help Avoidance: *If I were confused in this class, I would handle it by myself, not ask for help.*
 - Holding Back: *I sometimes hold back from doing my best in this class, because of what others might say or think.*

Conduct, help seeking, effort, and hiding effort all express agency. Hiding effort expresses agency in two distinct ways. First, the student is expressing agency by sustaining effort instead of reducing it in the face of social incentives to reduce effort. Second, by pretending not to try hard, the student is trying actively (even if awkwardly) to achieve a social goal, such as to avoid being teased for working so hard or to be perceived smart.

Finally, the three disengagement behaviors of not persisting, avoiding help, and holding back are often the result of discouragement. Under most circumstances, they can be considered the *opposite* of agency.

Goal 3: Ambitiousness vs. Ambivalence

This engagement goal category concerns *motivational mindsets*. The goal is that students should be ambitious instead of ambivalent or uncommitted.⁶⁵ Our empirical analysis for this goal is focused on mastery orientation and efficacy. As agency-related factors, mastery orientation and efficacy are very closely related to growth mindset.

Scholars who study motivation distinguish between *mastery-goal* orientations and *performance-goal* orientations.⁶⁶ The same student can rate high or low on both, or high on one and low on the other. Performance orientations tend to be either socially comparative (e.g., wanting to outperform others) or focused on affecting what others

65 Scholars working in the expectancy-value tradition tend to focus on achievement values, defining achievement value as the intrinsic value of a task to a student as well as the importance he or she ascribes to doing well on a given task (attainment value), his or her perceptions of a task's usefulness for the future (utility value), and his or her assessment of the degree to which the decision to engage in a task limits his or her ability to engage in other preferred tasks (Wigfield & Eccles, 2000). Our approach, however, has a different emphasis.

66 For example, see the review in Ames, 1992.

think (e.g., wanting to appear smart rather than stupid). Students who do not have a growth mindset, but who are nonetheless ambitious about achievement, tend to have a performance goal orientation, but not a mastery orientation.

Mastery orientation tends to be higher when students believe in the efficacy of effort, possess a growth mindset, and focus on intrinsic (as opposed to extrinsic) satisfaction. Discussing the expression of agency in classrooms and drawing upon work by Carol Dweck and others, Ames (1992) writes, “Active engagement is characterized by the application of effective learning and problem-solving strategies, and students’ use of these strategies is dependent on a belief that effort leads to success and that failure can be remedied by a change in strategy” (p. 263). In other words, whether students express agency *by actually applying* learning and problem-solving strategies, depends upon efficacy beliefs, not simply the desire to learn that researchers associate with having a mastery orientation.

The following are example items from the *ambitiousness vs. ambivalence goal* category:

- ▶ Mastery Goals: *One of my goals in this class has been to learn as much as I can.*
- ▶ Efficacy: *I’m certain I can master the skills taught in this class.*

A mastery goal orientation motivates agency, while a sense of efficacy makes acting on that motivation—in other words, enacting the *diligence* envisioned by engagement goal category 4—rational.

Goal 5: Satisfaction vs. Disappointment

The fifth Tripod engagement goal is for students to experience satisfaction with their performance instead of disappointment. The feeling of satisfaction may be based, for example, on having simply avoided failure in some cases and in other cases on the heightened sense of efficacy that comes from mastering difficult lessons. The goal is that students should experience such feelings throughout the school year but especially when taking stock at the end.

Exhibit 10

Success Mindsets, Success Skills, and Agency

Awaken & Support Agency	Enable Agency	Express Agency
<ul style="list-style-type: none">✓ Growth Mindset✓ Future Orientation	<ul style="list-style-type: none">✓ Executive Functioning✓ Academic Skills	<ul style="list-style-type: none">✓ Conscientiousness<ul style="list-style-type: none">▪ Attention to Quality▪ Good Time Use▪ Persistence▪ Being Organized

Survey statements related to this goal include:

- ▶ Satisfaction: *I am satisfied with what I have achieved in this class.*
- ▶ Perceived Learning: *In this class, we learn a lot almost every day.*
- ▶ Retrospective Efficacy: *I have been able to figure out the most difficult work in this class.*

These feelings and perceptions inspire agency by supporting a positive sense of anticipation regarding the gratification to come from future educational accomplishments.

Success Skills and Success Mindsets

Success skills help to enable agency, while success mindsets help to awaken and support it. Exhibit 10 summarizes the success skills and mindsets we believe are most critical to agency: academic skills, conscientiousness, growth mindset, and future orientation. Academic skills are listed because they are among the most important factors for enabling success. However, as indicated above, academic skills are not the focus of this report, aside from a brief discussion in

the results section concerning student perceptions that they learn a lot almost every day in the surveyed classroom.

Status vs. Development

Before describing the research underpinning Tripod’s measures of success skills and mindsets, it is important to draw a distinction between *status* and *development*. Most measures of success skills and success mindsets in the research literature are *status* indicators. They assess how students’ perceive themselves (e.g., “I am the type of person who...”). In contrast, development pertains to learning or growth and is not often directly measured in the literature. Exhibit 11 shows the distinction between development (e.g. “In this class we learn...”) as opposed to status (e.g. “I am the type of person that...”). As we seek to understand the development of agency, it stands to reason, as an hypothesis, that a student’s status in a particular domain should rise at least slightly more in classrooms where classmates agree strongly that they are developing skills or mindsets in that same domain.

Conscientiousness

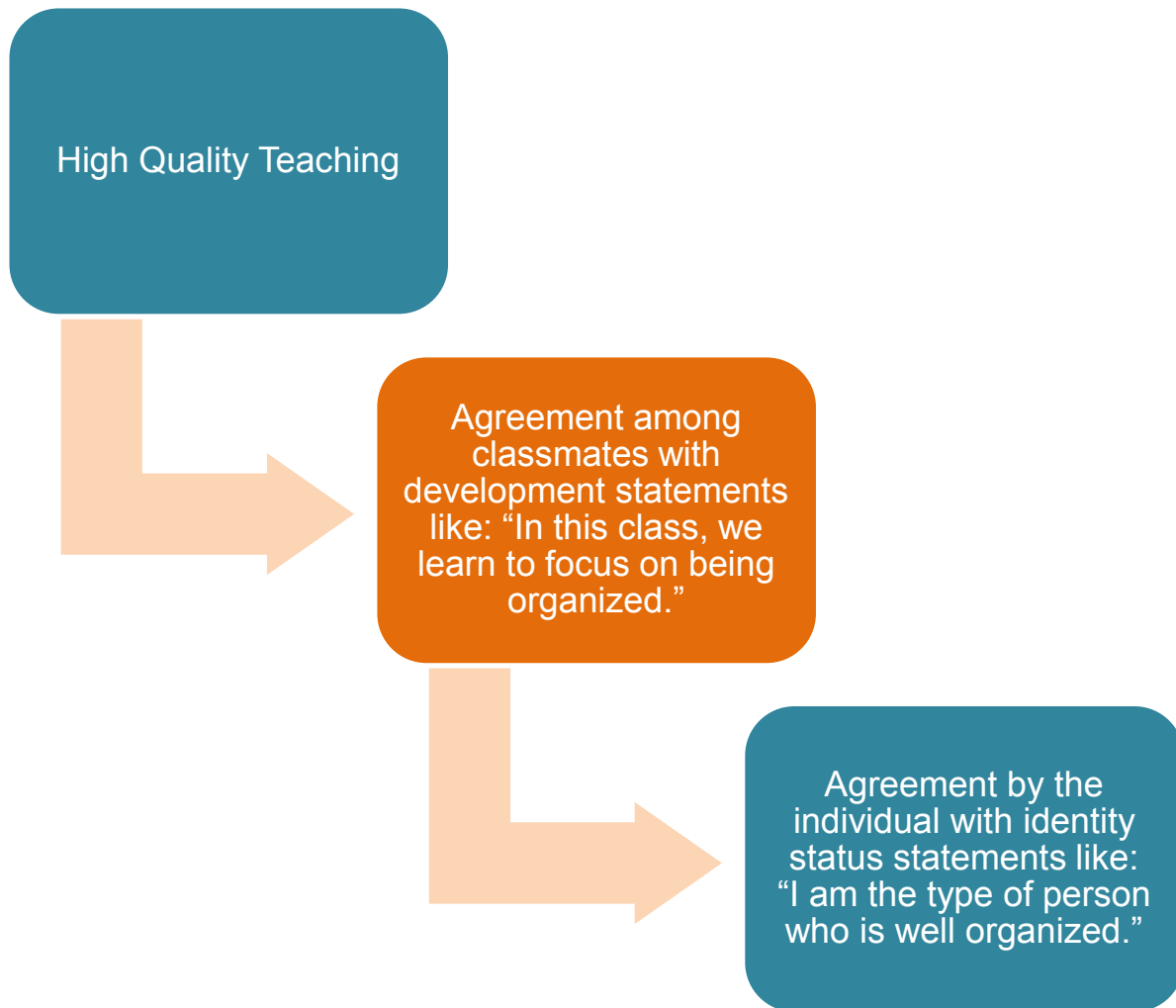
What we call conscientiousness in this report is closely related to skills that neuropsychologists associate with executive functions. A literature review by Jurado and Roselli (2007) reports general agreement that executive functions enable goal formulation, planning, the execution of goal-directed plans, and effective performance. Paul Tough (2012) emphasized how brain-based foundations for executive functioning are established in early childhood. However, we also know that executive functions continue evolving across the lifespan as people interact in social environments, including in classrooms.

The executive function-related behaviors that we emphasize in this report concern being organized, persistent, disciplined in time use, and focused on producing quality work. These are the behaviors that personality psychologists associate with conscientiousness. Conscientiousness is one of the Big Five personality traits.⁶⁷ The others are openness, extraversion, agreeableness, and neuroticism. Of the five, researchers agree that conscientiousness is the most related to achievement. Aiming to clarify the underlying facets of

⁶⁷ MacCann, Duckworth, & Roberts, 2009.

Exhibit 11

How Teaching May Lead to Changes in Identity Status through the Development of Success Skills and Success Mindsets



conscientiousness, MacCann, Duckworth, and Roberts (2009) asked students from ages 13 to 19 to respond to items from a dozen distinct personality models that claimed to measure conscientiousness. The facets of conscientiousness that emerged from their analysis were industriousness, perfectionism, tidiness, a tendency not to procrastinate, self-control, cautiousness, task planning, and perseverance. They also found that these facets of conscientiousness were related to class absences (negatively); sports absences (negatively);

disciplinary infractions (negatively); and high honors grades (positively). Industriousness and perfectionism were the most strongly related to the authors' measure of achievement.

The items in our analysis align with MacCann et al.'s facets for tidiness (our item for learning to be more organized), perfectionism (our item for learning to focus on the quality of work), industriousness and perseverance (our item for learning to keep trying when inclined to give up), and task planning, procrastination, and control (each related to our item on learning to use time more wisely). Conscientiousness helps to enable agency (if understood as a skill) and to express agency (if understood as a behavior) in service to the goal of high quality achievement.


Growth Mindset

The essence of growth mindset is a belief that effort begets ability. A number of experiments by Carol Dweck and others have shown convincingly that increasing a person's belief in effort-based ability—in other words, their growth mindset—can improve performance.⁶⁸ The studies have shown that a range of teaching behaviors, especially whether feedback from teachers is supportive and emphasizes effort as opposed to ability, can cultivate a growth mindset.⁶⁹ A shift from what researchers call a “fixed mindset” or an “entity theory of intelligence” to what they call a “growth mindset” can increase persistence, which can increase performance and skills.

To detect whether instruction in a surveyed classroom cultivates a growth mindset, Tripod measures the extent of agreement with the statement, *“In this class, students learn to believe that they can get smarter.”* In the present study, we use two items from our efficacy index to measure whether the student believes that effort-based ability applies in the specific classroom where they do the survey: *“Even if the work in this class is hard, I can learn it;”* and *“I’m sure I can do almost*

68 Also see the review related literature by Yeager & Walton, 2011.

69 For example, Blackwell, Trzesniewski, & Dweck (2007) used an eight-session workshop to teach middle school students that effort builds the brain like exercise builds muscles. A control group learned study skills instead of growth mindset. The treatment group improved markedly in math performance. The matched control group did not. The treatment group's advantage lasted through the rest of the school year. Mueller & Dweck (1998) showed that simply altering the form of praise can make a difference.



all of the work in this class if I don't give up." The latter serve as growth mindset *status* items, to accompany the growth-mindset *development* item, *"In this class, students learn to believe that they can get smarter."*


A growth mindset is a foundation for agency because it supports the sense of possibility upon which a sense of agency depends. The belief that needed skills and abilities can be developed, even if presently lacking, helps to awaken and support the expressions of agency that are often necessary for achieving ambitious aspirations.

Purpose and Future Orientation

We find surprisingly little research on the role that a sense of purpose plays in the lives of adolescents. However, Damon, Menon, and Bronk (2003) provide guidance on ways to conceptualize the topic. For one, they distinguish *meaning*, as a broad general concept, from *purpose*, which they regard as a narrower, more specific idea. Damon et al. (op.cit.) propose the following definition: "Purpose is a stable and generalized intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self." This definition, they suggest, highlights the following points (quoted verbatim):

1. Purpose is a goal of sorts, but it is more stable and far-reaching than low-level goals such as "to get to the movie on time" or "to find a parking space in town today."
2. Purpose is part of one's personal search for meaning, but it also has an external component, the desire to make a difference in the world, to contribute to matters larger than the self.
3. Unlike meaning alone (which may or may not be oriented towards a defined end), purpose is always directed at an accomplishment towards which one can make progress.

Although most research on meaning and purpose has focused on adults, the lack of purpose has been associated with "self-absorption, depression, addictions, deviant and destructive behavior, a lack of productivity, and an inability to sustain stable interpersonal relations" (Damon et al., p. 120). Some interesting work on the importance of purpose appears in literature on resilient children in dysfunctional environments. A common theme is that resilient children in stressful



environments are sustained by faith that their efforts will help them escape their circumstances.⁷⁰

Having a sense of purpose and future orientation is the final piece in this section of the Tripod framework. The *status* item in this category is, “*I have a clear purpose in my life—I know the types of things I want to achieve.*” The growth items are, “*Because of my teacher, I think more about going to college,*” and “*Because of my teacher, I think more about what I will do after high school.*” Clearly, a future orientation and sense of purpose are at the core of life-course agency, in particular. They provide the intellectual orientation and sense of direction that keep it focused.

Summary

Good teaching and positive student engagement foster greater development of success skills and success mindsets. Success skills include academic skills that are beyond the scope of this report to consider, and the executive function skills underlying the intentionality and expression of conscientiousness. Success mindsets include growth mindset, future orientation, sense of purpose, and the attitudinal underpinnings of conscientiousness. Our framework posits that by engaging students in the classroom and helping them learn success skills and success mindsets, teachers can increase the extent to which positive agency becomes ingrained as a stable aspect of students’ identities.

70 Bernard, 1991.

CHAPTER 4: MAJOR PATTERNS IN THE DATA

This section first describes the classes and grades in the study. Then it profiles students' backgrounds, including cross tabulations with grade point averages. Finally, we show detailed response patterns for a range of selected survey items. The latter cover student perspectives on classroom engagement, conscientiousness, future orientation, growth mindset, and Tripod 7Cs components.

Classes, Schools, and Districts

The primary data come from more than 300,000 Tripod student surveys taken in more than 16,000 sixth to ninth grade classrooms, 490 schools, 26 districts, 14 states, and all major regions of the nation, collected during the 2013-14 school year.⁷¹ In a few instances, we draw additional data from earlier years for issues that the 2013-14 survey did not cover.⁷²

Most students (60 percent) were surveyed in classrooms with twenty to twenty-nine students. Three percent were in classrooms with nine or fewer students; 26 percent were in classrooms with ten to nineteen students; and 11 percent were in classes with thirty or more students. The majority were surveyed in the core subjects of English language arts (ELA), mathematics, science, and social studies. Table 1 shows percentages by grade level for each of 10 subject classifications. Table 2 shows that the sample is racially and ethnically diverse.⁷³ There are 328,000 student observations in the data set. Some students and some teachers appear in the data multiple times, because some schools survey multiple classrooms per teacher. Most of the multivariate analyses below use a data file that includes 160,000 observations, so that no teacher or student is represented more than once.

71 Individual teachers receive classroom level reports and schools receive school-level summaries. In the process, student responses enter a master Tripod data set with records from other systems, from which parameters are developed for scaled scores that adjust for classroom composition and other characteristics beyond a teacher's control.

72 The latter include hiding effort and avoiding help. They also include matching teachers' responses to their students' in order to understand unexpected results in how a particular component of teaching quality predicts student behavior.

73 Any student who checked more than one racial or ethnic identity was labeled multi-racial. Ten percent indicated two affiliations and another five percent indicated three. Five percent indicated more than three. One very large district that is known to be multiracial accounts for many of the multi-racial respondents.

Table 1**Column percentages for surveys administered, by grade and subject**

	Sixth	Seventh	Eighth	Ninth
English Language Arts	23.6	22.3	21.9	17.9
Math	23.8	22.9	22.5	20.3
Science	15.7	16.7	16.9	16.0
Social Studies	14.6	16.1	16.5	14.0
Music	5.5	5.1	4.2	2.5
Gym	6.9	6.5	5.7	6.3
Art	3.4	2.4	3.0	2.6
Other	4.6	5.7	5.8	11.2
Health	0.9	1.2	1.0	5.0
Foreign Language	1.1	1.2	2.6	4.1
Total	100.0	100.0	100.0	100.0

Table 2**Race/ethnicity and gender composition of the data**

	Females	Males	Unknown	Total
Arab	975	1,189	138	2,302
Asian	3,836	3,754	355	7,945
Black	31,593	31,858	3,181	66,632
East Indian	256	326	44	626
Hispanic	11,053	10,760	1,489	23,302
Multi-Racial	21,577	18,444	3,239	43,260
Native American	1,007	1,034	112	2,153
Other	2,030	2,248	417	4,695
Pacific Islander	855	1,117	175	2,147
Unknown	3,756	5,500	10,785	20,041
West Indian	115	131	44	290
White	39,187	37,785	3,691	80,663
Total	116,240	114,146	23,670	254,056

The Students

Students were asked for their grade point average (GPA) across all classes at the end of the previous term. Table 3 shows the distribution of GPA responses by grade level, while Table 4 shows it by race/ethnicity. As in most contemporary samples, Blacks, Hispanics, Pacific Islanders, and Native Americans self-report lower grades on average than other groups.⁷⁴

Control variables in the analysis cover five aspects of students' backgrounds as proxies for socioeconomic status.⁷⁵ Tables 5 through 9 show the response patterns for each in turn, cross-tabulated with students' reported GPAs. The relationships to GPA are the expected. Specifically, students with higher GPAs are from households that have more computers, more books, more parental education, and are more likely to have a father living in the home. There is very little relationship of GPA to how frequently the family speaks a language other than English in the home. Other than for parental years of schooling, the percentages shown in these tables are for students with non-missing data for each respective variable.⁷⁶

Student Engagement

Table 10 shows selected engagement items organized under engagement goal categories. The data shown are for the top and bottom quartile classrooms as ranked using the composite Tripod 7Cs instructional quality rating.⁷⁷ Each quartile has roughly 75,000 students and 4,000 classrooms. As shown on the table, student responses range from Totally True to Totally Untrue. The Q1 and Q4 indicators at the

74 Tables 1 through 4 include one observation per student.

75 National Center for Education Statistics. November, 2012.

76 Missing data are due to nonresponses or uninterpretable responses. In a class of average size (i.e., 22.7 students), the number of students with missing data for each respective background variable was 2.6 for computers in the home; 1.5 for number of books in the home; 2.1 for language spoken at home; 6.5 for parental education; and 1.5 for whether the father resides in the home. These missing demographic data were replaced with the classroom average. Because students tend to be grouped in class with other similar students, we considered this the most accurate way of replacing missing background data without having to drop the affected observations.

77 The 7Cs composite rating gives each teacher a single summary rating formed from an equally-weighted average of the 7Cs component indices. In turn, each 7Cs component is an equally weighted average of included items.

Table 3**Self-reported grade point averages by grade level (percentages)**

	D Range	C Range	B Range	A Range	Total
Sixth	4	16	42	38	100
Seventh	5	18	42	35	100
Eighth	4	18	44	33	100
Ninth	5	19	43	33	100

Table 4**Self-reported grades, by race/ethnicity (percentages)**

	D Range	C Range	B Range	A Range	Total*
Arab	4	13	41	43	100
Asian	3	13	37	47	100
Black	5	24	46	25	100
East Indian	2	8	30	60	100
Hispanic	5	19	49	26	100
Multi-Racial	5	18	43	35	100
Native American	10	22	40	27	100
Other	8	23	41	27	100
Pacific	11	26	40	23	100
West Indian	8	15	38	39	100
White	3	13	40	43	100
Unknown	6	19	42	34	100

Table 5**Computers in the home (percentages)**

GPA	None	One	Two	Three	Total
C and Below	19	34	23	25	100
B Range	12	31	25	32	100
A Range	8	23	25	44	100
Total	12	29	25	35	100

Table 6 Books in the home (percentages)						
GPA	< 10	10 to 25	26 to 100	101 to 250	> 250	Total
C and Below	28	25	26	11	10	100
B Range	18	23	31	16	13	100
A Range	11	15	29	22	23	100
Total	18	21	29	17	16	100

Table 7 Does the father live in the home? (percentages)			
GPA	No	Yes	Total
C and Below	54	46	100
B Range	43	57	100
A Range	31	69	100
Total	41	59	100

Table 8 Years of schooling for the most educated parent (percentages)							
GPA	Less than HS	HS Grad	Some College	Bachelors	Grad School	No Response	Total
C and Below	10	22	14	13	11	31	100
B Range	6	19	15	17	16	26	100
A Range	4	13	13	20	27	22	100


Table 9 Parents speak a language other than English at home? (percentages)						
GPA	No	Seldom	Half the Time	Most of the time	Always	Total
C and Below	68	6	7	6	13	100
B Range	68	7	7	6	12	100
A Range	67	9	7	7	10	100
Total	68	7	7	6	11	100

Table 10

Comparing response patterns for selected engagement items for classrooms in the top and bottom quartiles of the composite Tripod 7Cs instructional quality distribution

SELECTED ITEMS		Totally Untrue	Mostly Untrue	Somewhat True	Mostly True	Totally True	Row Total
Goal 1: Trust vs. Mistrust							
1. This class is a happy place for me to be.	Q1	20	15	31	19	15	100
	Q4	3	4	17	26	49	100
2. Being in this class makes me feel angry.	Q1	37	23	21	9	9	100
	Q4	73	15	7	3	2	100
Goal 2: Cooperation vs. Misbehavior							
3. My behavior is a problem for the teacher in this class.	Q1	56	20	15	6	5	100
	Q4	70	17	7	3	3	100
4. I don't really care whether I arrive on time to this class.	Q1	51	20	15	7	6	100
	Q4	74	14	6	3	3	100
Goal 3: Ambitiousness vs. Ambivalence							
5. One of my goals in this class has been to learn as much as I can.	Q1	4	5	20	31	41	100
	Q4	1	1	9	27	61	100
6. I'm certain I can master the skills taught in this class.	Q1	5	6	24	31	34	100
	Q4	2	2	13	33	50	100
Goal 4: Diligence vs. Disengagement							
7. I have pushed myself hard to completely understand my lessons in this class.	Q1	5	8	28	31	27	100
	Q4	1	3	14	33	49	100
8. In this class, I stop trying when the work gets hard.	Q1	40	27	20	8	5	100
	Q4	61	23	9	5	3	100
9. I would ask the teacher for help, if I needed it.	Q1	5	6	19	29	41	100
	Q4	1	2	8	25	64	100
Goal 5: Satisfaction vs. Disappointment							
10. I am satisfied with what I have achieved in this class.	Q1	9	10	27	28	26	100
	Q4	3	3	13	29	51	100
11. I have been able to figure out the most difficult work in this class.	Q1	8	10	33	29	20	100
	Q4	2	4	21	37	36	100

left of each line of data indicate whether the tabulations come from the bottom 7Cs quartile of classrooms (Q1) or the top (Q4). As always in this report, for every individual student, the 7Cs measure is based on how the average of their classmates in the surveyed classroom (*not they themselves*) rate that classroom.



The largest differences between Q1 and Q4 classrooms happen to be for the first item on the table: “This class is a happy place for me to be.” If we combine the percent “Totally True” with the percent “Mostly True,” the sum is 85 percent for classrooms in Q4 versus 34 percent for Q1. Below, we examine some reasons that top-rated classrooms are so much happier places to be.

Imagine a student who responds “Totally Untrue,” “Mostly Untrue,” or only “Somewhat True” to the positively worded items in Table 10, and the opposite for the negatively worded items. That student:

- ▶ is not very happy in class;
- ▶ sometimes feels angry about being there;
- ▶ misbehaves in class;
- ▶ doesn’t care much about getting to class on time;
- ▶ seems only somewhat interested in learning;
- ▶ has not tried very hard to understand lessons;
- ▶ is not confident of being able master lessons;
- ▶ often stops trying when the work gets hard;
- ▶ avoids seeking help from the teacher; and
- ▶ often fails to understand the most difficult work in the class.

Evidence below has implications for how to help teachers reduce the percentage of youth who fit the above description.

Success Skills and Success Mindsets

Using the same Q4 and Q1 groupings as in Table 10, Table 11 shows selected development and status items for conscientiousness, future orientation, and growth mindset. Similar to Table 10, there are clear differences.

Development differences between Q1 and Q4 classes are larger than the identity status differences. This is expected, since identity perceptions should be less sensitive to contexts. For example, consider the status item, “*I am the type of person who focuses on the quality of my work,*” versus the corresponding development item, “*In this*


Table 11

Comparing Response Patterns for Selected Conscientiousness, Growth Mindset, and Future Orientation Items for Classrooms in the Top and Bottom Quartiles of the Composite 7Cs Instructional Quality Distribution

SELECTED ITEMS		Totally Untrue	Mostly Untrue	Somewhat True	Mostly True	Totally True	Row Total
Development of Conscientiousness							
1. In this class, students learn to be more organized.	Q1	17	19	37	17	10	100
	Q4	4	7	33	30	26	100
2. In this class, students learn to focus more on their quality of their work.	Q1	9	14	38	25	15	100
	Q4	1	4	21	35	38	100
3. In this class, students learn to try harder when the work becomes difficult.	Q1	10	14	36	25	16	100
	Q4	1	3	19	36	40	100
Conscientiousness Status							
4. I am the type of person who is well organized.	Q1	5	8	28	28	30	100
	Q4	3	7	23	31	37	100
5. I am the type of person who focuses on the quality of my work.	Q1	3	5	25	33	34	100
	Q4	1	3	16	34	45	100
6. I am the type of person who keeps trying even when I feel like giving up.	Q1	3	5	22	30	39	100
	Q4	2	3	13	30	52	100
Developing Future Orientation							
7. Because of my teacher, I think more about going to college.	Q1	17	16	28	19	20	100
	Q4	5	6	21	25	43	100
Sense of Purpose (Status)							
8. I have a clear purpose in my life—I know the types of things I want to achieve	Q1	3	4	16	23	53	100
	Q4	2	2	11	23	62	100
Development of Growth Mindset							
9. In this class, students learn to believe that they can get smarter.	Q1	8	12	36	26	19	100
	Q4	1	3	16	32	48	100
Sense of Efficacy (Status)							
10. Even if the work in this class is hard, I can learn it.	Q1	5	7	24	29	34	100
	Q4	1	2	10	28	58	100

class, students learn to focus more on the quality of their work.” For the development item, 60 percent of respondents in Q1 classrooms responded “Totally Untrue,” “Mostly Untrue,” or “Somewhat True,” compared to only 37 percent in Q4 classes. The difference is 23 percentage points. The analogous difference for the status item is 13.

Again, comparing the development versus the status patterns, we see that what students perceive about the development of skills and



mindsets differs more between Q4 and Q1 classrooms than what they perceive about their own identity status. At the same time, focused only on the status items, we see that student self perceptions tend to be more positive in Q4 classrooms than in Q1 classrooms. Psychologists are still learning about the degree to which a person's sense of identity varies across contexts and how experiences in different contexts over time cause identity to change. Could it be that high quality teaching improves identity status in the domains of conscientiousness, future orientation, and growth mindset? The findings that we present in the appendix indicate that the answer may be yes.

Tripod 7Cs Patterns

Table 12 shows selected items from each 7Cs category for the same Q1 and Q4 groupings as above. The most agreement in the Totally True column is for the *care* item, “*My teacher in this class makes me feel that s/he really cares about me.*” Sixty percent of respondents in Q4 classrooms give the Totally True response versus 21 percent in Q1 classrooms.

The smallest level of total agreement in Q4 classrooms is for the *classroom management* item, “*Our class stays busy and doesn't waste time,*” where total agreement is 30 percent in Q4 classrooms and only 13 percent in Q1 classrooms. Another item with relatively low agreement is, “*My teacher takes time to summarize what we learn each day,*” for *consolidate*. For this item, only 35 percent respond Totally True even in Q4 classrooms. In Q1 classrooms, two thirds indicate that the statement is Totally Untrue, Mostly Untrue, or only Somewhat True. It is the only item where more than 10 percent respond Totally Untrue or Mostly Untrue for Q4 classrooms.

Defining disagreement as Totally Untrue or Mostly Untrue, we note that 20 percent or higher disagreement is the norm in Q1 classrooms.

The only two items on Table 12 where fewer than 20 percent disagree in Q1 classrooms are in the *challenge* category. Specifically, 18 percent disagree with the item “*My teacher wants me to explain my answers—why I think what I think,*” and 14 percent disagree with the statement, “*In this class, my teacher accepts nothing less than our full*


Table 12

Comparing Response Patterns for Selected Tripod 7Cs Items for Classrooms in the Top (Q4) and Bottom (Q1) Quartiles of the Composite 7Cs Instructional Quality Distribution

SELECTED ITEMS		Totally Untrue	Mostly Untrue	Some-what True	Mostly True	Totally True	Row Total
CARE							
1. My teacher in this class makes me feel that s/he really cares about me.	Q1	11	12	32	25	21	100
	Q4	1	2	11	26	60	100
CONFER							
2. My teacher wants us to share our thoughts.	Q1	13	14	32	24	17	100
	Q4	2	4	17	31	46	100
CAPTIVATE							
3. My teacher makes lessons interesting.	Q1	19	16	31	19	14	100
	Q4	3	4	17	28	49	100
CLARIFY							
4. If you don't understand something, my teacher explains it another way.	Q1	10	11	28	27	23	100
	Q4	2	3	11	30	55	100
5. My teacher has several good ways to explain each topic that we cover in this class.	Q1	11	14	33	25	17	100
	Q4	2	3	15	33	48	100
6. The comments that I get on my work in this class help me understand how to improve.	Q1	12	12	31	25	21	100
	Q4	2	3	16	30	48	100
CONSOLIDATE							
7. My teacher takes the time to summarize what we learn each day.	Q1	17	18	31	20	14	100
	Q4	4	8	23	31	35	100
CHALLENGE							
8. My teacher wants me to explain my answers—why I think what I think.	Q1	9	9	30	27	26	100
	Q4	2	2	14	30	52	100
9. In this class, my teacher accepts nothing less than our full effort .	Q1	6	8	26	28	31	100
	Q4	2	3	12	29	55	100
CLASSROOM MANAGEMENT							
10. Our class stays busy and doesn't waste time.	Q1	14	17	34	22	13	100
	Q4	3	6	23	37	30	100

effort.” Again, these were the only items with less than 20 percent disagreement in Q1 classrooms. The same items had the highest levels of Totally True responses for Q1 classrooms, at 25 and 31 percent, respectively.

Conversely, the most disagreement in Q1 classrooms is for three items: 35 percent disagreed with, “*My teacher makes lessons interesting*”; 35 percent disagreed with, “*My teacher takes time to*



summarize what we learn each day”; and 33 percent disagreed with, “*Our class stays busy and doesn’t waste time.*” These also had the smallest percentages of Totally True responses in Q1 classrooms, at 14, 14, and 13 percent, respectively. The three are only slightly below the 17 percent total agreement for “*My teacher has several good ways to explain each topic that we cover in this class.*”

These responses reflect the highest agreement that teachers care and challenge students, and the lowest agreement that they keep students on task and present the material in ways that are captivating, clear, and coherent.

CHAPTER 5: ISOLATING THE INFLUENCE OF TEACHING

Each Tripod 7Cs component is measured by combining several survey items into a single index. Consider, for example, the 7Cs component for *captivate*. The items that measure *captivate* are:

- ▶ *This class does not keep my attention--I get bored* (Reversed).
- ▶ *My teacher makes learning enjoyable.*
- ▶ *My teacher makes lessons interesting.*
- ▶ *I like the ways we learn in this class.*


Students respond to each item on a five-point scale: Totally Untrue; Mostly Untrue; Somewhat; Mostly True; Totally True. The negatively worded item, “*This class does not keep my attention--I get bored,*” gets reverse coded. The index value for *captivate* is the average of standardized values for the four items in the index, rescaled to give the index a mean of zero and standard deviation of 1 in the aggregate student-level distribution. Each 7Cs index is, similarly, the average of multiple items.

Three Forms for Each 7Cs Component

We exploit the multi-level structure of the data by isolating multiple levels of variation in perceived teaching quality. We do this, for any given student, by constructing three different variables for each Tripod 7Cs component.⁷⁸

Consider *captivate*. One variable measures how the student responds to the *captivate* index, minus the average of classmates’ responses for that same index. The second variable is the average of his or her classmates’ responses, minus the average for students in the whole school. The third variable is the average for students in the school, minus the average for students in the district. Hence, we have a student level measure centered on the classroom mean, a classroom level measure centered on the school mean, and a school level measure centered on the district mean. Each of the teaching quality variables in the analysis and most of the statistical control variables are structured

⁷⁸ Each teacher and each student enter an estimated equation only once, so that between-class variation is the same as between-teacher variation.



in this way, to separately distinguish between-student, between-classroom, and between-school effects.⁷⁹

Can Students Really Distinguish the 7Cs Components?

Table 13 shows the results of using classmates' responses to all of the 7Cs components to predict student-level responses to each component, one at a time. Each column represents an estimated equation. Each predicts student-level responses to a particular 7Cs component, controlling for the same background variables as the rest of our analyses. The table shows that the classmates' average for each component (*please recall that we exclude the student's own responses from the calculation of the classmates' average*) is by far the strongest predictor of student-level responses for that component. The evidence that students are able to distinguish between Tripod 7Cs components is that they tend to agree in their assessments within each of the 7Cs domains. There is no other explanation for the pattern in Table 13.

Next, we use as predictors classmates' responses for all of the 7Cs components *except for the component being predicted* (with the same control variables as above). The results appear in Table 14. The table shows, for each 7Cs component, patterns in how the *other* 7Cs components predict it. The results remind us that the 7Cs are interdependent. Notice that *clarify* is the strongest predictor of student perceptions for four of the other six components: *care*, *captivate*, *consolidate*, and *challenge*. The two for which *clarify* is not the strongest predictor are *confer* (for which *care* is the strongest predictor) and *classroom management*, for which *challenge* and *captivate* are roughly equal as the strongest predictors.

As we interpret findings below, please keep in mind that the 7Cs components are interdependent and sometimes work through one another.

Accounting for Other Influences

Our analysis of agency-related factors includes multiple types of predictors including, most prominently, the Tripod 7Cs components.

⁷⁹ Enders & Tofighi, 2007.

Table 13

For each 7Cs component, the mean of classmates' responses for that same component is by far the strongest predictor. Coefficients from multi-level random effects multivariate regressions.*

Predictors: Classmates' Mean Responses	Dependent Variables: the Individual Student's Own Responses						
	CARE	CONFER	CAPTIVATE	CLARIFY	CONSOLIDATE	CHALLENGE	CLASSROOM MANAGEMENT
CARE	0.655	0.184	0.139	0.182	0.071	0.084	0.020
CONFER	0.055	0.445	-0.018	-0.030	0.014	0.043	-0.009
CAPTIVATE	0.115	0.030	0.624	0.136	-0.019	0.007	0.040
CLARIFY	0.083	-0.013	0.115	0.444	0.187	0.041	-0.046
CONSOLIDATE	-0.009	0.062	0.003	0.036	0.477	0.058	0.004
CHALLENGE	-0.065	0.021	-0.073	0.039	0.048	0.499	0.061
CLASSROOM MANAGEMENT	0.030	0.060	0.088	0.093	0.067	0.083	0.837

*N=One student from each of 14,461 classrooms; 9696 teachers; 486 schools; 26 districts.

However, we employ a host of statistical control variables as well. A number of the control variables are specified in the same three-level manner as the 7Cs components. In other words, there is one form of the variable that measures how the individual student differs from classmates; a second that measures how classmates differ from the rest of the school; and a third that measures how the school differs from the rest of the district. Each of the variables listed in Exhibit 12 appears in all three forms. Control variables that appear in only one form are class size, indicator variables for the student's grade level (six through nine), the subject of the class, whether the survey was taken

Table 14

For each 7Cs component, how the means of classmates' responses for the other components predict it. Coefficients from multi-level random effects multivariate regressions.*

Predictors: Classmates' Mean Responses	Dependent Variables: the Individual Student's Own Responses						
	CARE	CONFER	CAPTIVATE	CLARIFY	CONSOLIDATE	CHALLENGE	CLASSROOM MANAGEMENT
CARE		0.293	0.308	0.276	0.106	0.085	-0.018
CONFER	0.200		0.050	-0.017	0.074	0.176	0.057
CAPTIVATE	0.276	0.079		0.281	-0.025	-0.114	0.273
CLARIFY	0.382	0.020	0.607		0.397	0.323	-0.056
CONSOLIDATE	0.037	0.123	-0.006	0.126		0.173	-0.011
CHALLENGE	-0.064	0.166	-0.258	0.167	0.172		0.239
CLASSROOM MANAGEMENT	0.017	0.077	0.177	0.092	0.064	0.128	

*N=One student from each of 14,461 classrooms, 9696 teachers, 486 schools, 26 districts.

in the fall or the spring, and each of twenty combinations of race/ethnicity and gender.

Our main interest in this report is to understand the effects of teaching on agency-related factors. We believe that the best proxy for the teaching that a given student experiences in a given class is the average of his or her classmates' perceptions of teaching in that class (as a deviation from the whole-school average). Therefore, for each Tripod 7Cs variable, tables of results in the next chapter report estimated effects on agency-related factors using this between-class form of the variable.

Exhibit 12

Indices Used in Estimated Equations, each in Three Forms, Centered Around Classroom, School, and District Means


7Cs of Effective Teaching Variables	Other School Related Variables	Student Background Variables
1. CARE 2. CONFER 3. CAPTIVATE 4. CLARIFY – Clear Up Confusion – Lucid Explanations – Informative Feedback 5. CONSOLIDATE 6. CHALLENGE – Require Rigor – Require Persistence 7. CLASSROOM MANAGEMENT	Perceptions of peer teasing in the classroom GPA at the end of the last term (self-reported) Class size Subject	Number of computers in the student’s home Estimated number of books at home Frequency that a non-English language is spoken at home Household structure (percentage living with a dad in the home) Parental years of schooling (for the parent with the most schooling) Race/Ethnicity

Unless otherwise indicated, equations use random error terms for students, classrooms, and schools, and fixed intercepts for each of 26 school districts.⁸⁰

Interpreting the Multivariate Analysis

First, please keep in mind the “other things equal” interpretation of multivariate predictions. Specifically, we report results below

⁸⁰ Because no teacher or student appears more than once, there is no cross-classification and between-classroom variation is the same as between-teacher variation.



using bar charts. Each bar represents an estimated coefficient. Each estimated coefficient predicts the effects on a particular agency-related factor (e.g., effort in class) of changing one predictor variable (e.g., *captivate*) *while holding the other predictors constant*. As a reminder, we will occasionally repeat the phrase, “other things equal.”

Second, each panel of findings displays results for three separate GPA levels. Specifically, one set of estimates predicts outcomes only for students who reported prior-term grade point averages (GPAs) of C plus or lower. A second set predicts outcomes only for students who reported prior-term GPAs in the range from B minus to B plus. And, a third set is for students who reported prior-term GPAs in the A range. No teacher or student is included more than once in any estimated equation in this section of the report.⁸¹

81 For predictor variables, all classmates were included in computing classmates' averages, not restricted to those in the same GPA category.

CHAPTER 6: HOW TEACHING PREDICTS AGENCY-RELATED FACTORS

Each agency-related factor in the analysis below is predicted by a distinct combination of Tripod 7Cs components and subcomponents. Predictions are generated for students at three GPA levels, but in most cases, predictions are remarkably similar across GPA categories.

Bar graphs show the predictions. The length of each bar represents a multiple regression coefficient (a standard deviation effect size) for A, B, or C students. Statistical significance indicators are not shown because the vast majority of coefficients—even those with magnitudes below 0.05—are statistically distinguishable from zero. This is because the data set is large enough to isolate even very small effects.⁸²

Engagement Goal 1: Trust vs. Mistrust

Trust versus Mistrust concerns feeling psychologically safe and welcome in class, instead of nervous and insecure. In the Erikson model from which the engagement goals are adapted, *Trust vs. Mistrust* is the emphasis during the infancy stage of life. The primary focus is on whether the infant feels happy and secure, or not. Accordingly, as we apply the framework, Exhibit 13 has one panel for Happy in Class and another for Angry in Class. Examining the exhibit, we see that most of the estimated relationship of Tripod 7Cs teaching components to Happy in Class comes from *care* and *captivate*.

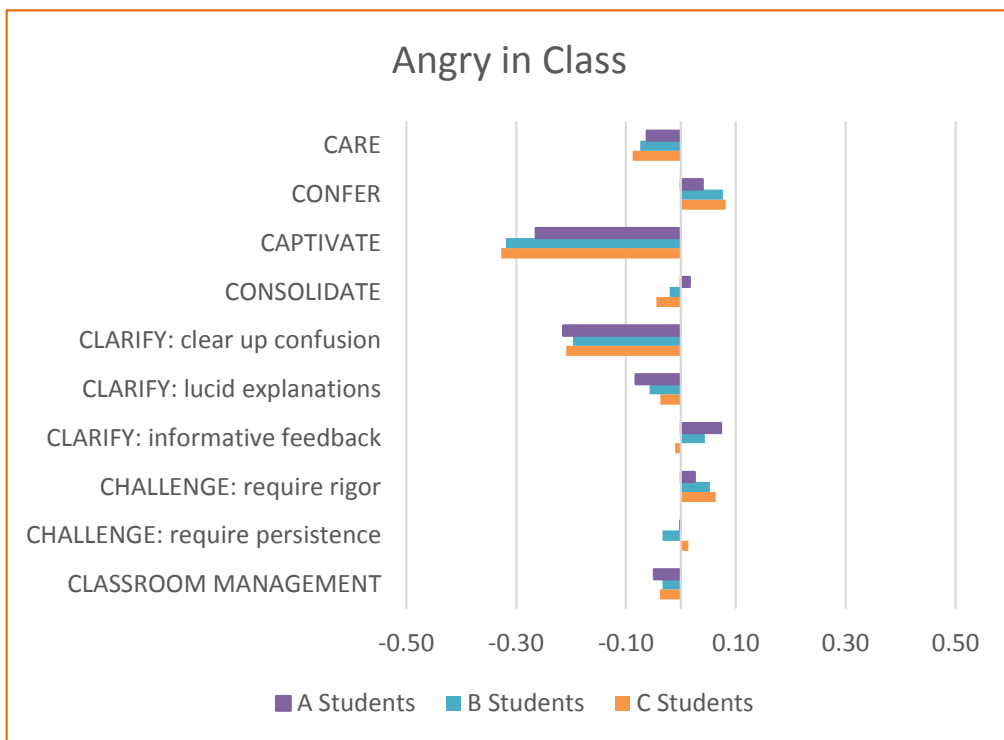
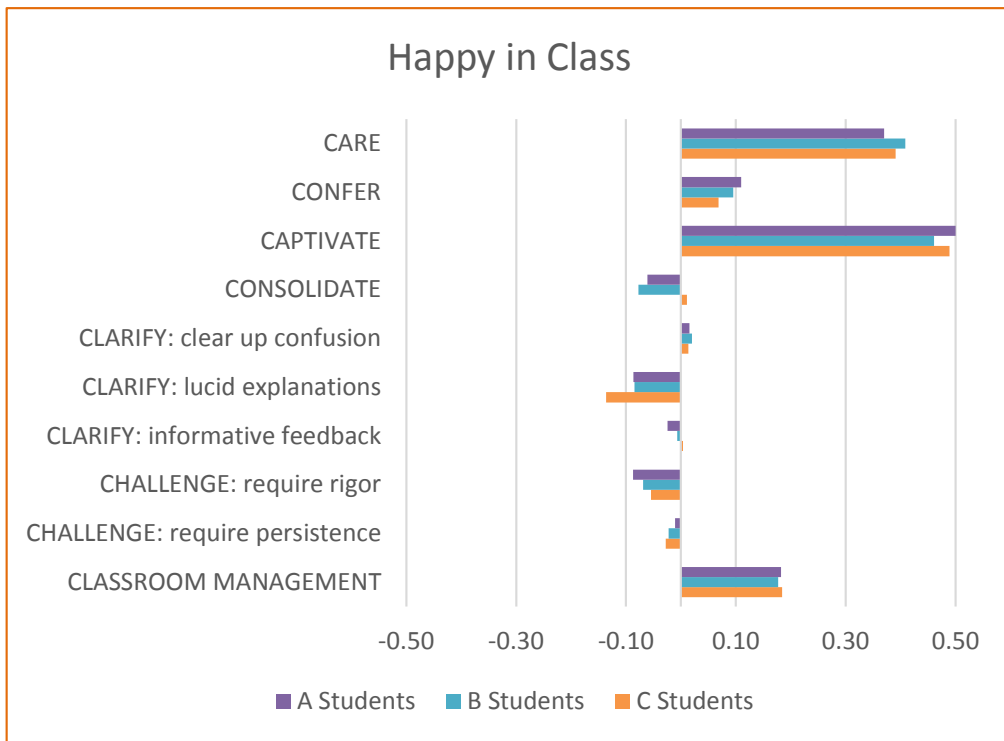
Care is a measure of teacher sensitivity and emotional support. For example, “*My teacher really tries to understand how students feel about things.*” Accordingly, with *care* and *captivate* as the strongest predictors, the finding is that students are happier when their teacher is sensitive to their feelings and makes lessons interesting. In addition, *classroom management* and *confer* have small positive effects, indicating that students are happier if the class is orderly and the teacher is interactive.

In contrast, *consolidate*, *clarify*, and *challenge*—each of which concerns the core work of teaching to produce learning—do not contribute to happiness, other things equal. Indeed, their small negative coefficients may indicate that the types of concentration and focus that

82 Regression tables with significance levels are available in the Statistical Appendix, at <http://www.agi.harvard.edu/publications.php>.

Exhibit 13

Engagement Goal 1: Trust vs. Mistrust



consolidate, *clarify*, and *challenge* entail tend slightly to detract from happiness. Being serious is less fun! But again, by far the strongest predictors of happiness are *care* and *captivate*.

Similar to Happy in Class, lower levels of Angry in Class are predicted most strongly by whether lessons are interesting (*captivate*). In addition, whether the teacher seems willing and able to *clear up confusion* appears fully two-thirds as important as whether lessons are interesting. A simple summary statement is that anger in class is predicted primarily by whether the class is boring (low on *captivate*) and whether the teaching leaves students confused (low on *clear up confusion*).

Are emotions relevant to agency? Emotions can affect the cognitive bandwidth for expressing agency and the strength of the urge to do so. Hence, a happy student may be more likely than an angry student in the same class to express agency by approaching the teacher with a new idea. Conversely, an angry student may be more likely than a happy student to feel annoyed by particular conditions and then express agency by lodging a complaint. While the details will vary from one example to another, we reason that emotions such as happiness and anger can affect both feelings and expressions of agency.

The basic empirical finding is that teachers who *care*, *captivate*, and *clear up confusion* are likely to achieve the emotional climates in their classes—more happiness, less anger—that they desire. However, as we shall see, there may be some tradeoffs.

Engagement Goal 2: Cooperation vs. Misbehavior

Exhibit 14 shows one panel for “Punctual to Class” and another for “Good Conduct in Class.” Not surprisingly, the exhibit indicates that individuals are more engaged where peers report better *classroom management* (on the Good Conduct panel) and more *challenge* (on both the conduct and punctuality panels). In addition, curricular support (*captivate* and *clarify*) is a generally positive influence, though the details differ between the panels.

The pattern most worth discussing is that there are some negative behavior effects associated with *care* and *confer*. Why? As indicated above, *care* is a measure of sensitivity to students’ feelings.

Exhibit 14

Engagement Goal 2: Cooperation vs. Misbehavior

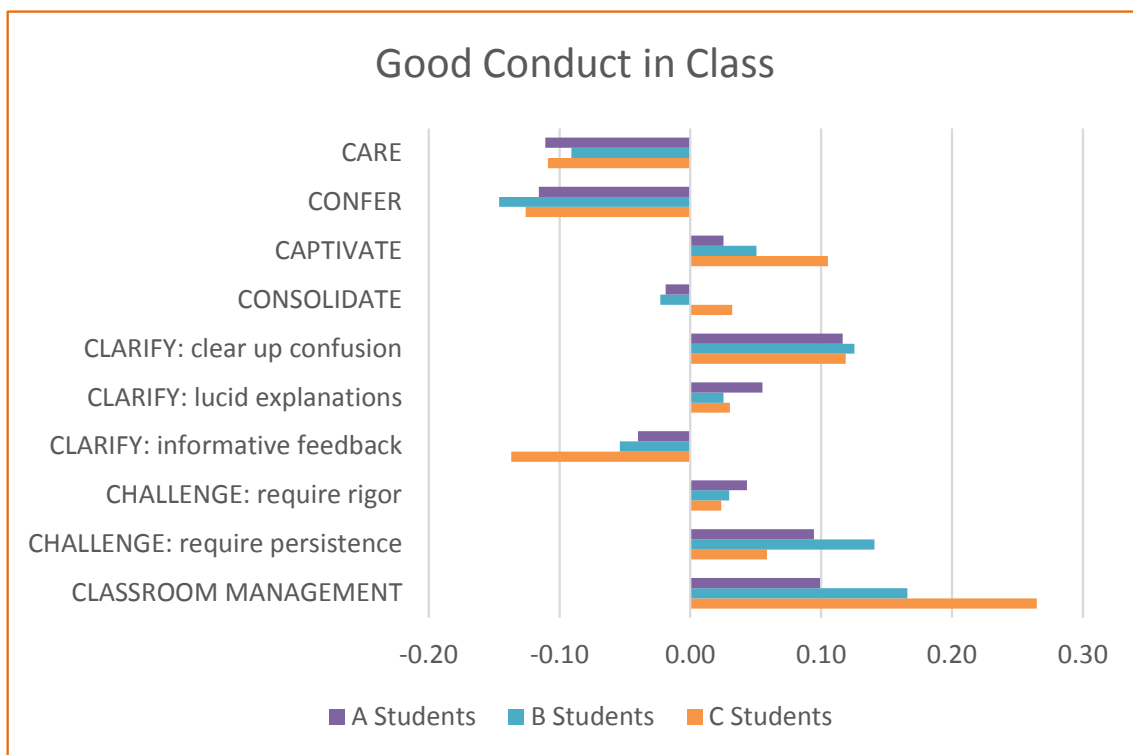
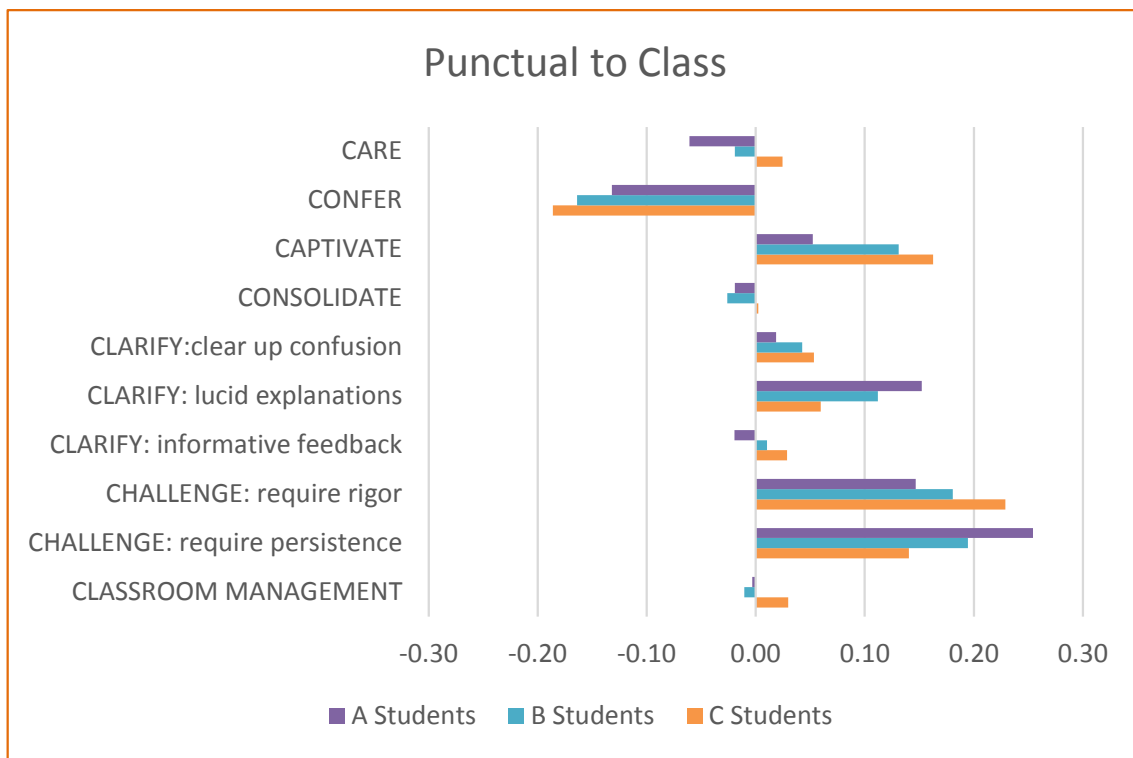
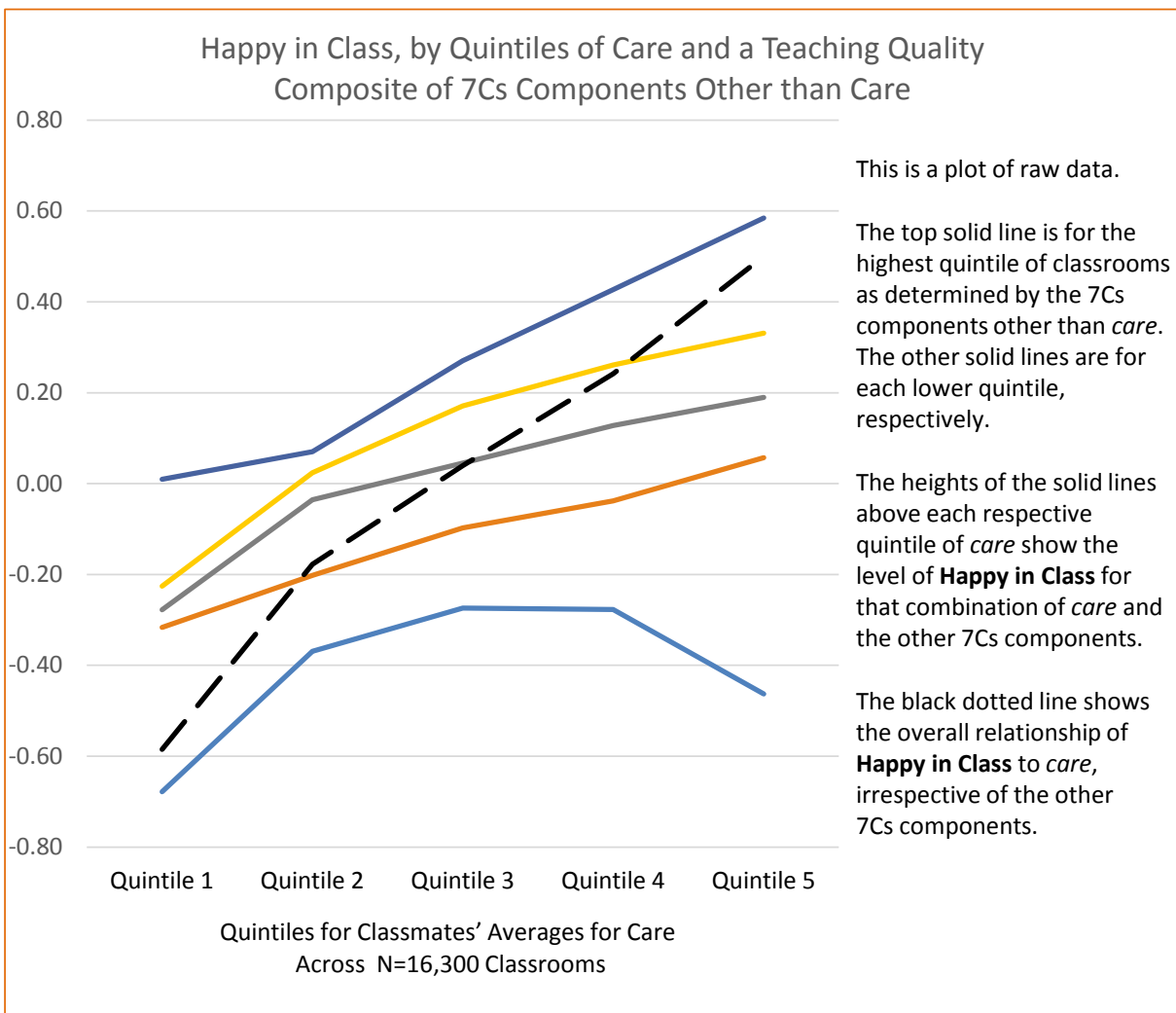


Exhibit 15

How Care Predicts Happiness

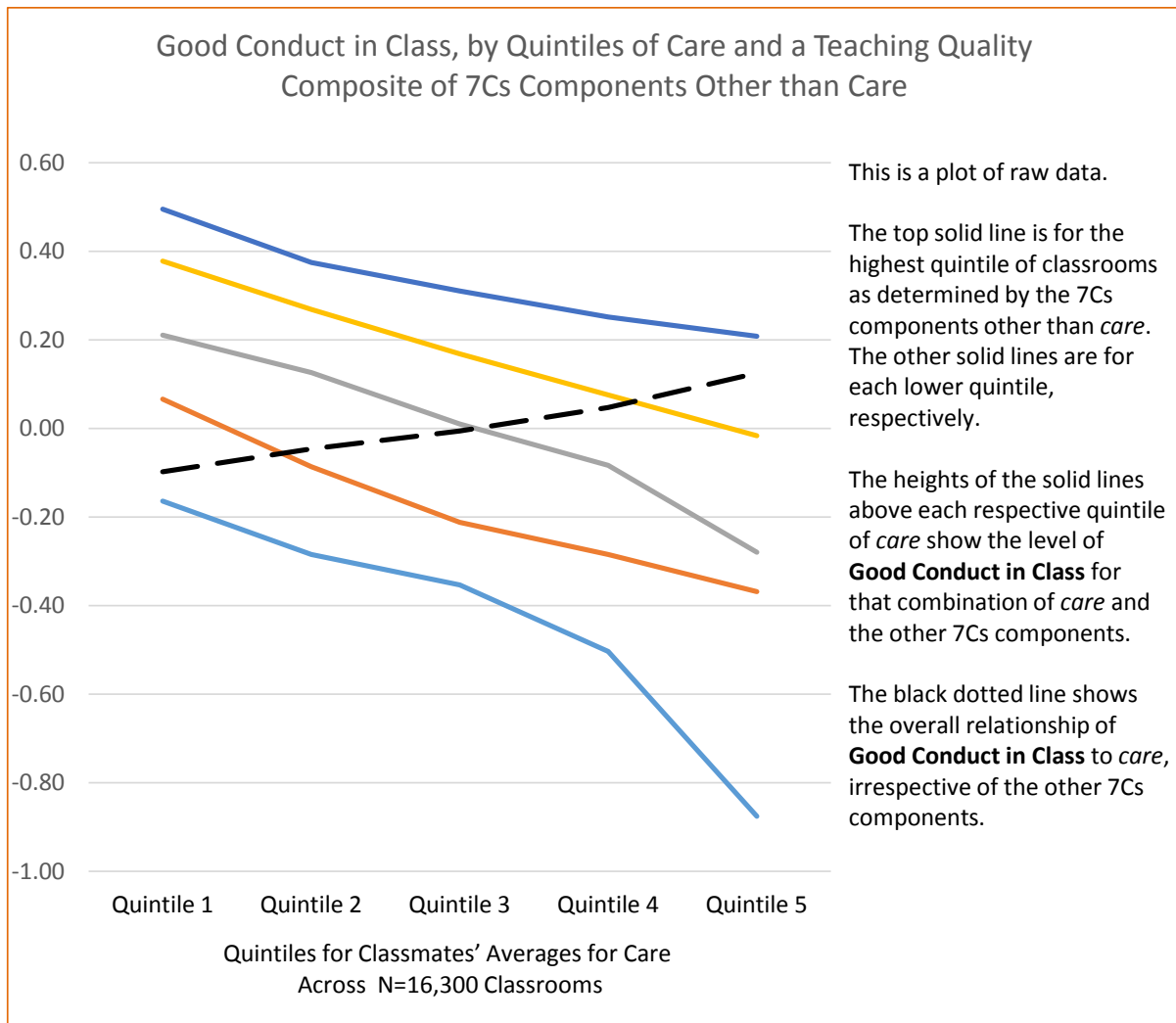


Similarly, *confer* is a measure of receptivity to students' perspectives. For example, "*My teacher wants us to share our thoughts.*" Recall that in Table 14 above, *confer* is the strongest predictor of *care* among the Tripod 7Cs components. Both measure ways that the teacher expresses sensitivity. The findings in Exhibit 14 indicate that, other things equal, increased sensitivity may at least slightly diminish how well students behave in the classroom.

Please keep in mind that the negative associations of *care* and *confer* with Punctual to Class and Good Conduct in Class are "other things equal" findings. To see the type of difference the "other things

Exhibit 16

How Care Predicts Conduct



equal” condition makes, examine Exhibits 15 and 16, where the height of each line represents an average value for Happy in Class (Exhibit 15) or Good Conduct in Class (Exhibit 16). Each of five points on the horizontal axis represents a group of classrooms. The point labeled “Quintile 1” represents the bottom quintile of classrooms as rated on *care*, and so on, up to “Quintile 5” for the top quintile.

On both exhibits, a black dotted line labeled “Overall” plots the relationship of *care* to Happy in Class or Good Conduct in Class, without holding other things equal. In each case, the line is positively

sloped, indicating that when *care* rises, so also do Happy in Class and Good Conduct in Class,

Next, to approximate the “holding other things equal” feature of multivariate estimation, we subdivide classrooms into quintiles using a composite of all *other 7Cs* components, *excluding care*. Then, we rank-order classrooms into quintiles using a composite of teaching quality components other than care. Each solid line represents classrooms in quintiles of that *other-than-care* composite.

Exhibits 15 and 16 show that within each quintile of the *other-than-care* ranking, moving from classrooms rated lower on *care* to classrooms rated higher on *care* corresponds to higher levels of Happy in Class, but lower levels of Good Conduct in Class. Students are happier, but less well behaved. This is the same basic result that appears on Exhibits 13 and 14 for the multivariate statistical findings.

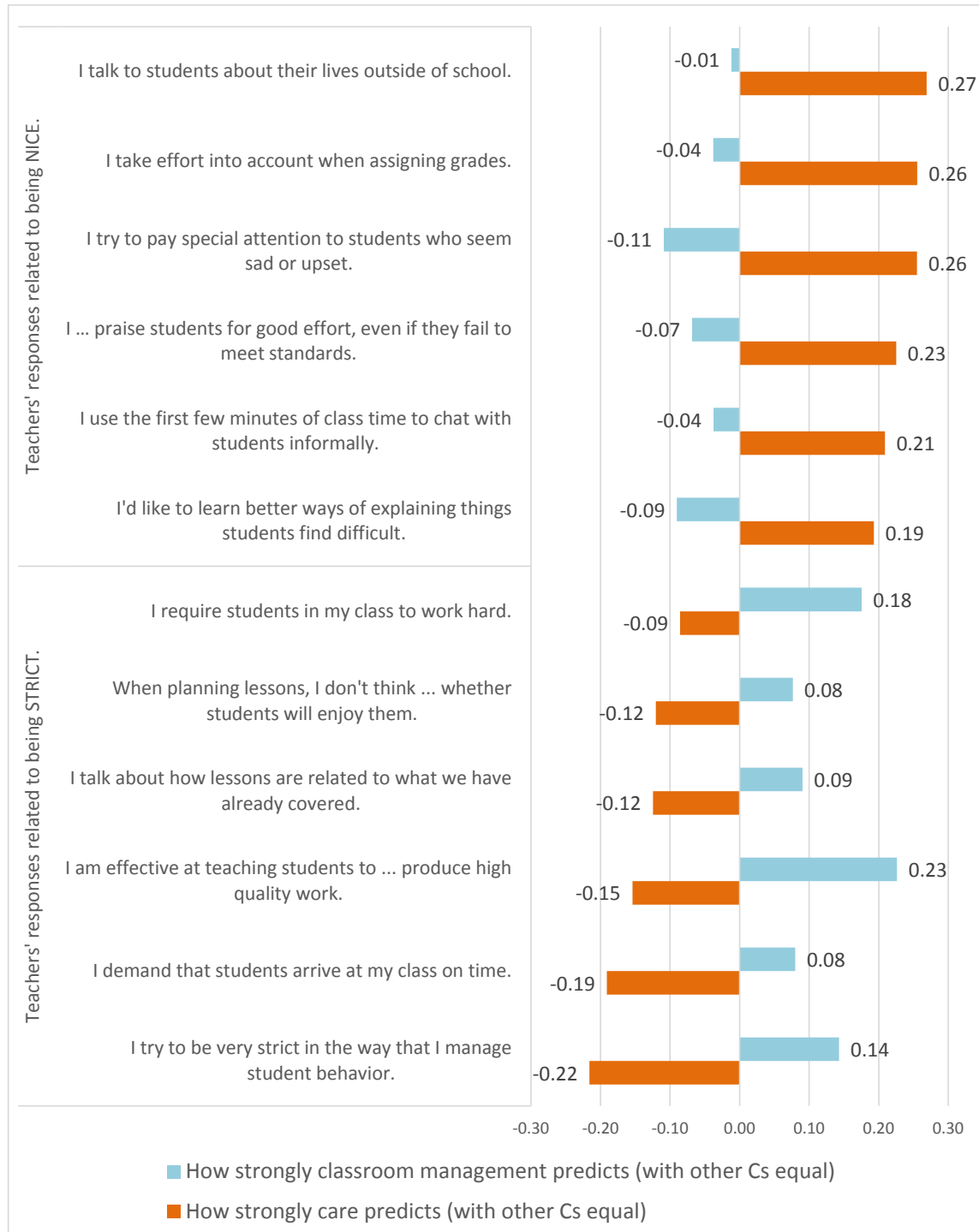
The obvious question at this point, is: Why might higher levels of *care* and *confer* produce slightly less disciplined classrooms, *other things equal*? To find some answers, we conducted a supplementary analysis using data from 2007 and 2008. In those years, 12,600 sixth to ninth grade students in 780 classrooms responded to Tripod student surveys, and their teachers in the same classrooms responded to Tripod teacher surveys. A section on the teacher survey described elements of teaching. Teachers in responding indicated how much of the time their teaching resembled listed descriptions.

Our analysis of the data from 2007 and 2008 use student responses for *care*, *captivate*, *clarify*, *challenge*, and *classroom management* in a multivariate analysis predicting teacher perceptions of their own teaching practices in the surveyed classrooms. Our rationale is that identifying the teaching practices on which *care* and *classroom management* predict most differently should give us clues for why *care* (and even *confer*) might, other things equal, be a negative predictor of student conduct.

We find that *care* and *classroom management* from the student survey predict in different directions—and to a statistically significant degree—for a number of practices on the survey that teachers completed. Exhibit 17 shows the pattern. The top half of the exhibit shows what we call “Teachers’ responses related to being *nice*,” while the bottom shows

Exhibit 17

Coefficients on Care and Classroom Management in Multivariate Equations Using 7Cs Components from Students' Responses to Predict Their Teachers' Responses on Listed Teaching Practices



“Teachers’ responses related to being *strict*.” *Care* is a positive predictor of items in the *nice* category and a negative predictor of items in the *strict* category. The opposite is true for *classroom management*.

The exhibit suggests an answer for why higher ratings on *care* and *confer* predict somewhat worse student conduct. Specifically, teachers who are more sensitive to students’ feelings tend to be less strict than their colleagues. This seems like common sense. Other things equal, the price for being nice may be a slightly less orderly classroom.

Engagement Goals 3 & 4: Ambitiousness vs. Ambivalence and Diligence vs. Disengagement

Engagement Goal 3, Ambitiousness vs. Ambivalence is closely related to Goal 4, Diligence vs. Disengagement. One might say that the two involve the *desire* to learn (e.g., mastery orientation), the *confidence* to learn (e.g., efficacy), and taking action to learn (e.g., effort and help seeking). Accordingly, the panels in Exhibits 18 and 19 show predictions for Mastery Orientation, Efficacy, Effort, and Help Seeking.

The most consistent predictor for all four is *lucid explanations*. To help us understand why, we identify the statements from the Tripod teacher survey that are most strongly predicted by student perceptions of *lucid explanations*, other things equal. We use the same data we employed for the supplementary *care* and *classroom management* analyses described above.

We find that the teacher responses most positively related to student reports of *lucid explanations* are:

- ▶ *I can easily predict which concepts and skills will be difficult for students in this class.*
- ▶ *In this class, I talk about how new lessons are related to what we have already covered.*
- ▶ *I require students in my class to work hard.*

The most negatively related are:

- ▶ *I have so much to cover in class that there isn’t enough time to answer student questions.*

- 
- ▶ *I don't have time to give students enough feedback on their work.*

It is easy to understand why these particular teacher survey items correlate with student perceptions of *lucid explanations*. On the positive side, if teachers anticipate which concepts and skills will be difficult for students, they may make special efforts to be lucid when covering those topics. And, if they connect lessons to what the class has already covered, that is another way of helping to make the new material clear. On the negative side, if a teacher is not taking time to answer questions and is not giving feedback, this indicates that the communication through which greater clarity might be delivered is not happening. Furthermore, it is easy to imagine why students' Mastery Orientation, Efficacy, Effort, and Help Seeking might tend to be different in the classrooms of teachers who characterize their own teaching differently by these criteria.

Other than the consistent importance of *lucid explanations*, each panel of Exhibits 19 and 20 shows a distinct pattern. Mastery Orientation is most strongly predicted by *lucid explanations*, *require rigor*, and *require persistence*—in other words, clarity and academic press. Compared to *lucid explanations*, *require rigor*, and *require persistence*, *captivate* and *consolidate* have much smaller but still positive effects. On the negative side, estimates indicate that *clear up confusion* slightly reduces mastery orientation for students with A and B (but not C) GPAs. More negative is the estimated effect of *confer* (for all three GPA levels). Nonetheless, the most important findings for Mastery Orientation are that *lucid explanations*, *require rigor*, and *require persistence* all increase it. The practical implication is that students are more motivated to master their studies in classrooms where teachers provide clear, lucid explanations and press them to persist in thinking rigorously. Think, “Persistence in thinking rigorously produces mastery!”

The pattern for Efficacy is different. It suggests that students feel a stronger sense of efficacy when lessons are interesting (*captivate*) with teachers who provide *lucid explanations* and *informative feedback*, *require persistence* in the face of difficulty, and are willing and able to *clear up confusion*. Note that unlike for Mastery Orientation—where *clearing up confusion* was a slightly negative influence and *informative feedback* mattered not at all—*clearing up confusion* and *informative feedback* join *lucid explanations* as positive predictors of Efficacy. In

Exhibit 18

Engagement Goal 3: Ambitiousness vs. Ambivalence

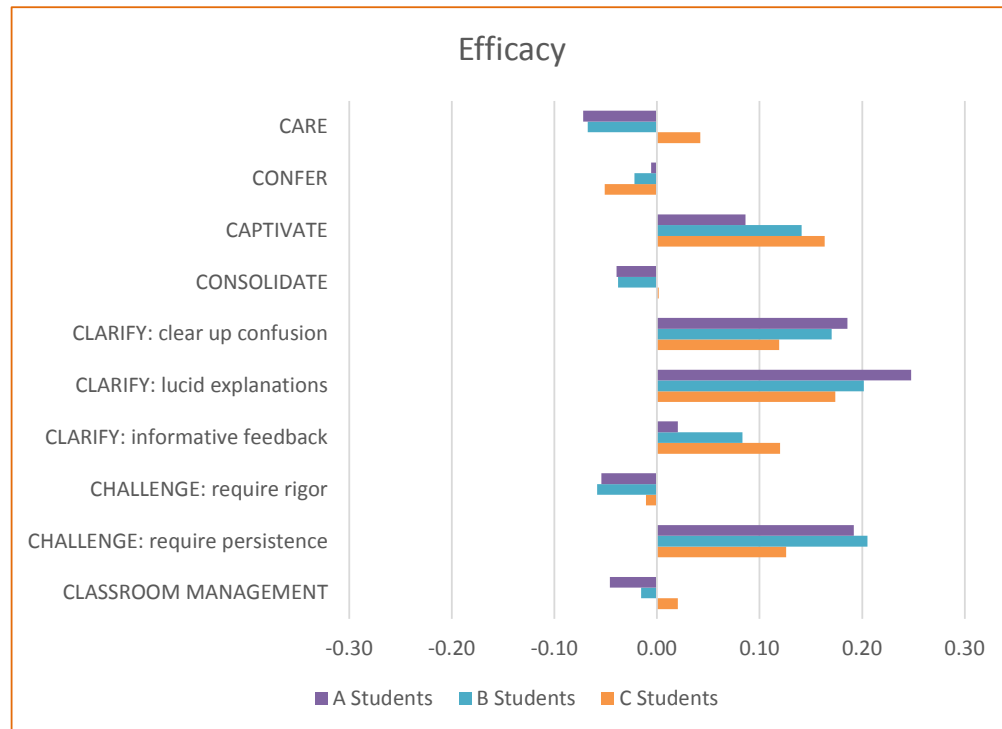
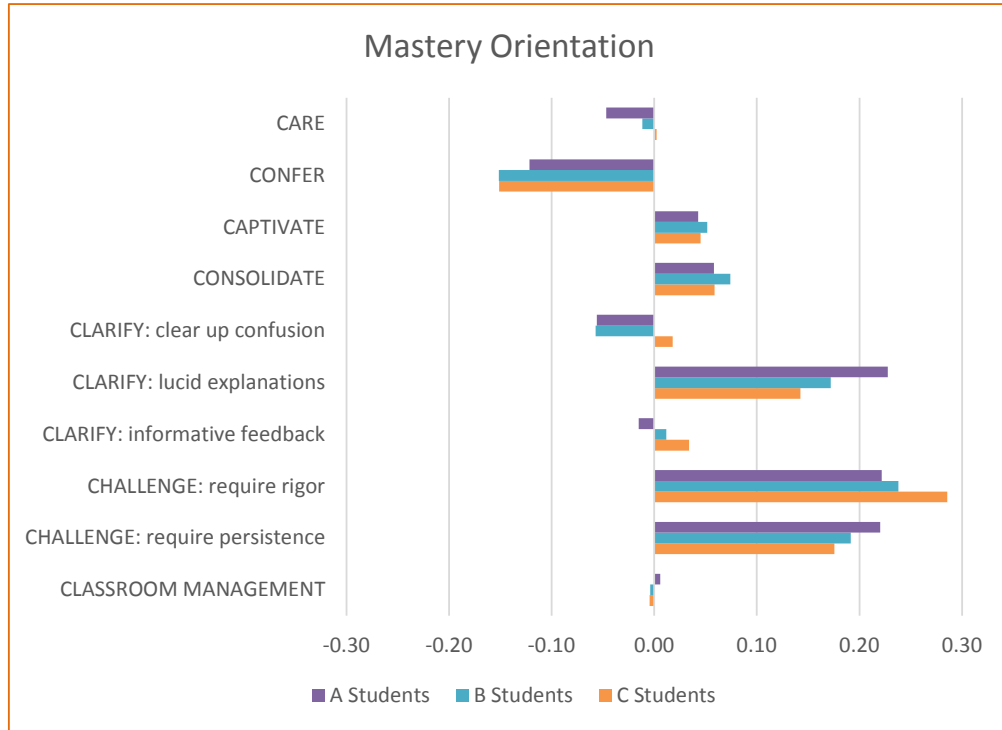
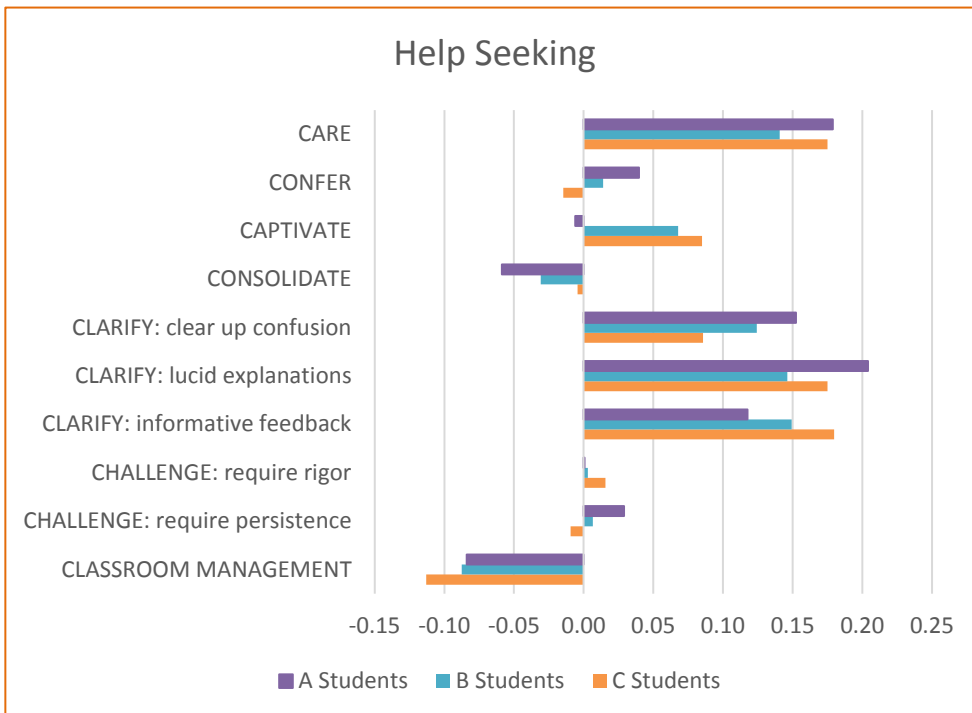
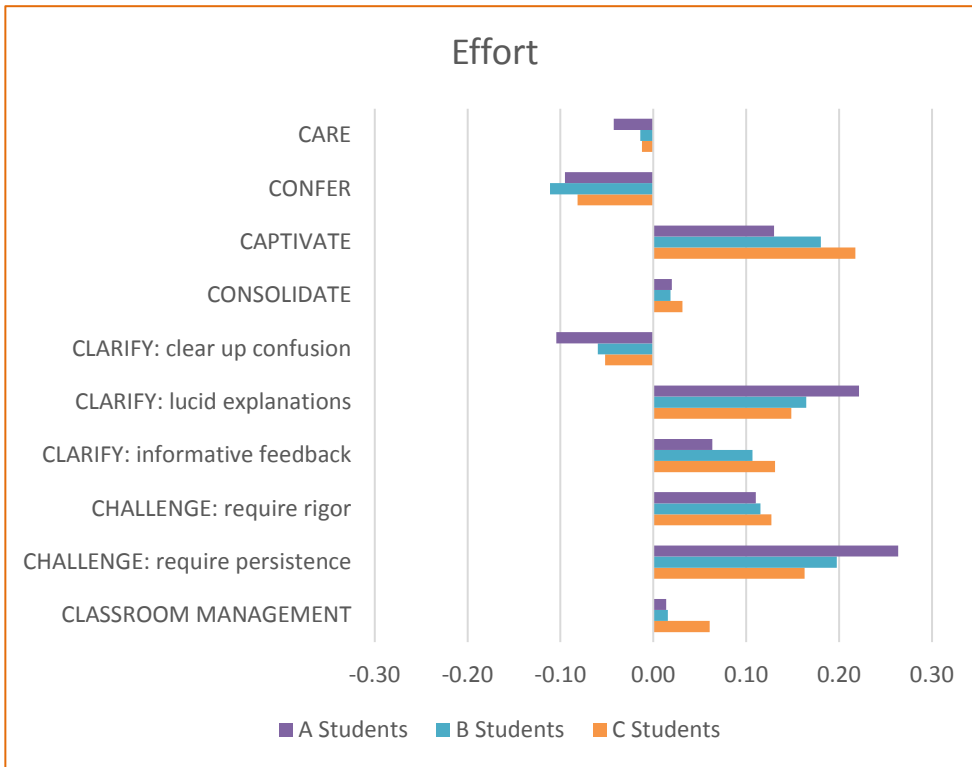


Exhibit 19

Engagement Goal 4: Diligence vs. Disengagement



addition, while *require rigor* is predicted to increase Mastery Orientation, it appears to have a small negative effect on Efficacy for students with A and B range GPAs. This makes sense, because being required to think rigorously makes success more difficult to achieve.


Again, while Mastery Orientation and Efficacy pertain to Engagement Goal 3, for Ambitiousness versus Ambivalence, Help Seeking and Effort pertain to Goal 4, for Diligence versus Disengagement.

Our estimates indicate that Help Seeking is predicted by all three subcomponents of *clarify*. Students are more prone to seek help from teachers who *clear up confusion* and provide *lucid explanations* and *informative feedback*. In addition, *care* is just as strong a predictor as each subcomponent of *clarify*. It appears that students are most inclined to seek help from a teacher who is sensitive to their feelings (*care*), clear in all three of the ways that the subcomponents of *clarify* address, and not too strict (in other words, note that *classroom management* predicts negatively).

The strongest predictors for Effort are *captivate*, *lucid explanations*, and *require persistence*. The second tier of predictors in terms of their effect sizes include positive effects for *instructive feedback* and *require rigor*, along with negative effects for *confer* and *clear up confusion*. Both *instructive feedback* and *require rigor* may entail pressing students to process ideas for themselves, and hence to exert more effort.

But why should *clear up confusion* affect effort negatively? Stated differently, why should it be an *agency damper*? The answer may be that when teachers rush to *clear up confusion*, doing so may modestly reduce the urgency that students feel to problem-solve for themselves. This is consistent with the finding on Exhibit 19 where higher levels of *clear up confusion* predict slightly less Mastery Orientation for students with A and B grade point averages. In addition, we will see below that *clear up confusion* predicts slightly less progress in a classroom toward the development of conscientiousness and growth mindset. Indeed, *clear up confusion* is the only predictor with a slightly negative estimated effect on the development of growth mindset or conscientiousness.

Similar to *clear up confusion*, *confer* has negative predicted effects on Mastery Orientation and Effort. However, different from *clear up confusion*, *confer* has very little effect on either Efficacy or Help



Seeking (both of the latter being places where *clear up confusion* predicts positively). Findings in Table 14 on relationships among the Tripod 7Cs indicate that *confer* helps predict *caring* and *challenge* and, to lesser degrees, *consolidate*, *captivate* and *classroom management*. A strong possibility for why *confer* predicts lower Mastery Orientation and Effort, other things equal, is that its primary effect on student engagement may be indirect. Specifically, *confer* may serve as a mechanism for delivering the other 7Cs components, especially *care* and *challenge*. Consider what it means in a real classroom to increase *confer* while holding the other 7Cs components constant. When a teacher confers with students but has no purpose in mind related to the other 7Cs components—for example, to express caring, achieve clarity, demand rigor, or achieve consolidation—the lack of apparent purpose (other than to respect student voice in a perfunctory way) may undermine motivation. Hence, the negative effects on Mastery Orientation and Effort.

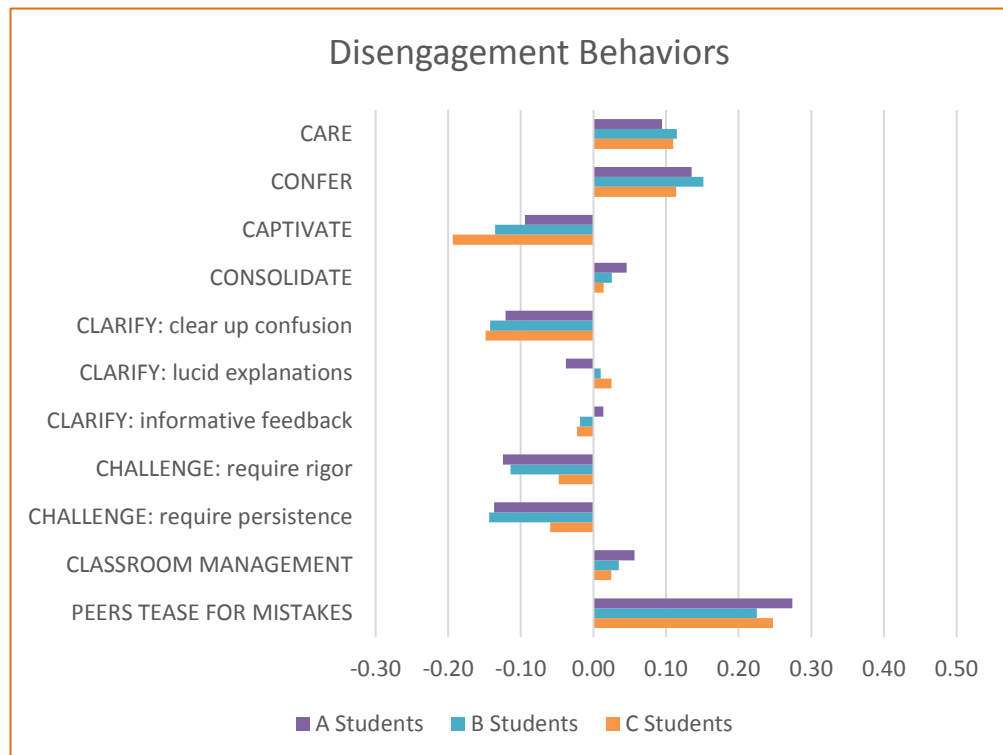
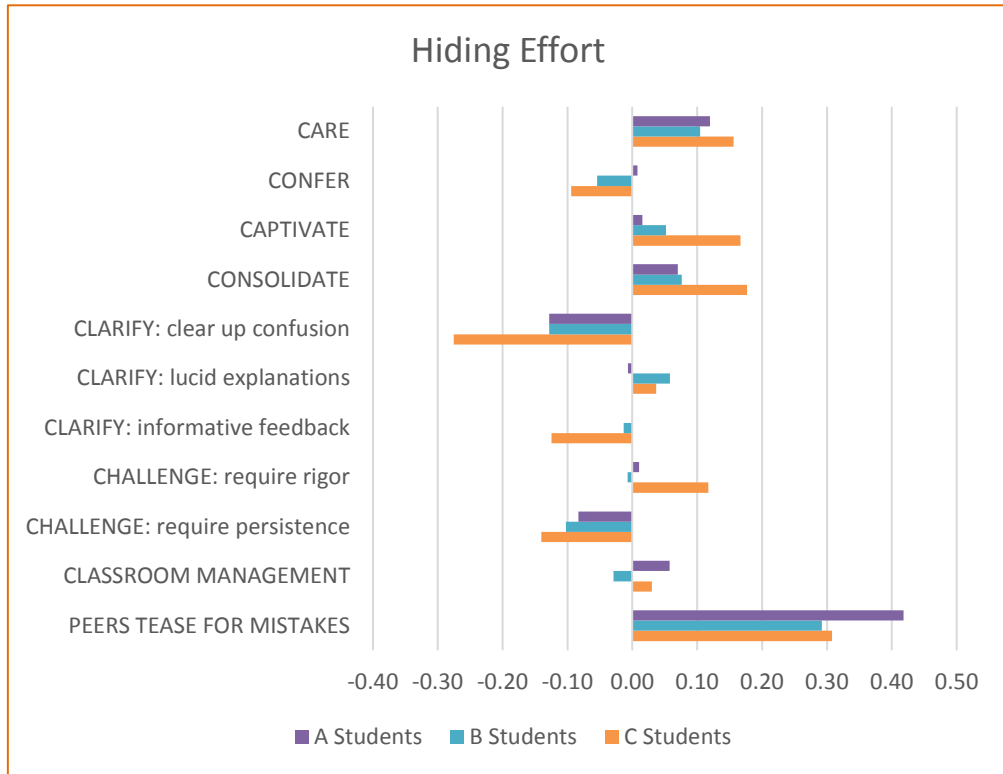
Exhibit 20 presents two additional charts for Engagement Goal 4. One is for Disengagement Behaviors and the other is for Hiding Effort. Items in the Disengagement index signal a withdrawal of effort: “*Sometimes I pretend to be working hard in this class, when I’m really not,*” “*In this class, I stop trying when the work gets hard,*” and “*In this class, I take it easy and do not try very hard to do my best.*” At the same time, Hiding Effort is a single item index, for which the wording is “*Sometimes I pretend I’m not trying hard in this class, when I really am.*”


The strongest classroom-level predictor for these variables is not one of the 7Cs. Instead, it is whether peers in the class tease one another for making mistakes. The coefficient on Peers Tease for Mistakes is shown at the bottom of the exhibit. This is the only exhibit on which a predictor other than the 7Cs is shown. We chose to include it here because it is so important to the prediction of these particular variables.

It is interesting to compare the prediction patterns for Disengagement with those for Hiding Effort. Hiding effort concerns concealing effort, not withdrawing it. One reason for a student to conceal effort is that an apparent lack of effort provides a convenient excuse for poor performance in the event that effort fails to produce success. It is a good bet that most struggling students would prefer being considered lazy to being considered stupid. To support this interpretation, notice that the predicted effects of *captivate*, *consolidate*, *clear up confusion*,

Exhibit 20

Engagement Goal 4: Diligence vs. Disengagement





informative feedback, and *require rigor* on Hiding Effort are strongest for students with GPAs of C and lower.

Notice on Exhibit 19 that the effect of *clear up confusion* on Hiding Effort is twice as large for C students as for A and B students. Presumably, the more the teacher can *clear up confusion*, the less is the need that C students feel to hide effort. Also note the contrasting effects of *captivate* when predicting Disengagement Behaviors versus when predicting Hiding Effort. In predicting Disengagement Behaviors, Exhibit 20 shows that higher ratings on *captivate* predict less disengagement (more engagement). So, in this respect, *captivate* is good! However, we also see that higher ratings on *captivate* predict that low achievers, in particular, will hide effort more even as they becoming less disengaged. Hence, a teacher who succeeds at making lessons more interesting and, at the same time, eliciting more (hidden) effort from low achievers, might be misled into thinking that low achievers are no more interested or hard working than before the teacher made the effort. An implication is that teachers should not take students—and especially low achievers—at face value when judging their effort or their interest.

All in all, it appears that *clearing up confusion* and giving *informative feedback* are promising ways to mitigate hiding effort among low achievers. Most impactful, however, would be to stop the teasing that occurs between classmates for making mistakes.

Engagement Goal 5: Satisfaction vs. Disappointment

Exhibit 21 indicates that students are most satisfied with learning when teachers make lessons interesting (*captivate*) and clear (*lucid explanations*). Smaller but nonetheless positive effects appear for *clear up confusion*, *informative feedback*, and *require persistence*. The latter are ways of getting students to actually learn the material that lessons convey. The exhibit shows a negative effect for *require rigor*, with an effect size whose absolute value is about half that for *lucid explanations*. Apparently, teachers who rate higher on *require rigor* challenge students in ways that leave them feeling a bit less successful (also recall the small negative effect of *require rigor* on Efficacy in Exhibit 18).

Comparing the top and bottom panels on Exhibit 21 helps distinguish the emotional gratification of Satisfaction from the perception that a lot has been learned (Perceived Learning). Each of these dependent

variables is a single item index. Satisfaction is measured by the item, “*I am satisfied with what I have achieved in this class.*” Perceived learning is, “*In this class, we learn a lot almost every day.*”

There are three interesting contrasts. First, *capture* contributes to Satisfaction much more than to Perceived Learning. Second, *consolidate*—which involves taking time to summarize and integrate learning—contributes to Perceived Learning but not at all to Satisfaction. And third, *require rigor* predicts negatively for Satisfaction, but positively for Perceived Learning. These are nuanced differences, but note that all make perfect sense.

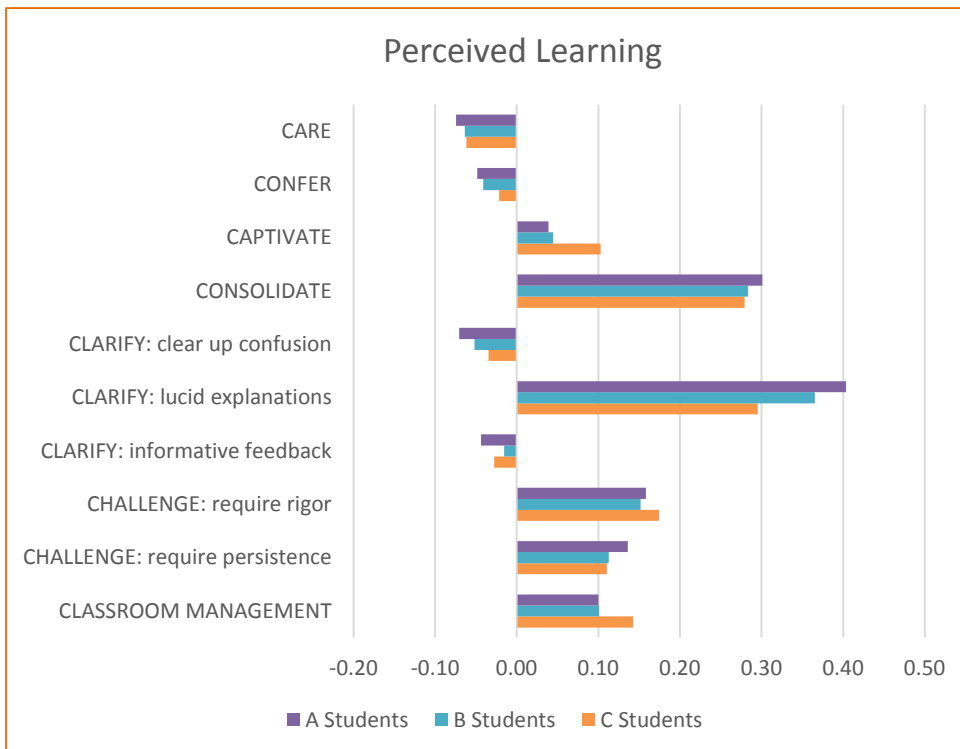
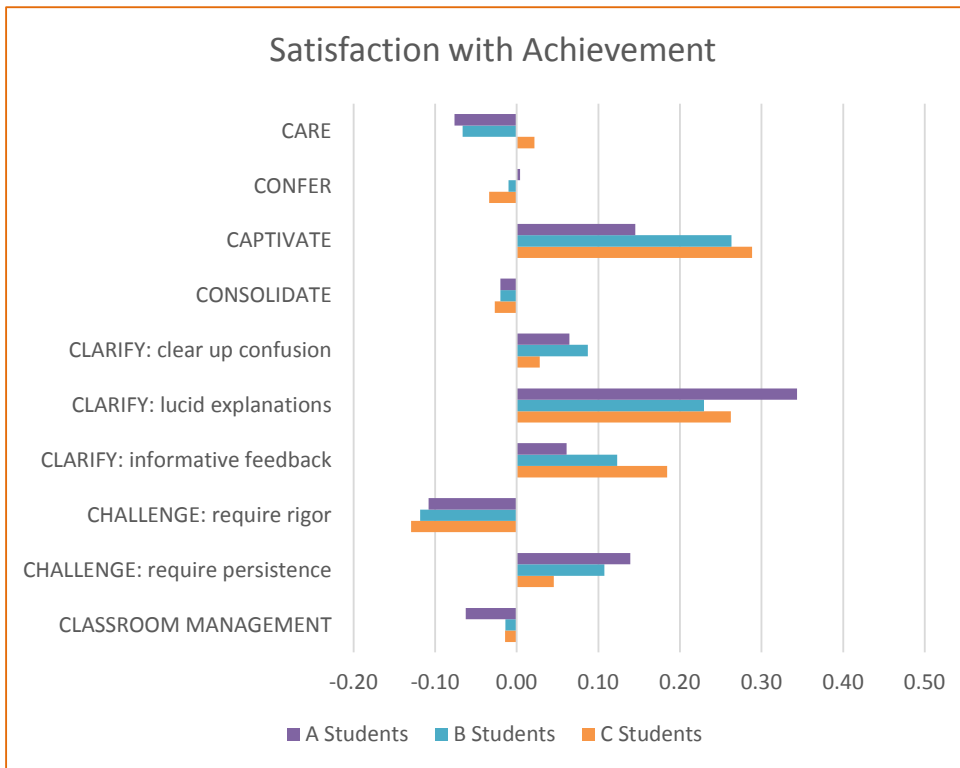
It is also interesting to compare the predictors of Happy in Class, which we saw on Exhibit 13, with the predictors for Perceived Learning on Exhibit 21. Recall that Happy in Class is predicted most powerfully by *care* and *capture*, with a secondary role for *classroom management*. The positive contribution of *classroom management* is the only commonality between patterns for Happy in Class versus Perceived Learning. A clear implication is that educators should avoid drawing conclusions about whether learning is occurring in a particular classroom based on the apparent emotional climate. The same contrast with predictors of happiness appears when the measure of learning is value-added achievement gains on standardized tests.⁸³ Predictors of happiness and learning are not the same.

Consider some implications for teaching based on these findings. If their main goal is to keep students happy, the teacher should express lots of interpersonal sensitivity (*care*), make lessons highly relevant and interesting (*capture*), and be effective at maintaining order (*classroom management*). Conversely, if the main goal is to increase learning, the teacher should take care to explain things very clearly (*lucid explanations*) and do an excellent job of integrating and summarizing lessons (*consolidate*). In addition, they should challenge students by *requiring rigor* in their thinking and *persistence* in the effort that they exert. Again, good *classroom management* is the lone Tripod 7Cs component that seems to contribute, other things equal, to both happiness and academic learning.

83 Ferguson with Danielson, 2014.

Exhibit 21

Engagement Goal 5: Satisfaction vs. Disappointment



Of course, as discussed above, there is interdependence. So, for example, the 7Cs components most important for achieving Satisfaction and Happiness may help a teacher deliver on the 7Cs components most important for achieving learning (and vice versa).

As we close this section on predicting engagement, notice that only *captivate*, *instructive feedback*, and *require persistence* present no apparent trade-offs. They appear to be unambiguously beneficial. The list would also include *lucid explanations*, if not for a small negative effect predicted for Happy in Class. Other components with small negative effects on Happy in Class as well as Satisfaction are *consolidate* and *require rigor*. The reason, we believe, is that along with *lucid explanations*, they represent a degree of seriousness about teaching and learning; they are not necessarily fun. In any case, most 7Cs components and subcomponents appear to improve particular aspects of engagement, while only slightly diminishing others. This conclusion obtains across all three GPA ranges. Later in the report, we review implications for teaching.

Developing Success Skills and Success Mindsets

In this section, we ask, “*In what ways does teaching influence the agency-related factors we call success skills and success mindsets?*” We focus on development in the body of the report. In the Appendix, we examine how classmates’ perceptions concerning development predict each individual student’s identity status in three domains. Exhibit 22 lists parallel development and status items in each domain: Conscientiousness, Growth Mindset/Efficacy, and Future Orientation and Purpose.

Development of Conscientiousness

The items in our index for developing conscientiousness are:

- ▶ *In this class, students learn to pay attention to the quality of their work.*
- ▶ *In this class, students learn to use time wisely.*
- ▶ *In this class, students learn to be more organized.*

Exhibit 22

Status and Development Measures

Parallel Status and Development Measures	
DEVELOPMENT	STATUS
Conscientiousness	
<ul style="list-style-type: none">✓ In this class, students learn to be more organized.✓ In this class, students learn to keep trying when work becomes difficult.✓ In this class, students learn to become better at using time wisely.✓ In this class, students learn to focus more on the quality of their work.	<ul style="list-style-type: none">✓ I am the type of person who is well organized.✓ I am the type of person who keeps trying even when I feel like giving up.✓ I am the type of person who uses time wisely.✓ I am the type of person who focuses on the quality of my work.
Growth Mindset/Efficacy	
<ul style="list-style-type: none">✓ In this class, students learn to believe that they can get smarter.	<ul style="list-style-type: none">✓ Even if the work in this class is hard, I can learn it.
Future Orientation and Purpose	
<ul style="list-style-type: none">✓ Because of my teacher, I think more about going to college.✓ Because of my teacher, I think more about what I will do after high school.	<ul style="list-style-type: none">✓ I have a clear purpose in my life—I know the types of things I want to achieve.

- ▶ *In this class, students learn to keep trying when work becomes difficult.*

Each is a blend of skills and mindsets. The Develop Conscientiousness index is the average of these items.

Exhibit 23 shows that *all* of the Tripod 7Cs help to predict Develop Conscientiousness, with *classroom management* as the strongest predictor.⁸⁴ The fact that *classroom management* is so prominent as a predictor adds an insight for why *classroom management* tends to be the strongest 7Cs predictor of value-added.⁸⁵ In addition, it is interesting that the *require persistence* subcomponent of *challenge* ranks second to *classroom management*. Like *classroom management*, *challenge* tends to be a stronger predictor of value-added than the other five 7Cs components. It makes sense that the strong association of *classroom management* and *challenge* with value-added might operate at least partly through their effects on conscientiousness.

Notice on Exhibit 23 that only *clear up confusion* shows negative effects. Note also that the absolute value of the estimated effect, while modest, is nonetheless twice as large for students with A and B range GPAs as for students with C range GPAs.⁸⁶ Similarly, estimated effects for *require persistence* and *instructive feedback* are larger in absolute value for students with higher GPAs.

We think the finding for *clear up confusion* reflects teacher behaviors that relieve some of the pressure on students to resolve their own misunderstanding. Conversely, the findings for *require persistence* and *instructive feedback* may suggest that these place more responsibility back on the student. If this is correct, then the results in Exhibit 23 indicate that there is more growth in conscientiousness when teachers hold students more accountable for doing the intellectual work—including the work to clear up their own confusion—and the effect may be strongest for students who tend to be higher achieving.

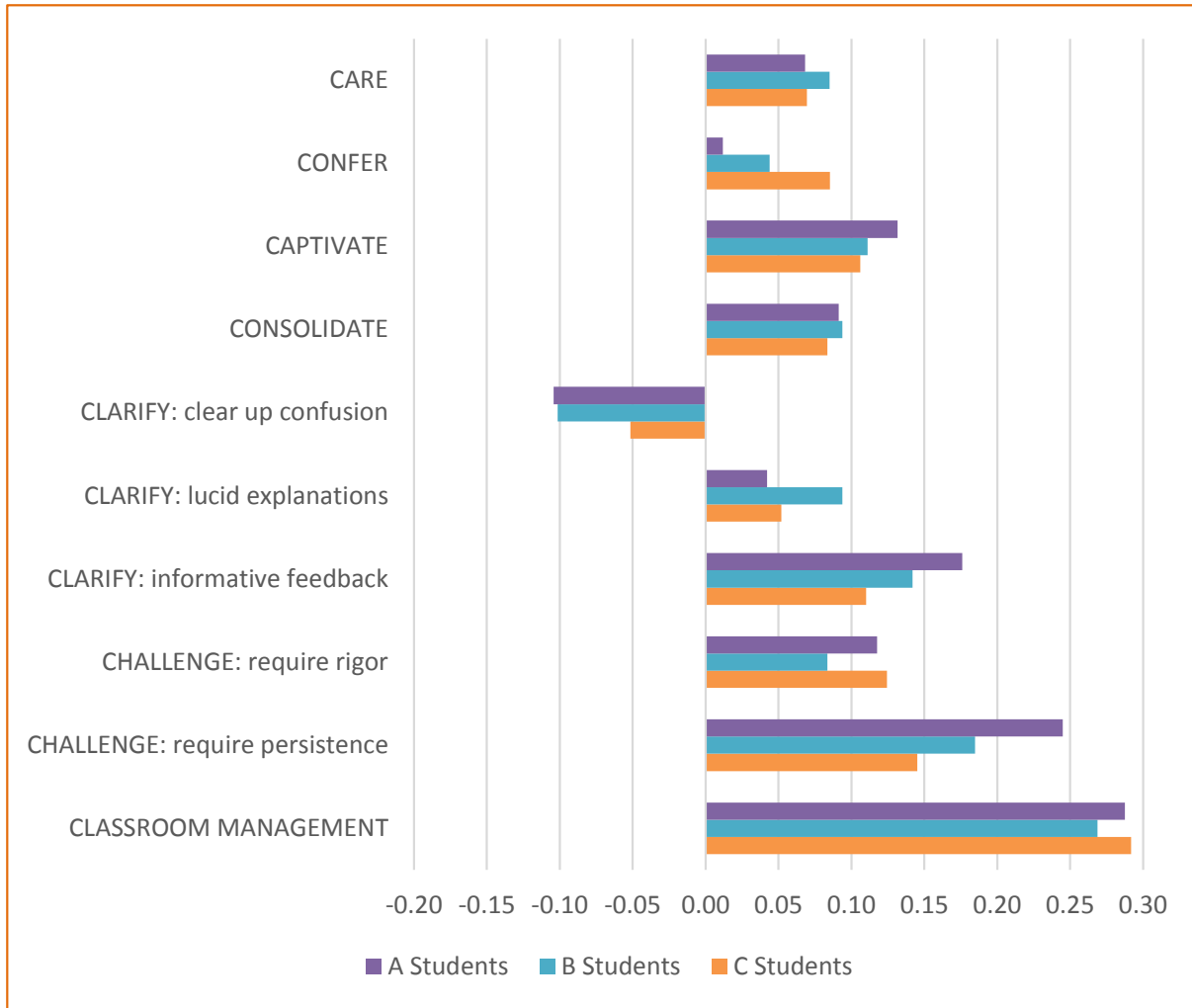
84 Note that all of the regressions predicting conscientiousness, growth mindset, and future orientation include all of the success skills and success mindsets status items as control variables. So, the predicted effects of classroom conditions on skills and success mindsets development indicators are estimated holding constant the types of people that respondents claim to be.

85 Ferguson with Danielson, 2014; Raudenbush & Jean, 2014.

86 Because the sample is so large, even the coefficient of -0.05 for C range students is statistically significant at the 0.01 level.

Exhibit 23

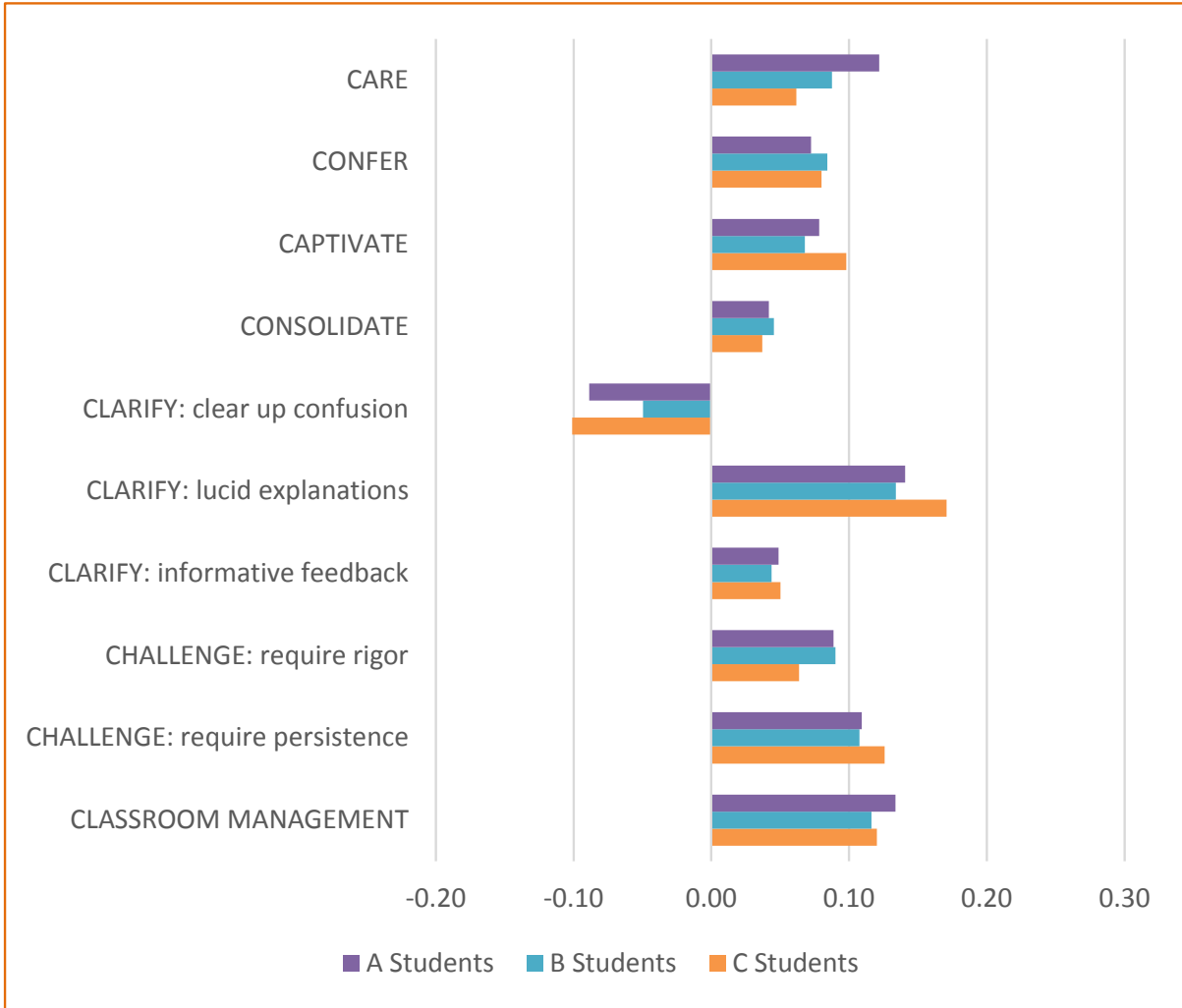
Develop Conscientiousness



Development of Growth Mindset


The measure for Develop Growth Mindset is the item “In this class, students learn to believe they can get smarter.” Similar to findings for Develop Conscientiousness, Exhibit 24 shows that *clear up confusion* is the only Tripod 7Cs measure with a negative predicted effect, other things equal. Presumably, one way that students develop a growth

Exhibit 24 Develop Growth Mindset



mindset is by discovering that they can get smarter: by persevering to reach achievements that exceed their own expectations for success. Teachers who *clear up confusion* too reflexively may reduce the number of opportunities students have to discover that they can get smarter.

An interesting feature of the results for growth mindset is that all of 7Cs components are statistically significant predictors with effect



sizes in a rather narrow range. Holding aside the subcomponents of *clarify*, we see that measures of personal and curricular support (i.e., *care*, *confer*, *captivate*, *consolidate*) matter to roughly the same degree as the measures of press (i.e., *require rigor*, *require persistence*, and *classroom management*). Recall that *care* and *confer* were sometimes negative predictors for both behavioral and motivational aspects of student engagement. Here, however, both are positive predictors of growth mindset development.

Based on teachers' characterizations of their own teaching, we concluded above that teachers who rate higher on *care* and *confer* tend to be less strict. The result is classrooms with slightly more off-task behavior and slightly less motivated students. However, the same teachers provide more personalized attention. In addition, they agree more with statements such as “*I take effort into account when assigning grades,*” and “*I praise students for good effort, even when they fail to meet standards.*” Our results suggest that the sensitivity and interpersonal support such teachers provide are among factors that inspire students to believe in themselves—to trust that they have the ability to get smarter.

Development of Future Orientation

Our measure of Develop Future Orientation is the mean of two items:

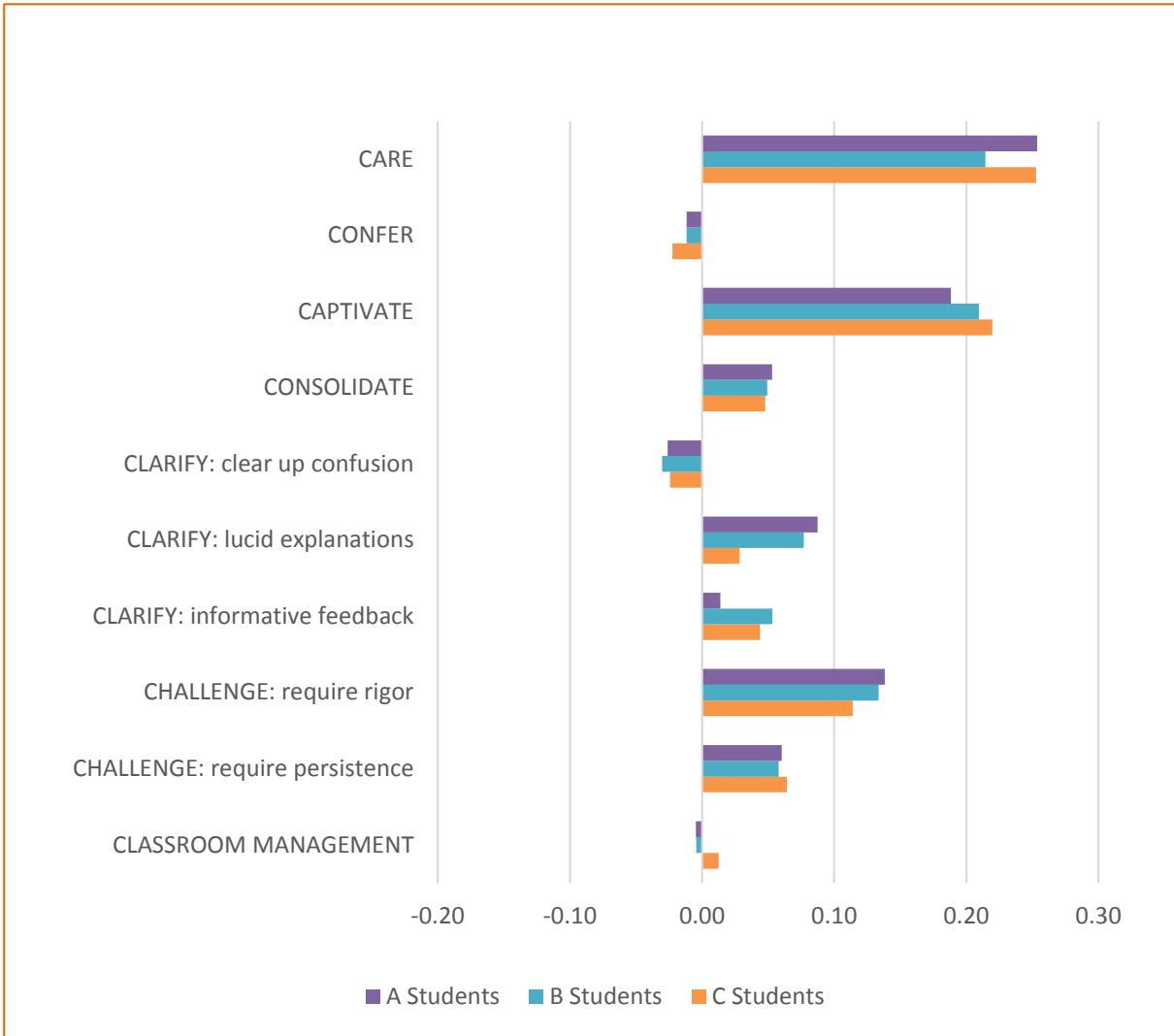
- ▶ *Because of my teacher, I think more about going to college.*
- ▶ *Because of my teacher, I think more about what I will do after high school.*

Exhibit 25 shows that *care* and *captivate* are by far the strongest predictors of future orientation, with *require rigor* in third place, ahead of other positive predictors. *Confer* and *clear up confusion* have extremely small negative effects, while *classroom management* has no effect at all. The reasons that *captivate* should be a strong predictor of our particular measure of future orientation—which is associated with going to college—seem clear. Teaching that rates high on *captivate* makes the prospect of college (or other forms of post-high school learning) more appealing.

Why *care* should be so important to future orientation is less clear. One possibility is that caring teachers inspire students to view them as


Exhibit 25

Develop Future Orientation



role models. They reduce the social distance between themselves and students, making college and career seem like realistic and attractive options.

Another likely possibility is that caring teachers actually talk with students about their futures. Recall from Exhibit 17 that teachers rated more caring by students agreed more strongly with the statement, *“I talk with students about their lives outside of school.”* When we look for student items that correlate with this statement from teachers, two



stand out: “*I feel close to my teacher in this class,*” and “*My teacher knows me well.*” Hence, it seems likely that teachers who talk with students about their lives outside of school also talk about plans for the future.

In summary, we find that all of the Tripod 7Cs components contribute positively to developing the agency-related factors that we call success skills and success mindsets. The only minor exception is the *clear up confusion* subcomponent of *clarify* and we have discussed some possible reasons. The relative importance of the different 7Cs components and subcomponents varies, depending upon which outcome is under consideration. For Develop Conscientiousness, the most important predictors are *classroom management* and *require persistence*, both of which concern self-control. For Develop Growth Mindset, *lucid explanations* is a somewhat stronger predictor than other teaching qualities, but improvement on any 7Cs component (other than *clear up confusion*) seems to help students believe they can get smarter. Finally, for Develop Future Orientation, *care* and *captivate* are the clear standouts.

CHAPTER 7: TEN PRACTICAL IMPLICATIONS FOR TEACHING TO DEVELOP AGENCY

This report has shown that classmates' perceptions of teaching predict skills, feelings, thoughts, and behaviors that enable, inspire, focus, and express agency. Exhibit 26 tabulates the findings. Cells containing the word "Tradeoff" signal that more of a Tripod 7Cs component or subcomponent has an *undesirable* predicted effect, other things equal. The color in a cell indicates the size of the estimated effect in student-level standard deviation units.⁸⁷ Darker cells signal larger estimated effects.

This chapter summarizes findings and proposes implications for teaching.

Care

Our measure of *care* pertains to emotional sensitivity and responsiveness to students' feelings. For example, "*My teacher really tries to understand how students feel about things.*" Findings indicate that when a teacher is *caring*, students are happier, more inclined to seek help, more future oriented (i.e., interested in college and what happens after high school), more conscientious, and more inclined to believe in the possibility of getting smarter (i.e., they develop more growth mindset).

But there can be a downside, too. Other things equal, more *caring* predicts slightly worse classroom behavior, more faking effort, hiding effort, giving up when work is hard, and not trying in general.⁸⁸ To help interpret this finding, the report draws from a round of Tripod surveys that matched students' perceptions of teaching in each class with their teacher's self-reports concerning specific instructional practices. Based on teachers' own descriptions of their teaching, our conclusion is that teachers rated higher on *care*, other things equal, tend to be

87 In order to be coded a particular color, at least two of the three GPA groups had to have a coefficient at least large enough to satisfy the condition for receiving that code.

88 These types of responses to a sensitive teacher may help explain why another result of more caring is a slightly lower sense of efficacy among A and B students (but not C students)—i.e., higher achievers seem slightly less sure of themselves if the teacher is more sensitive. For C students, the effect on efficacy goes in the opposite direction: more caring predicts a slightly higher sense of efficacy, even though it also predicts less persistence.

Exhibit 26

How Classmates' Perceptions of Teaching Predict Engagement and Development of Success Skills and Success Mindsets

Classmates' Perceptions of Teaching										
"Tradeoffs" indicates that the effect was in the undesirable direction, <i>other things equal</i>										
Dependent Variables	CARE	CONFER	CAPTIVATE	CONSOLIDATE	CLARIFY			CHALLENGE		CLASSROOM MANAGEMENT
					Clear up Confusion	Lucid Explanations	Instructive Feedback	Require Rigor	Require Persistence	
Happy in Class	Tradeoffs		Tradeoffs	Tradeoffs		Tradeoffs		Tradeoffs		
Angry in Class		Tradeoffs	Tradeoffs		Tradeoffs			Tradeoffs		
Punctual to Class		Tradeoffs							Tradeoffs	
Good Conduct	Tradeoffs	Tradeoffs					Tradeoffs			
Mastery Orientation		Tradeoffs			Tradeoffs			Tradeoffs	Tradeoffs	
Efficacy						Tradeoffs		Tradeoffs		
Effort		Tradeoffs			Tradeoffs				Tradeoffs	
Help Seeking										Tradeoffs
Disengagement	Tradeoffs	Tradeoffs								
Hiding Effort	Tradeoffs		Tradeoffs	Tradeoffs						
Satisfied w/Achievement	Tradeoffs		Tradeoffs			Tradeoffs		Tradeoffs		
Perceived Learning	Tradeoffs			Tradeoffs	Tradeoffs	Tradeoffs				
Growth Mindset					Tradeoffs					
Conscientiousness					Tradeoffs					Tradeoffs
Future Orientation	Tradeoffs		Tradeoffs							

Note: Shaded cells represent coefficients that are statistically distinguishable from zero at the 0.01 level or better.

Color codes for coefficient magnitudes:	<.05	≥0.05	≥0.10	≥0.20	≥0.30
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more sensitive and permissive. Too narrow a focus on *sensitivity* as an aspect of caring may include a type of accommodation to students' feelings that fosters slightly less orderly classrooms, less persistence in the face of difficulty, and less development of agency.

Implicated guidelines for teaching: Be attentive and sensitive, but avoid a tendency among sensitive teachers to coddle students in ways that may lower standards and undermine agency.

Confer

The Tripod 7Cs measure of *confer* is associated with how welcoming the teacher is to student perspectives. For example, “*My teacher wants us to share our thoughts.*” When classrooms rate higher on *confer*, other things equal, the implications for student engagement are surprisingly mixed. The most positive prediction is that students will be happier in class. Also positive is that students in such classrooms report small but positive effects on developing growth mindset and future orientation.

At the same time, we can ask, “What purpose does *conferring* serve?” other things equal. If other 7Cs components are being held constant, then the purpose of conferring cannot be to demonstrate *caring*, to *captivate*, to *clarify*, to *challenge*, to *consolidate*, or to *maintain order*. Holding all other 7Cs components constant, conferring may often be idle chatter that makes teaching and learning less focused. Other things equal, results indicate that students in classrooms rated higher on *confer* tend to be less punctual, less well behaved, less mastery oriented, and less hard working. They are also more likely to fake effort, give up when work is difficult, or simply not try in general. In addition, while they are happier (perhaps due to the personalization that *confer* entails), they are also a bit angrier (perhaps due to a general laxness in the class).

When we investigated how the Tripod 7Cs components predict one another, we found that *confer* was an important predictor of both *care* and *challenge*. It could be that the most important and positive role of conferring with students is in helping to implement the other 7Cs components—especially *care* and *challenge*.

Implicated guidelines for teaching: Encourage and respect students' perspectives and honor student voice but do so while remaining focused on

instructional goals; avoid extended discussions that have no apparent purpose and thereby fail to model self-discipline and cultivate agency.

Captivate

The 7Cs measure of *captivate* rates classes higher the more stimulating they are. For example, “*This class does not keep my attention--I get bored*” [reversed], or conversely, “*I like the ways we learn in this class.*” Across the seventeen engagement goals, success skills, and success mindsets that the report examines, increasing *captivate* predicts changes in the desired direction for all but one. That one is “hiding effort.” *Captivate* does not predict hiding effort for A students, but it has a small predicted effect for B students and a larger effect for C students (more than twice that for B students).

Why? We find that higher ratings on *captivate* predict more effort for all three GPA groups—more so the lower a student’s GPA. However, students with lower grades tend to hide their increased effort. Struggling students may anticipate that despite their increased effort, failure remains a distinct possibility. Probably preferring to be perceived as lazy or indifferent, not stupid, appearing not to try is rational. If even lower achieving students work harder in classes that rate higher on *captivate*—which our findings suggest they typically do—that may account for why increasing *captivate* predicts more hiding effort by lower achieving students.

Captivate’s largest effects are on happiness and anger. When learning is more stimulating, students feel cheerier and less irritated. They are also more punctual, better behaved, more mastery oriented, and they feel more efficacious. They exert more effort, seek more help, and engage less often in disengagement behaviors such as faking effort, giving up, or not trying. They report more learning and they feel more satisfied with their achievements. In addition, they develop more growth mindset, conscientiousness, and future orientation. Generally, it seems that *captivate* has no downside.⁸⁹

89 Raudenbush and Jean (2014) found a negative predicted effect of *captivate* on value-added, but this may be because they omitted the other support variables from their analysis, using only *control*, *challenge*, and *captivate* to predict achievement gains for upper elementary school students. Similarly, Ferguson with Danielson (2014) finds a negative effect on value-added for a composite of the five support components, which includes *captivate*. However, in unpublished findings not reported here, only a composite of *care* and *confer* has a negative predicted effect

Implicated guidelines for teaching: Strive to make lessons stimulating and relevant to the development of agency. If some students seem unresponsive, do not assume too quickly that they are disinterested or disengaged. Some students—and especially those who struggle—purposefully hide their interest and their effort.

Consolidate

Consolidate concerns the degree to which a teacher makes learning coherent. The emphasis is on making connections across topics and summarizing. For example, “*My teacher takes the time to summarize what we learn each day.*” *Consolidate* rates second only to *lucid explanations* in predicting how strongly students agree that “*In this class, we learn a lot almost every day.*”⁹⁰ *Consolidate* also has small effects in the desired direction on mastery orientation and development of conscientiousness and future orientation.

There are four engagement measures on which *consolidate* has small predicted effects in the undesirable direction. These are Happy in Class, Efficacy, Help Seeking, and Hiding Effort. We note that *consolidate* is not the only instruction-related variable with a negative predicted effect on happiness in class. *Lucid explanations* and *require rigor* also have small negative effects. We surmise that the negative predicted effects for all three—*consolidate*, *lucid explanations*, and *require rigor*—may have simply to do with being serious about learning. This seems all the more plausible when we notice that the “feel-good” categories of *care*, *confer*, and *captivate*—but neither *consolidate* nor any subcomponent of *clarify* or *challenge*—are positive predictors of Happy in Class.

Implicated guidelines for teaching: Regularly summarize lessons to remind students what they have learned and help them encode understanding in memory, even when they seem reticent or disinterested. Consolidation helps to solidify student learning.

on value-added for 223 classrooms in one school district. *Challenge*, *classroom management*, and a composite of *captivate*, *clarify*, and *consolidate* all have positive effects.

90 It is impossible to know whether this is because summarizing reminds students that they are learning, or because doing so actually helps with encoding new material into memory. We suspect more the latter, than the former.

Clarify

Clarify is operationalized in the analysis through *clear up confusion*, *lucid explanations*, and *instructive feedback*.

Clearing up Confusion

As a subcomponent of *clarify*, *clear up confusion* concerns whether teachers routinely and correctly recognize when students are confused and take steps to provide support, especially by giving additional explanations. For example, “*If you don’t understand something, my teacher explains it another way.*” Among Tripod 7Cs components and subcomponents, *clear up confusion* is second only to *captivate* in predicting that students will feel *less angry* in class. It also predicts better student conduct, a greater sense of efficacy, more help seeking, increased satisfaction with achievement, and fewer disengagement behaviors (faking effort, giving up, and not trying). All of these factors are closely related to classroom-level emotions and feelings of insecurity.

Higher values for *clear up confusion* predict slightly less mastery orientation, effort, perceived learning, development of growth mindset, and development of conscientiousness. All of these have strong connotations of reduced initiative, assertiveness, and perseverance. Indeed, *clear up confusion* is the only negative predictor of conscientiousness or growth mindset, other things equal.

Implicated guidelines for teaching: Take regular steps to detect and respond to confusion in class, but in ways that share responsibility (and agency) with students for doing the thinking. Strike a balance between keeping hope alive for struggling students, on the one hand, versus pressing them to take responsibility for their own learning, on the other hand.

Lucid Explanations

Lucid explanations is the subcomponent of *clarify* concerned with explaining things clearly. For example, “*My teacher explains difficult things clearly.*”

Lucid explanations has a large positive effect on perceived learning—i.e., “*In this class, we learn a lot almost every day.*” It also predicts increased punctuality, mastery orientation, effort, growth mindset, conscientiousness, and future orientation. The things that

both *lucid explanations* and *clear up confusion* predict in the desired directions are less anger in class, greater efficacy, more help seeking, and greater satisfaction. Generally, and similar to *captivate*, there seem to be many benefits and no serious drawbacks to providing more *lucid explanations*.

Implicated guidelines for teaching: Strive to develop clearer explanations—especially for the material that students find most difficult. Also, related to both clarify and captivate, and consistent with the themes in this report, develop lucid explanations of how the skills and knowledge you teach are useful in the exercise of effective agency in real life.

Instructive Feedback

Instructive feedback helps students to spot their mistakes and coaches them on ways to improve their performance. For example, “*The comments that I get on my work in this class help me understand how to improve.*” Aside from a minor deleterious effect on classroom conduct—perhaps some students become a bit off task when the teacher is giving individualized feedback to classmates—*instructive feedback* has positive effects where one might expect. It bolsters efficacy, effort, and help seeking, while reducing the likelihood that students give up when work is hard. It keeps students involved when they might otherwise disengage. Students become more satisfied with what they achieve, develop more growth mindset, and learn to be more conscientious.


Implicated guidelines for teaching: Give instructive feedback in ways that provide scaffolding for students to solve their own problems; through instructive feedback, you provide the type of support that enables students to develop and express agency by correcting their own work, solving their own problems, and building their own understandings.

Challenge

Challenge is operationalized in the analysis through subcomponents for *require rigor* and *require persistence*.

Require Rigor

The *require rigor* subcomponent of *challenge* concerns pressing students to concentrate in order to understand lessons more deeply. For example, “*My teacher wants me to explain my answers—why I think what I think.*” For many students, requiring rigorous thinking is not a



welcome instructional practice; it can raise the classroom stress level. Therefore, it is not surprising that, other things equal, *require rigor* predicts less happiness in class, more anger, a lower sense of efficacy, and less satisfaction with performance. However, these negatives are generally small and more than offset by the positives.

The strongest of the positive effects is for mastery orientation, indicating that when teachers require more rigorous thinking, more students report wanting to learn the material well. *Require rigor* also predicts more self-discipline. Specifically, students are more punctual in getting to class, exert more effort, and engage in fewer disengagement behaviors. In addition, they perceive more learning and develop more growth mindset, conscientiousness, and future orientation.

Implicated guidelines for teaching: Press students to think deeply instead of superficially about their lessons; set and enforce learning goals that require students to use reasoning and exercise agency in solving problems. Expect some pushback from students who might prefer a less stressful approach. Try increasing captivation and care in combination with rigor in order to help mitigate the tension and make the experience more enjoyable.

Require Persistence

Require persistence concerns pressing students to keep working and searching for ways to be successful, especially when they might otherwise stop trying. For example, “*My teacher doesn’t let people give up when the work gets hard.*” More than any other Tripod 7Cs component or subcomponent, *require persistence* is the most consistently positive predictor of the outcomes in this report. There are only three variables in the analysis—specifically, Happy in Class, Angry in Class, and Help Seeking—that *require persistence* does *not* help to predict. And, for these, the effect is zero, not negative. For the other fourteen measures, *require persistence* predicts in the desired direction. It might appropriately be said that *require persistence* is the teaching practice most clearly and consistently associated with the development of agency.

Implicated guidelines for teaching: Consistently require students to keep trying and searching for ways to succeed even when work is difficult. Emphasize the importance of giving their best efforts to produce their best work as a matter of routine. Be confident that few things could be more important for helping your students to develop agency.


Classroom Management

Classroom management is the last of the Tripod 7Cs components. A well-managed classroom is orderly, respectful, and generally on-task. For example, “*Students in this class treat the teacher with respect,*” and “*Our class stays busy and doesn’t waste time.*” When classrooms rate high on *classroom management*, individual students report better conduct and greater happiness. The downsides that appear in our estimates—perhaps driven by a small number of classrooms—are small increases in faking effort and giving up when work is hard. However, the most important predictions for classroom management are the positive effects on Perceived Learning, Development of Growth Mindset, and Development of Conscientiousness.

Indeed, *classroom management* is the strongest of all the 7Cs components as a predictor of Develop Conscientiousness. Recall that the Develop Conscientiousness index measures how strongly students agree that teaching in the surveyed classroom helps them learn to be more organized, to keep trying when work becomes difficult, to become better at using time wisely, and to focus more on the quality of their work. Each involves self-discipline.

It is worth noting that the Bill & Melinda Gates Foundation Measures of Effective Teaching study, as well as unpublished analyses that we have conducted with other data, indicates that *classroom management* tends to be the strongest of the Tripod 7Cs components (roughly equal to *challenge*) as a predictor of value-added gains on standardized exams. In addition, while it has no apparent effect on another key outcome—specifically, the inspiration to attend college—it fosters conditions under which more learning can occur, thereby making the college aspiration more attainable.

There are many ways of maintaining order in a classroom, including through intimidation and coercion. Table 8, above, indicates that the strongest predictors of *classroom management* from among the other 7Cs components are *captivate* and *challenge*, while the strongest predictor of both *captivate* and *challenge*, is *clarify*. It may be that focusing on *captivate*, *challenge*, and *clarify* is a good way to achieve not only an orderly classroom, but also lots of learning.




Implicated guidelines for teaching: Strive to achieve respectful, orderly, on-task student behavior in your class by teaching in ways that clarify, captivate, and challenge—in support of agency—instead of merely controlling students through intimidation or coercion.

Conclusion

Recent interest in the non-academic outcomes of teaching has raised the prospect that a broader range of agency-related factors will someday be more systematically addressed in educational policy and practice. For now, however, there remains an imbalance favoring the skills and knowledge that standardized tests measure. That imbalance does not need to continue.

Students' perspectives concerning the teaching they experience can be valid and reliable indicators of instructional quality. Their use can enhance how well we define and prioritize goals for instructional improvement. Using classmates' perspectives to measure the quality of multiple teaching components, we find in this report that teaching predicts a variety of agency related-factors that help prepare a student for success in school and life. These include the emotions, behaviors, and motivations that the student enacts in the classroom, in addition to the development of conscientiousness, future orientation, and growth mindset.

Our findings are nuanced. The teaching components that most strongly predict happiness in class and aspirations to attend college are *care* and *captivate*. These are distinctly different from *challenge* and *classroom management*, which most strongly predict annual learning gains. These differ, in turn, from the combination of *challenge*, *classroom management*, *consolidate*, and *clarify*, which most strongly predict whether students perceive that they are learning a lot almost every day in the surveyed classroom. Consequently, educators should be aware that teaching that fosters happiness may or may not also foster learning, and teaching that fosters learning may or may not also foster high aspirations, such as college attendance. For happiness, learning, and high aspirations, we need high performance on multiple teaching components.



Finally, we have learned that *agency* and *agency-related factors* are helpful concepts for encapsulating multiple educational goals—not only the academic skills that standardized test scores measure, but also emotions, behaviors, motivations, skills, and mindsets such as those we consider here. The quotation from Albert Bandura in the introduction to this report reminded us that agency is essential to human survival. Similarly, we opened with insights from Steven Hitlin and Glen Elder Jr. on how agency helps human beings fit into the environment, solve problems, develop and communicate our identities, and plan for the future. Therefore, it is fundamentally important that parents and teachers help to inspire, enable, and focus agency by the opportunities, instruction, and guidance they provide. This report on sixth to ninth graders in thousands of American classrooms expands our understanding of how distinct components of teaching cultivate agency in school and for life.



APPENDIX


Evidence that Teaching Affects Identity

Can classroom level effects on agency-related factors have longer term impacts on student identity? We would like to know whether classroom experiences lead students to become the types of people who routinely display the types of agency that classroom experiences help to cultivate. This appendix presents evidence that classroom experiences do, at least temporarily, affect students' perceptions of the types of people they are.

Most metrics for success skills and success mindsets are status measures—they measure aspects of identity. They capture elements of *self-concept*—what the individual perceives to be true about themselves. To measure whether *development* has occurred, the standard approach is to compare status measures taken at different points in time—like taking pictures of children at different ages and observing the change. Accordingly, a standard approach to measuring whether growth mindset status has increased among students in a particular classroom is to administer a growth mindset status scale near the beginning of the term and again near the end, and then take the difference. Note, however, that this tells us nothing about whether it was experiences *in the surveyed classroom* that helped produce the measured change in status. Indeed, the causal mechanisms that produced the change might lie entirely outside of the measured classroom.⁹¹

There are some topics for which common sense helps us draw rather confident conclusions about the causes of changes in status. For example, we know that changes in math and science test scores come primarily from experiences in math and science classes. However, conscientiousness, growth mindset, and future orientation are not like mathematics and science. Instead, conscientiousness, growth mindset,

91 In order to conclude that changes are the result of particular classrooms, researchers use both experimental and non-experimental research designs. Experimental designs manipulate treatment variables, or sometimes a whole “program model,” and test whether status changes more in settings that were randomly selected to receive the treatment than in those that did not (i.e., the control group). Randomized controlled experimental trials, when implemented with fidelity, produce robust conclusions regarding the impacts of well-defined treatments in particular treatment settings. Here, we use a non-experimental approach.



and future orientation are like reading skills during adolescence: growth may be augmented by experiences in multiple settings. One source of information about development in specific settings, albeit imperfect, is to simply ask the students. Asking students whether they learn conscientiousness, growth mindset, and future orientation in a particular class is analogous to asking students, “Do you think the teaching and learning activities in this class helped you improve your reading skills?” Their answers will be much better than having no information at all.

Equipped with student’s responses to both development and status questions, we can look for evidence that success skills and success mindsets evolve in response to classroom experiences. In addition, because Tripod surveys whole classrooms and often multiple classrooms per student, we can structure the analyses to rule out key competing explanations of our findings.

To develop an intuition for the approach we take, imagine a math class in which students take the Tripod survey. Imagine further that the same students answered the same survey questions about other classes—for example, their English, social studies, art, music, science, or health classes—where conditions were different, and where the student-body composition was different from the math class. For any given student in the math class, we can compute two measures of classmates’ perceptions of Develop Conscientiousness: one from that math class and one from classmates’ other classes. Which should we expect will predict what the student in question will say about his or her conscientiousness *status* (not just development) in the math class? Assume that we control statistically for what the student said *in other classes* about his or her conscientiousness status.

If our hypothesis is correct that *developmental* experiences in specific classrooms affect students’ identity beliefs concerning the types of people they are—i.e., their *status*—then classmates’ perceptions of development from other classrooms should have little or no power to predict *status* responses in the selected classroom. At the same time, classmates’ reports on development *in the selected classroom* should be positive and statistically significant predictors of the student’s reported *status* in that classroom. We should expect modest effect sizes, since


identity is influenced by multiple settings whose individual contributions presumably accumulate over time in small increments.

To be clear, we are indeed suggesting that students can perceive themselves a bit differently in different classrooms. A student who is generally not very conscientious might answer the survey in the classroom of a teacher who has established a culture in which most students behave conscientiously most of the time. That student may agree that he is a conscientious person while in this class, more than he would in another class where the teacher allows the climate to be more lax. With the teacher who teaches conscientiousness, the student experiences at least a short term, context-specific blip in self-perceived status with regard to conscientiousness. We are suggesting that if, over time, the student is in many classes where teachers insist that students behave in conscientious ways, then the propensity to be routinely conscientious may become increasingly ingrained. The student may become a generally more conscientious person than if his experience over time had been different.

Structure of the Status Analysis

More than 20,000 students in the data we are using were surveyed in multiple classrooms. For each of these students, we selected one class to study for this section of the analysis. Then, we compiled their answers not only about the selected class, but also about another class. We use the following as predictors:

1. The student's own reported status on conscientiousness, efficacy, and sense of purpose as the student reported these measures in another class;
2. The mean of classmates' responses regarding the specific development measure (i.e., Develop Conscientiousness; Develop Growth Mindset; or Develop Future Orientation) pertaining to the selected class;
3. The same classmates' mean responses concerning the same development measure, but pertaining to another class (these can be different other classes for different classmates).



Using these and a host of control variables as predictors,⁹² the success skills and success mindsets *status* measures that we predict are:

- ▶ Conscientiousness Status
- ▶ Efficacy Status
- ▶ Sense of Purpose Status

While the primary aim of this section is to show and discuss what predicts the status measures, we also show how the same metrics predict the development measures:

- ▶ Conscientiousness Development
- ▶ Growth Mindset Development
- ▶ Future Orientation Development

Just as in earlier sections, predictors of each individual's responses from a classroom use their classmates' responses from that classroom as predictors.

We also include each student's own responses from another classroom concerning the status metrics. By controlling for how each student characterized their status in another classroom, we can better isolate the contribution of conditions in the selected classroom to self-perceived status while in that class.

Findings

Exhibits A1, A2, and A3 show multivariate results for both development and status measures. Each panel in each exhibit (i.e., Regression A and Regression B) represents a distinct multivariate regression. The heights of the bars represent the magnitudes of regression coefficients.⁹³ The 4th and 5th bars from the left in each panel represent coefficients on “Classmates’ Development in this Class” and “Classmates’ Development in Other Classes,” respectively. The development measures that these represent are Develop

92 The control variables are all of the variables from our full model, described above, except the 7Cs variables.

93 Even the smallest coefficients tend to be statistically distinguishable from zero due to the large sample size. Also, most coefficients are statistically distinguishable from the others.

Conscientiousness in Exhibit A1; Develop Growth Mindset in Exhibit A2; and Develop Future Orientation in Exhibit A3.

Please begin by noticing that the strongest pattern for Regression A on all three exhibits is that classmates' reports on development in the selected class are much stronger predictors of individuals' development responses in the selected class, than are the same classmates' responses concerning the same topics in their other classes. This is clear evidence that students can distinguish which skills and mindsets are being developed and in which classes.

However, our primary motivation in this section is to analyze Regression B on each exhibit. Each Regression B has a status measure as the predicted outcome.

On Exhibit A1, the development and status variables are perfectly matched (as shown above on Exhibit 22). As one might expect, the strongest predictor of Conscientiousness Status is the student's own reported Conscientious Status from a different class. However, the important finding concerns the bars labelled "Classmates Develop Conscientiousness in THIS CLASS" and "Classmates Develop Conscientiousness in their OTHER CLASSES." The important finding here is that classmates experiences in the selected class, but not in their other classes, help predict how strongly the student agrees that he or she is *the type of person* who is conscientious. Let us emphasize again that the Conscientiousness Status index measures an identity—"I am a certain type of person"—not a behavior or experience. The finding is highly statistically significant.

The same general finding appears on Exhibits A2 and A3. In each instance, classmates' reports concerning development in the selected class, but not their reports of development in other classes, predict the student's identity statement. On Exhibit A2, the identity or status statement concerns Efficacy, as predicted by Develop Growth Mindset. On Exhibit A3, the identity statement concerns a Sense of Purpose, as predicted by Develop Future Orientation.

It is impossible to know, based on these findings, how much and how quickly the identity effects of a student's experience in a particular classroom may fade over time. Nonetheless, these results indicate clearly that classroom experiences predict self-perceptions of

Exhibit A1

Predicting Development and Status (i.e., Identity) Responses for Conscientiousness

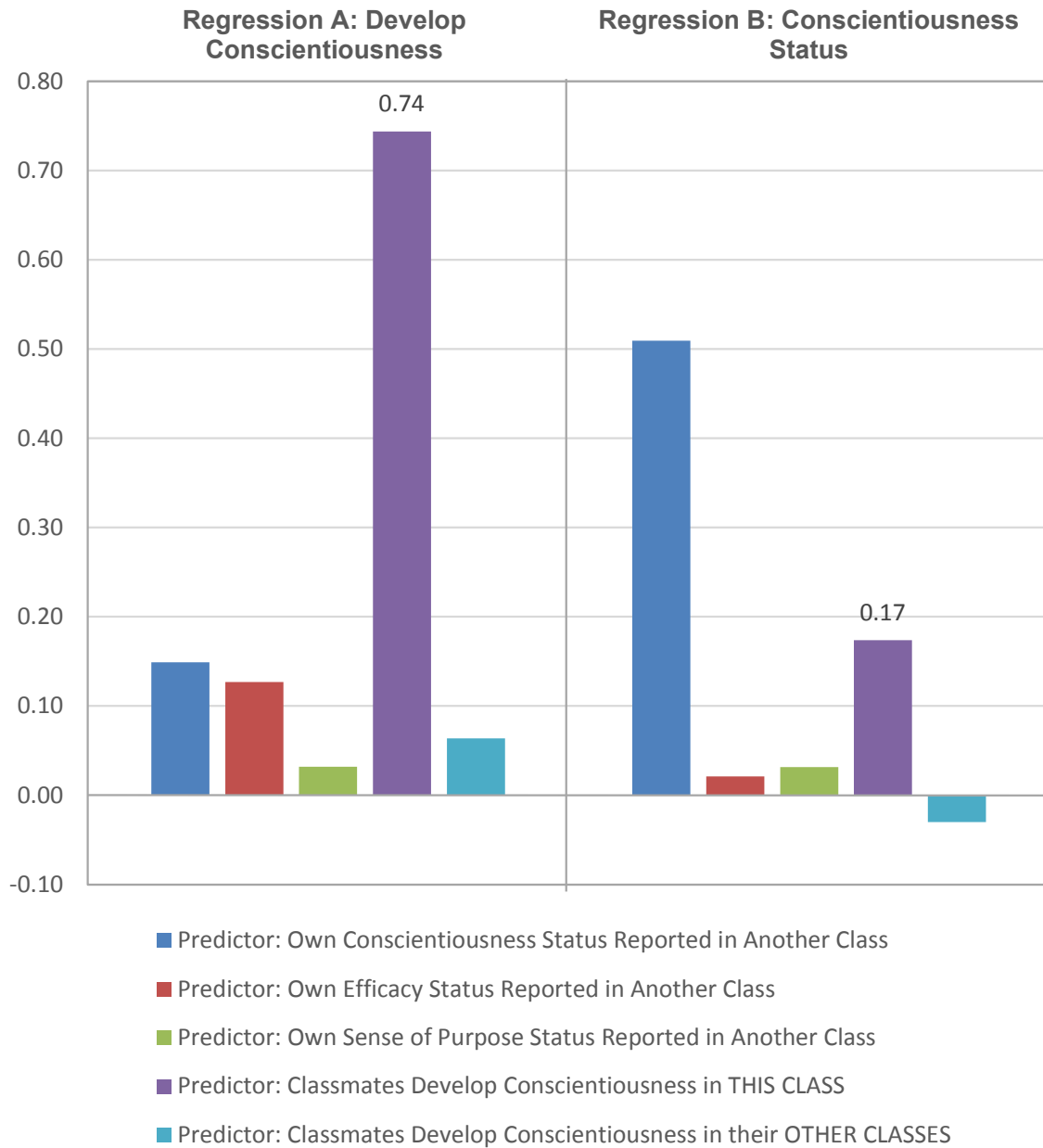
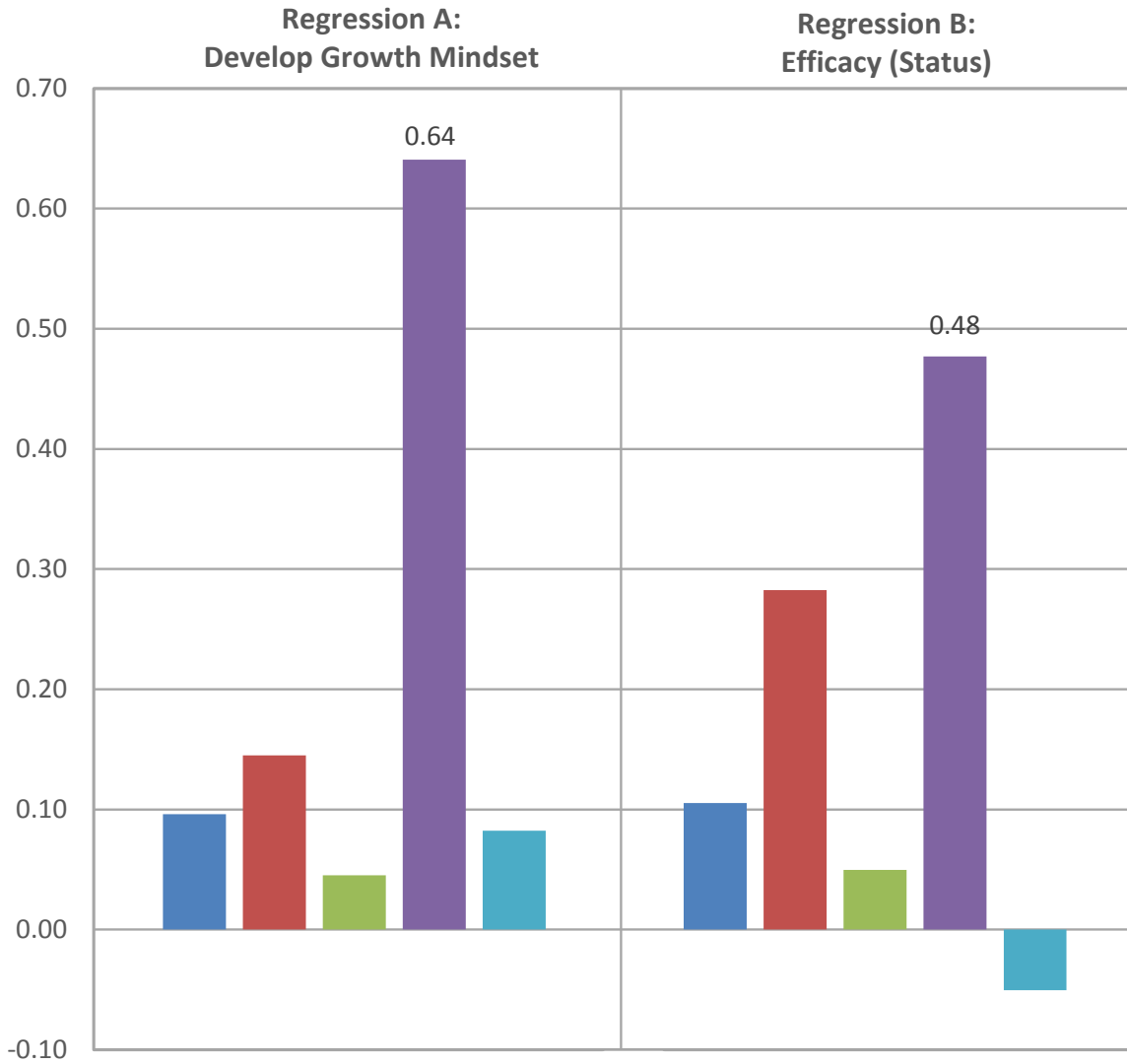


Exhibit A2

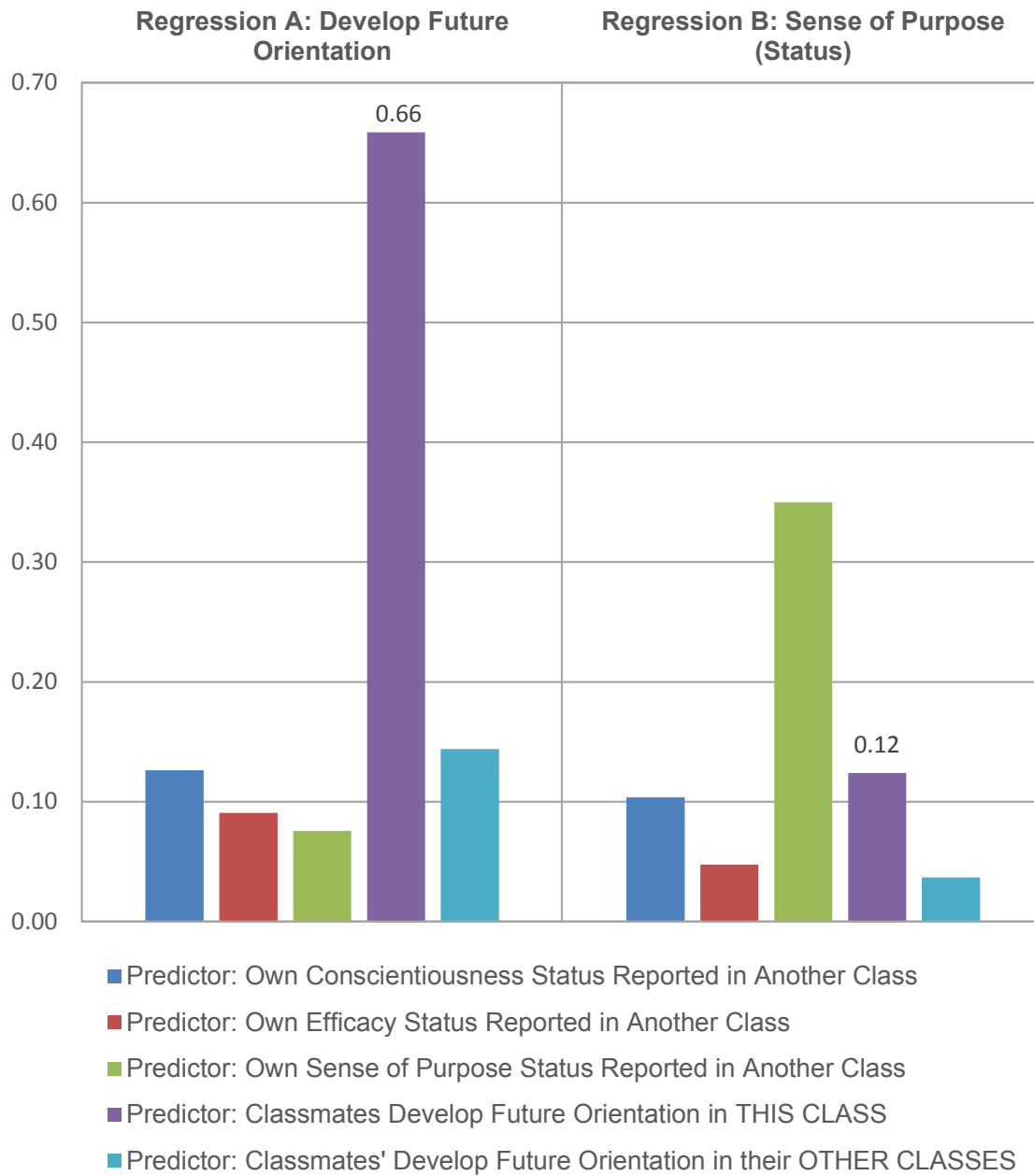
Predicting Development and Status (i.e., Identity) Responses for Growth Mindset and Efficacy




- Predictor: Own Conscientiousness Status Reported in Another Class
- Predictor: Own Efficacy Status Reported in Another Class
- Predictor: Own Sense of Purpose Status Reported in Another Class
- Predictor: Classmates Develop Growth Mindset in THIS CLASS
- Predictor: Classmates Develop Growth Mindset in their OTHER CLASSES

Exhibit A3

Predicting Development and Status (i.e., Identity) Responses for Future Orientation and Purpose





identity, at least temporarily. Furthermore, they bolster the plausibility of the proposition that mutually reinforcing experiences across multiple classrooms can accumulate to produce lasting changes in identity and agency.

REFERENCES

- Alder, N. (2002). Interpretations of the meaning of care: Creating caring relationships in urban middle school classrooms. *Urban Education, 37*(2), 241-266.
- Allen, J. (1995). Friends, fairness, fun, and the freedom to choose: Hearing student voices. *Journal of Curriculum and Supervision, 10*(4), 286-301.
- Allen, J. P. Gregory, A., Mikami, A. Y., Lun, J., Hamre, B., & Pianta, R. C. (2013). Observations of effective teacher-student interactions in secondary school classrooms: Predicting student achievement with the Classroom Assessment Scoring System-Secondary. *School Psychology Review, 42*(1), 76-98.
- Allen, J.P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science, 333*(6045), 1034-1037.
- Applebee, A. N., Langer, J. A., Nystrand, M., & Gamoran, A. (2003). Discussion-based approaches to developing understanding: Classroom instruction and student performance in middle and high school English. *American Educational Research Journal, 40*(3), 685-730.
- Armento, B. J. (1977). Teacher behaviors related to student achievement on a social science concept test. *Journal of Teacher Education, 28*(2), 46-52.
- Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology, 72*(2), 261-278.
- Balfanz, R., Herzog, L., & Mac Iver, D. J. (2007). Preventing student disengagement and keeping students on the graduation path in urban middle-grades schools: Early identification and effective interventions. *Educational Psychologist, 42*(4), 223-235.
- Bandura, A. (2001). Social Cognitive Theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.
- Bernard, B., (1991). *Fostering resiliency in kids: Factors in the family, school, and community*. Portland, OR: Western Center for Drug-Free Schools and Communities.
- 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*(1), 246-63.
- Bush, A. J., Kennedy, J. J., & Cruickshank, D. R. (1977). An empirical investigation of teacher clarity. *Journal of Teacher Education, 28*(2), 53-58.
- Butler, A. C., Godbole, N., & Marsh, E. J. (2013). Explanation feedback is better than correct answer feedback for promoting transfer of learning. *Journal of Educational Psychology, 105*(2), 290-298.
- Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development, 65*, 493-506.
- Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy and relatedness: A motivational analysis of self-system processes. In M. R. Gunar & L. A. Sroufe (Eds.), *Self Processes and Development* (pp. 43-77). Hillsdale, NJ: L. Erlbaum Associates.


- Cooper, K. S. (2013). Eliciting engagement in the high school classroom: A mixed-methods examination of teaching practices. *American Educational Research Journal, 51*(2), 363-402.
- Cothran, D. J., & Ennis, C. D. (2000). Building bridges to student engagement: Communicating respect and care for students in urban high schools. *Journal of Research & Development in Education, 33*(2), 106-117.
- Cothran, D. J., Kulinna, P. H., & Garrahy, D. A. (2003). "This is kind of giving a secret away...": Students' perspectives on effective class management. *Teaching and Teacher Education, 19*(4), 435-444.
- Cruickshank, D. R., & Kennedy, J. J. (1986). Teacher clarity. *Teaching and Teacher Education, 2*(1), 43-67.
- Crumpton, H. E., & Gregory, A. (2011). "I'm not learning": The role of academic relevancy for low-achieving students. *The Journal of Educational Research, 104*(1), 42-53.
- Culbertson, D. M. (2012). Effective mathematics instructional strategies for middle school students (Doctoral Dissertation, Walden University). Retrieved from <http://gradworks.umi.com/35/40/3540404.html>.
- Dickens, W. T. (2005). Genetic differences and school readiness. *The Future of Children, 15*(1), 55-69.
- Dickens, W. T., & Flynn, J. R. (2001). Heritability estimates versus large environmental effects: The IQ paradox resolved. *Psychological Review, 108*(2), 346-369.
- Dickens, W. T., & Flynn, J. R. (2006). Black Americans reduce the racial IQ gap: Evidence from standardization samples. *Psychological Science, 17*(10), 913-920.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087-1101.
- Duncan, G. J., & Dunifon, R. (2012). "Soft-skills" and long-run labor market success. *Research in Labor Economics, 35*, 313-339.
- Dweck, C.S. (2007, December/January). The secret to raising smart kids. *Scientific American: Mind, 36*-43.
- Elawar, M. C., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology, 77*(2), 162-173.
- Emmer, E. T. (1982). Improving classroom management and organization in junior high schools: An experimental investigation. Research and Development Center for Teacher Education, University of Texas at Austin.
- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: a new look at an old issue. *Psychological Methods, 12*(2), 121.
- Evertson, C. M., & Emmer, E. T. (1982). Effective management at the beginning of the school year in junior high classes. Texas University, Austin: Research and Development Center for Teacher Education, 1-36.

- Evertson, C. M., Emmer, E. T., Sanford, J. P., & Clements, B. S. (1983). Improving classroom management: An experiment in elementary school classrooms. *The Elementary School Journal*, 84(2), 172-188.
- 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 Noncognitive factors in Shaping School Performance: A Critical Literature Review*. Chicago: Chicago Consortium for School Research, University of Chicago.
- Ferguson, R. F. with Danielson, C. (2014). How Framework for Teaching and Tripod 7Cs evidence distinguish key components of effective teaching. In T. J. Kane, K. A., Kerr, & R. C. Pianta, (Eds.). *Designing teacher evaluation systems: New guidance from the Measures of Effective Teaching Project*. San Francisco, CA: Jossey-Bass.
- Ferreira, M. M., & Bosworth, K. (2001). Defining caring teachers: Adolescents' perspectives. *Journal of Classroom Interaction*, 36(1), 24-31.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, 82(2), 221-234.
- Flynn, J. R. (1987). Massive IQ score gains in 14 nations: What IQ tests really measure. *Psychological Bulletin*, 101(2), 171-191.
- Fredericks, J. A., Blumenfeld, P. C., Friedel, J., & Paris, A. H. (2003). *School engagement*. Paper presented at the Indicators of Positive Development Conference, Child Trends.
- Fredericks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). Engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59-109.
- Furrer, C., & Skinner, E. A. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148-162.
- Garnett, P. J., & Tobin, K. (1988). Teaching for understanding: Exemplary practice in high school chemistry. *Journal of Research in Science Teaching*, 26(1), 1-14.
- Goodenow, C. (1993). Classroom belonging among early adolescent students. *Journal of Early Adolescents*, 13(1), 21-43.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child development*, 76(5), 949-967.
- Hayes, C. B., Ryan, A., & Zsellar, E. B. (1994). The middle school child's perceptions of caring teachers. *American Journal of Education*, 103(1), 1-19.
- Heckman, J. J., Humphries, J. E., & Kautz, T. (Eds.). (2014). *The myth of achievement tests: The GED and the role of character in American life*. Chicago, IL: University of Chicago Press.
- Hernstein, R. J., & Murray, C. (1994). *The bell curve: Intelligence and class structure in American life*. New York, NY: Free Press Paperbacks.
- Hines, C. V., Cruickshank, D. R., & Kennedy, J. J. (1985). Teacher clarity and its relationship to student achievement and satisfaction. *American Educational Research Journal*, 22(1), 87-99.

- Hitlin, S & Elder Jr, G. H. (2007). Time, self, and the curiously abstract concept of agency. *Sociological Theory*, 25(2), 170-191.
- Hulleman, C. S., Godes, O., Hendricks, B. L., & Harackiewicz, J. M. (2010). Enhancing interest and performance with a utility value intervention. *Journal of Educational Psychology*, 102(4), 880-895.
- Hulleman, C. S., & Harackiewicz, J. M. (2009). Promoting interest and performance in high school science classes. *Science*, 326(5958), 1410-1412.
- Janosz, M., Archambault, I., Morizot, J., & Pagani, L. S. (2008). School engagement trajectories and their differential predictive relations to dropout. *Journal of Social Issues*, 64(1), 21-40.
- Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward an understanding of definitions and measures of school engagement and related terms. *California School Psychologist*, 8, 7-27.
- Kallison, J. M. (1986). Effects of lesson organization on achievement. *American Educational Research Journal*, 23(2), 337-347.
- Kane, T. J., Kerr, K. A., & Pianta, R. C. (Eds.). (2014). *Designing teacher evaluation systems: New guidance from the Measures of Effective Teaching Project*. San Francisco, CA: Jossey-Bass.
- Kennedy, J. J., Cruickshank, D. R., Bush, A. J., & Myers, B. (1978). Additional investigations into the nature of teacher clarity. *The Journal of Educational Research*, 72(1), 3-10.
- Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health*, 74(7), 262-273.
- Kounin, J. S. (1970). *Discipline and group management in classrooms*. Oxford, England: Holt, Rinehart, and Winston.
- Lawson, M. A., & Lawson, H. A. (2013). New conceptual frameworks for student engagement research, policy, and practice. *Review of Educational Research*, 83(3), 432-479.
- Learning about teaching: Initial findings from the Measures of Effective Teaching project*. (2010). Seattle, WA: Bill & Melinda Gates Foundation.
- Lee, V. E., & Smith, J. B. (1999). Social support and achievement for young adolescents in Chicago: The role of school academic press. *American Educational Research Journal*, 36(4), 907-945.
- Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *American Psychological Association*, 47(1), 233-247.
- MacCann, C., Duckworth, A. L., & Roberts, R. D. (2009). Empirical identification of the major facets of conscientiousness. *Learning & Individual Differences*, 19(4), 451-458.
- Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *American Educational Research Journal*, 37(1), 153-184.
- Matsumura, L. C., Slater, S. C., & Crosson, A. (2008). Classroom climate, rigorous instruction and curriculum, and students' interactions in urban middle schools. *The Elementary School Journal*, 108(4), 293-312.

- McElhone, D. (2012). Tell us more: Reading comprehension, engagement, and conceptual press discourse. *Reading Psychology, 33*(6), 525-561.
- Metcalf, K. K., & Cruickshank, D. R. (1991). Can teachers be trained to make clear presentations? *The Journal of Educational Research, 85*(2), 107-116.
- Mottet, T. P., Garza, R., Beebe, S. A., Houser, M. L., Jurrells, S., & Furler, L. (2008). Instructional communication predictors of ninth-grade students' affective learning in math and science. *Communication Education, 57*(3), 333-355.
- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75*(1), 33-52.
- Nagaoka, J., Farrington, C. A., Ehrlich, S.B., and Heath, R. D., with Johnson, D.W., Dickson, S., Turner, A.C., Mayo, A., and Hayes, K., 2015. *Foundations for Young Adult Success: A Developmental Framework*. Chicago: Chicago Consortium for School Research, University of Chicago.
- National Center for Education Statistics. (2012, November). *Improving the measurement of socioeconomic status for the National Assessment of Educational Progress: A theoretical foundation*. Washington, DC: Author
- Patrick, B. C., Skinner, E. A., & Connell, J. P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology, 65*(4), 781-791.
- Raudenbush, S. W., & Jean, M. (2014). To what extent do student perceptions of classroom quality predict teacher value added? In T. J. Kane, K. A., Kerr, & R. C. Pianta, (Eds.). *Designing teacher evaluation systems: New guidance from the Measures of Effective Teaching Project*. San Francisco, CA: Jossey-Bass.
- Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology, 98*(1), 209-218.
- Rodger, S., Murray, H. G., & Cummings, A. L. (2007). Effects of teacher clarity and student anxiety on student outcomes. *Teaching in Higher Education, 12*(1), 91-104.
- Rubie-Davies, C. M. (2007). Classroom interactions: Exploring the practices of high- and low-expectation teachers. *British Journal of Educational Psychology, 77*(2), 289-306.
- Ryan, A. M., Gheen, M., & Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social-emotional role and classroom goal structure. *Journal of Educational Psychology, 90*, 528-535.
- Ryan, A. M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*(2), 437-460.
- Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescents, 14*(2226-249).

- Schacter, J., & Thum, Y. M. (2004). Paying for high-and low-quality teaching. *Economics of Education Review*, 23(4), 411-430.
- Schmuck, R. A., & Schmuck, P. A. (1991). The attitudes of adolescents in small-town America. *NASSP Bulletin*, 75(533), 85-95.
- Shernoff, D. J., Csikszentmihalyi, M., Schneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, 18(2), 158-176.
- Shernoff, D. J., & Schmidt, J. A. (2008). Further evidence of an engagement-achievement paradox among U.S. high school students. *Journal of Youth and Adolescence*, 37, 564-580.
- Shouse, R. C. (1996). Academic press and sense of community: Conflict, congruence, and implications for student achievement. *Social Psychology of Education*, 1(1), 47-68.
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 84(4), 571-581.
- Skinner, E. A., Marchand, G., Furrer, C., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100(4), 765-781.
- Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology*, 82(1), 22-32.
- Tough, P. (2012). *How children succeed: Grit, curiosity, and the hidden power of character*. New York: Houghton Mifflin Harcourt.
- Van Ryzin, M. J., Gravely, A. A., & Roseth, C. J. (2009). Autonomy, belongingness, and engagement in school as contributors to adolescent psychological well-being. *Journal of Youth and Adolescence*, 38(1), 1-12.
- Vaquera, E. (2009). Friendship, educational engagement, and school belonging: Comparing Hispanic and White adolescents. *Hispanic Journal of Behavioral Sciences*, 31(4), 492-514.
- Wang, M., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction*, 28, 12-23.
- Wang, M.-T., & Holcombe, R. (2010). Adolescents' perceptions of school environment, engagement, and academic achievement in middle school. *American Educational Research Journal*, 47(3), 633-662.
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1993). Toward a knowledge base for school learning. *Review of educational research*, 63(3), 249-294.
- Wentzel, K. R. (2002). Are effective teachers like good parents? Teaching styles and student adjustment in early adolescence. *Child Development*, 73(1), 287-301.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25, 68-81.

- 
- Wilson, B. L., & Corbett, D. (2001). *Listening to urban kids: School reform and the teachers they want*. Albany, NY: SUNY Press.
- Wolf, M. K., Crosson, A. C., & Resnick, L. B. (2005). Classroom talk for rigorous reading comprehension instruction. *Reading Psychology, 26*(1), 27-53.
- Wright, C. J., & Nuthall, G. (1970). Relationships between teacher behaviors and pupil achievement in three experimental elementary science lessons. *American Educational Research Journal, 7*(4), 477-491.
- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research, 81*(2), 267-301.

ABOUT THE AUTHORS

Ronald F. Ferguson, Ph.D.

Ron is an MIT-trained economist who has taught at Harvard University since 1983. His teaching and publications cover a variety of issues in education and economic development. In addition to teaching and writing, he consults actively with school departments and agencies at all levels of government. He is the creator of the Tripod Project for School Improvement, including widely used student and teacher surveys. He is also a co-founder of Tripod Education, Inc., the faculty co-chair and director of the Achievement Gap Initiative at Harvard University, and was recently faculty co-chair of the Pathways to Prosperity Initiative on adolescent-to-adult transitions at Harvard's Graduate School of Education.

Most of Ferguson's research since the mid-1990s has focused on racial achievement gaps, appearing in publications of the National Research Council, the Brookings Institution, and the US Department of Education, in addition to various books and journals. His most recent book is *Toward Excellence with Equity: An emerging vision for closing the achievement gap*, published by Harvard Education Press. He earned an undergraduate degree from Cornell University and Ph.D. from MIT, both in economics.

Sarah F. Phillips, Ph.D., MSW

Sarah is the Vice President of Research at Tripod Education Partners. Her research examines positive youth development in school and out-of-school contexts with an emphasis on racial/ethnic differences and disparities. Her scholarship is informed by more than a decade of experience as a teacher, community organizer, and non-profit leader. Highlights include helping to start one of Oakland's first community schools, winning weekend train service for several low-income communities on Chicago's West Side, and co-leading the transformation of City Year Rhode Island's Program and Service Department. Sarah holds a PhD in Social Policy from Brandeis University, a MSW in Community Organization and Communities and Social Systems from the University of Michigan, and a BA in History with Honors from Brown University.



Jacob F. S. Rowley, Ed.M.

Jacob is a Research Associate at Tripod Education Partners. His passion for educational issues was first sparked by a community psychology research project conducted during his senior year of college. The project entailed examining the efficacy of newly implemented school policies. Following graduation, he served as a member of Project POWER, an Asheville, NC-based AmeriCorps program. As a Project POWER member, he worked as a second grade teacher's assistant and as co-site Leader of a K-5 after-school program. He holds an Ed.M. in Human Development and Psychology from Harvard University, as well as a B.A. in Psychology from the University of North Carolina, Asheville.

Jocelyn W. Friedlander, Ed.M.

Jocelyn is a researcher and Project Manager at the Achievement Gap Initiative at Harvard University. An expert on child development, she manages the Boston Basics initiative, an effort with a growing number of partners around Boston to saturate the city with information and supports for early childhood caregiving. She also manages a research and demonstration project helping a network of community-based organizations cultivate future orientation and agency-related factors into out-of-school time programs for children and youth. Previously, she conducted research on early childhood interventions and policy at Columbia University's National Center for Children and Families. She holds an Ed.M. in Prevention Science and Practice from Harvard University and a B.A. in Psychology with Honors from Yale College.