



Assessing Character: Measuring noncognitive factors that matter for school performance

Character Education for a Challenging Century
October 23, 2014

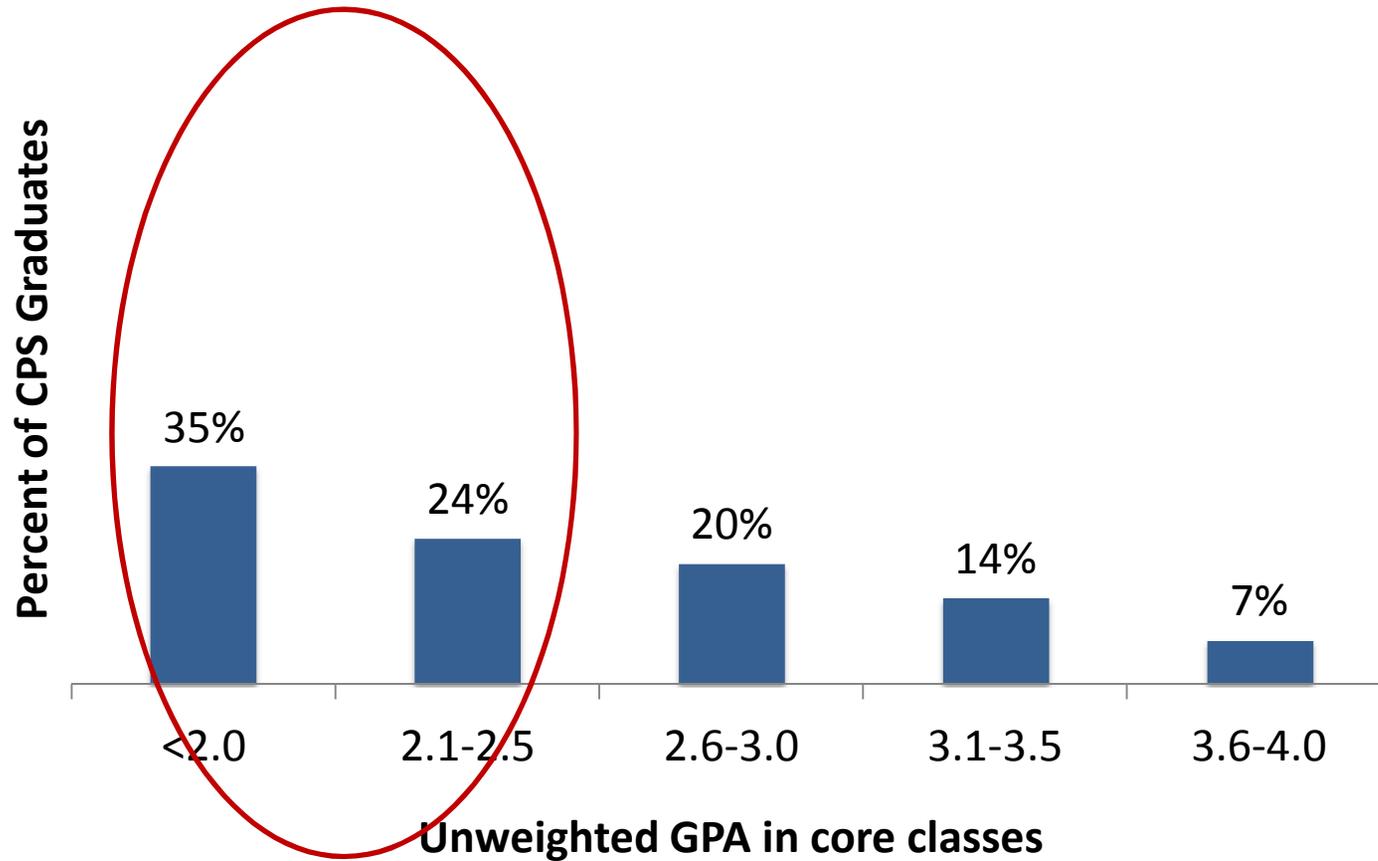
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Today

- What are “noncognitive performance character factors,” and how does the research on noncognitive factors challenge our understanding of character?
- How do we assess the noncognitive performance character factors that shape school experiences and outcomes?

Grades are VERY LOW in Chicago public high schools

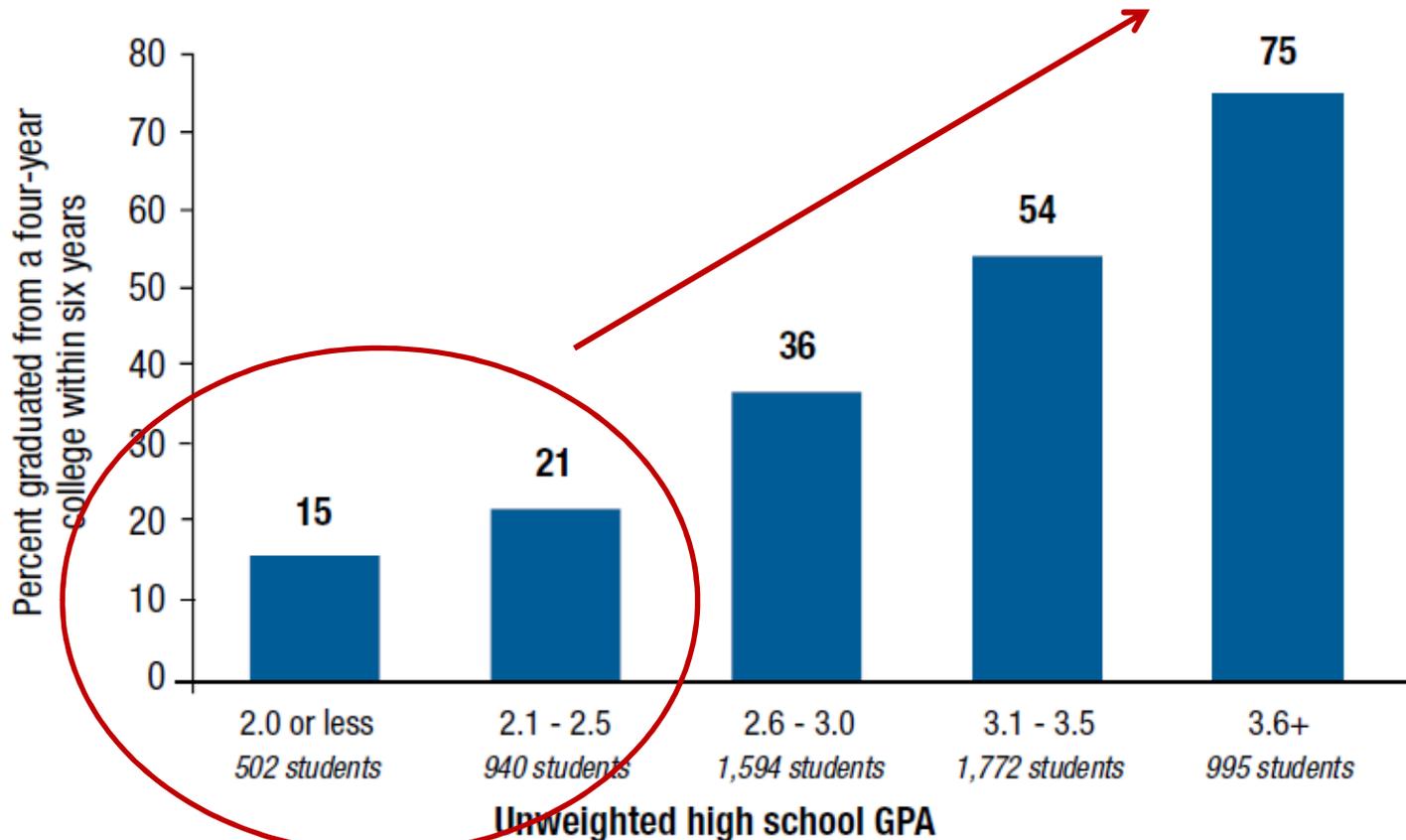
Over 50 percent of CPS *graduates* finish school with a high school GPA of 2.5 or less in their core classes.



Chicago Public Schools
2002 and 2003 graduates

Students who enroll in a four-year university with a high school GPA of 2.5 or lower are **very unlikely** earn a university degree

College graduation rates by unweighted high school GPA



Note: These were CPS alumni who enrolled full time in a four-year college by spring following their high school graduation and enrolled in a college for which we have graduation information.

Grades

- Grades are better predictors than test scores of long-term **educational outcomes** (high school graduation, university enrollment, university graduation)
- Grades are better predictors of **life outcomes** (wages, health, longevity, civic participation)
- Grades are where we observe growing **gaps** by race/ethnicity, socio-economic status, and gender

The Good News

- **Grades are malleable**
 - **Students** have a lot of control over their grades
 - **Teachers** have a lot of control over conditions that support high grades

Bad News:

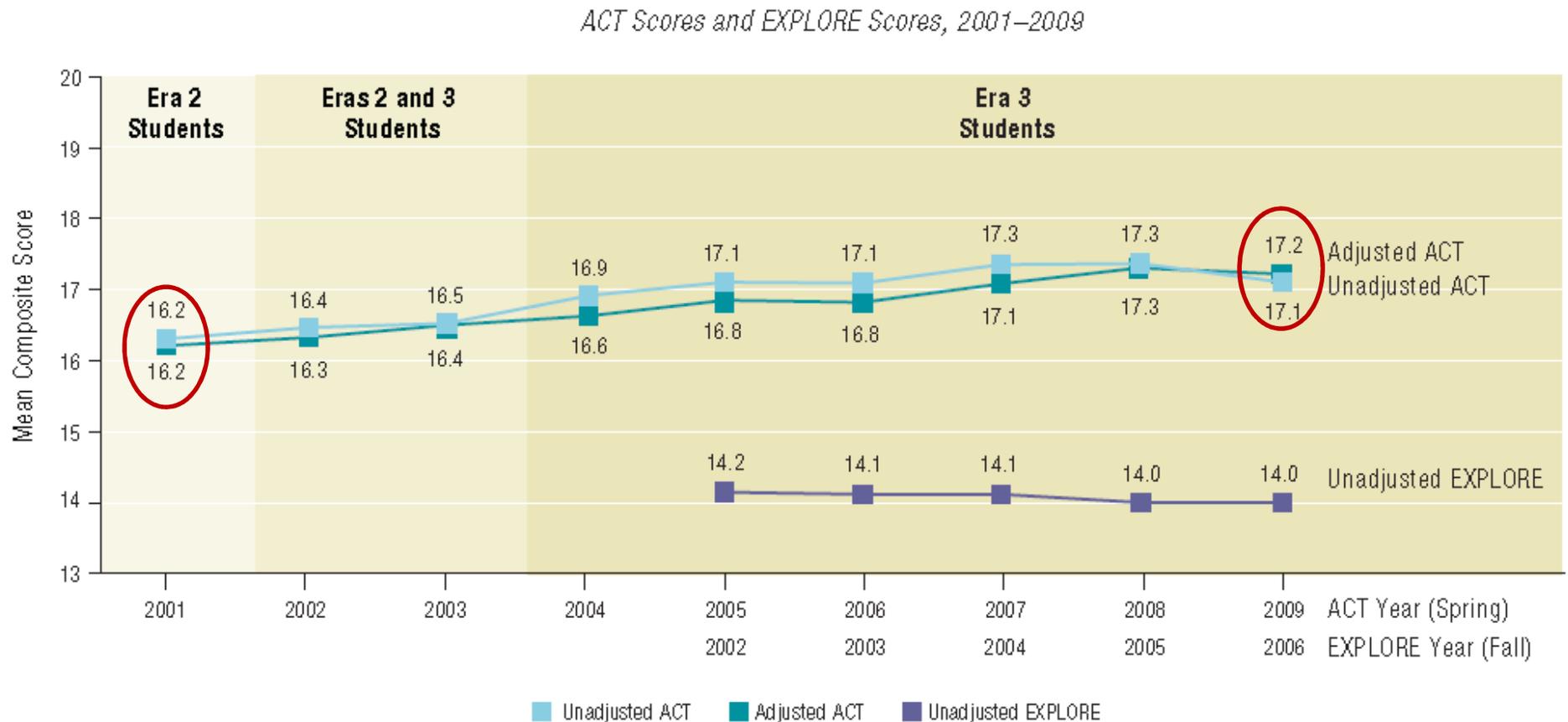
Era of Test-based Accountability

- Standardized tests used to assess students' content knowledge and academic skills
- Standardized tests are used to rate the quality of schools and teachers
- Enormous pressure on schools/teachers to raise test scores → primary goal of instruction

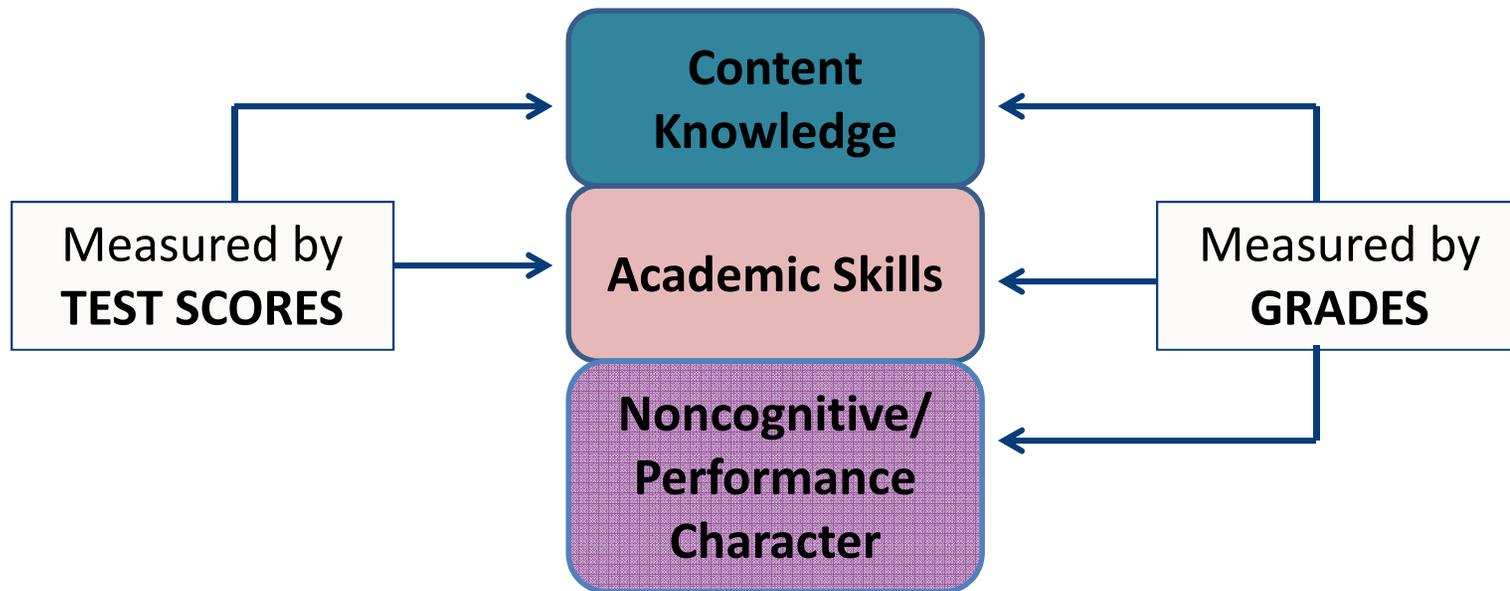
from CCSR report: *Trends in Chicago's Schools across Three Eras of Reform: Summary of Key Findings* (Luppescu, Allensworth, Moore, de la Torre, & Murphy, 2011)

FIGURE 9

Eleventh grade ACT scores have been rising, even though entering ninth grade EXPLORE scores have been flat



What makes a Grade?



Noncognitive Performance Character vs Cognitive Factors

- *Not measured by cognitive tests*
(achievement or IQ tests)
 - Not content knowledge
 - Not core academic skills
- Other skills, behaviors, strategies, beliefs, attitudes related to school performance

Noncognitive Performance vs Noncognitive Moral Character

- Moral factors:
 - integrity, ethics, gratitude,
 - what makes good or bad *people*
- Performance factors:
 - “qualities that allow individuals to regulate their thoughts and actions in ways that support achievement in a particular endeavor”¹
 - contributing to successful or unsuccessful *student*

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Jenny Nagaoka, Tasha Seneca Keyes, David W. Johnson, Nicole O. Williams



Literature Review Goals

- What noncognitive character factors matter for performance?
- Address practitioner demand for understanding the leverage points and mechanisms for grade improvement in the classroom?

Key Findings of Literature Review

1. Improving students' grades requires improving their **academic behaviors** and building their **academic perseverance**

ACADEMIC BEHAVIORS

Going to class
Doing homework
Participating, Studying

ACADEMIC PERFORMANCE

Academic Behaviors

- Going to class
- Doing homework
- Participating
- Studying
- *Improving academic behaviors is the only way to improve grades!*

ACADEMIC PERSEVERANCE

Self-Control, Delayed Gratification



ACADEMIC BEHAVIORS



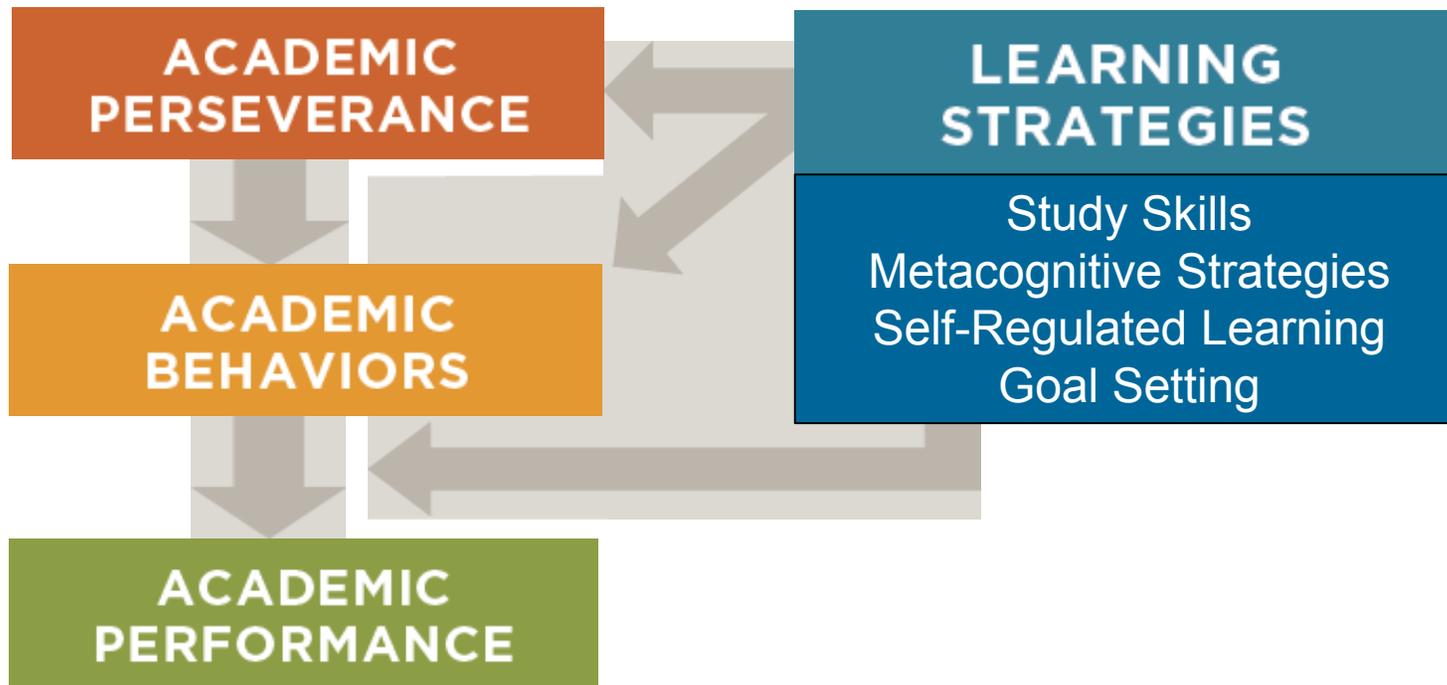
ACADEMIC PERFORMANCE

Academic Perseverance

- Self-Control
- Academic Delay of Gratification
- *Ability and tendency to see things through to completion despite distractions or obstacles*

Key Findings of Literature Review

1. Improving students' grades requires improving their **academic behaviors** and building their **academic perseverance**
2. **Academic mindsets and learning strategies** are key levers for improving students' **academic behaviors** and **academic perseverance** (and hence for raising their grades)



Learning Strategies

- Goal setting/Time management
- Identifying Task Demands
- Monitoring

ACADEMIC MINDSETS

Self-efficacy, Relevance, Belonging, Growth

Mindset

ACADEMIC
PERSEVERANCE

ACADEMIC
BEHAVIORS

ACADEMIC
PERFORMANCE

Academic Mindsets

Beliefs about oneself in relation to academic work.

My ability and competence grow with my effort

Key Findings of Literature Review

1. Improving students' grades requires improving their **academic behaviors** and building their **academic perseverance**
2. **Academic mindsets and learning strategies** are key levers for improving students' **academic behaviors** and **academic perseverance** (and hence for raising their grades)
3. **Classroom context and teacher instructional practices** play a crucial role in fostering **mindsets, strategies, and thus, character**

Effect of the Classroom Context

- Noncognitive Performance Character is a property of the person? YES!

Genetics

Social learning

Development over time

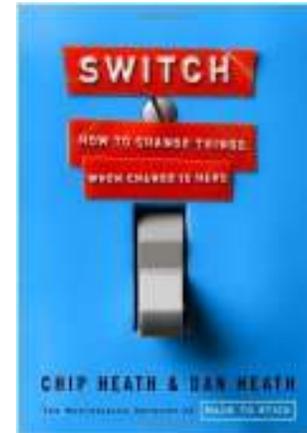
Effect of the Classroom Context

- Walter Mischel
 - ✓ The importance of the situation!
- Heath & Heath, *Switch*
 - ✓ The power of the situation!
 - ✓ Gluttony is as extreme as the popcorn tub is deep



Effect of the Classroom Context

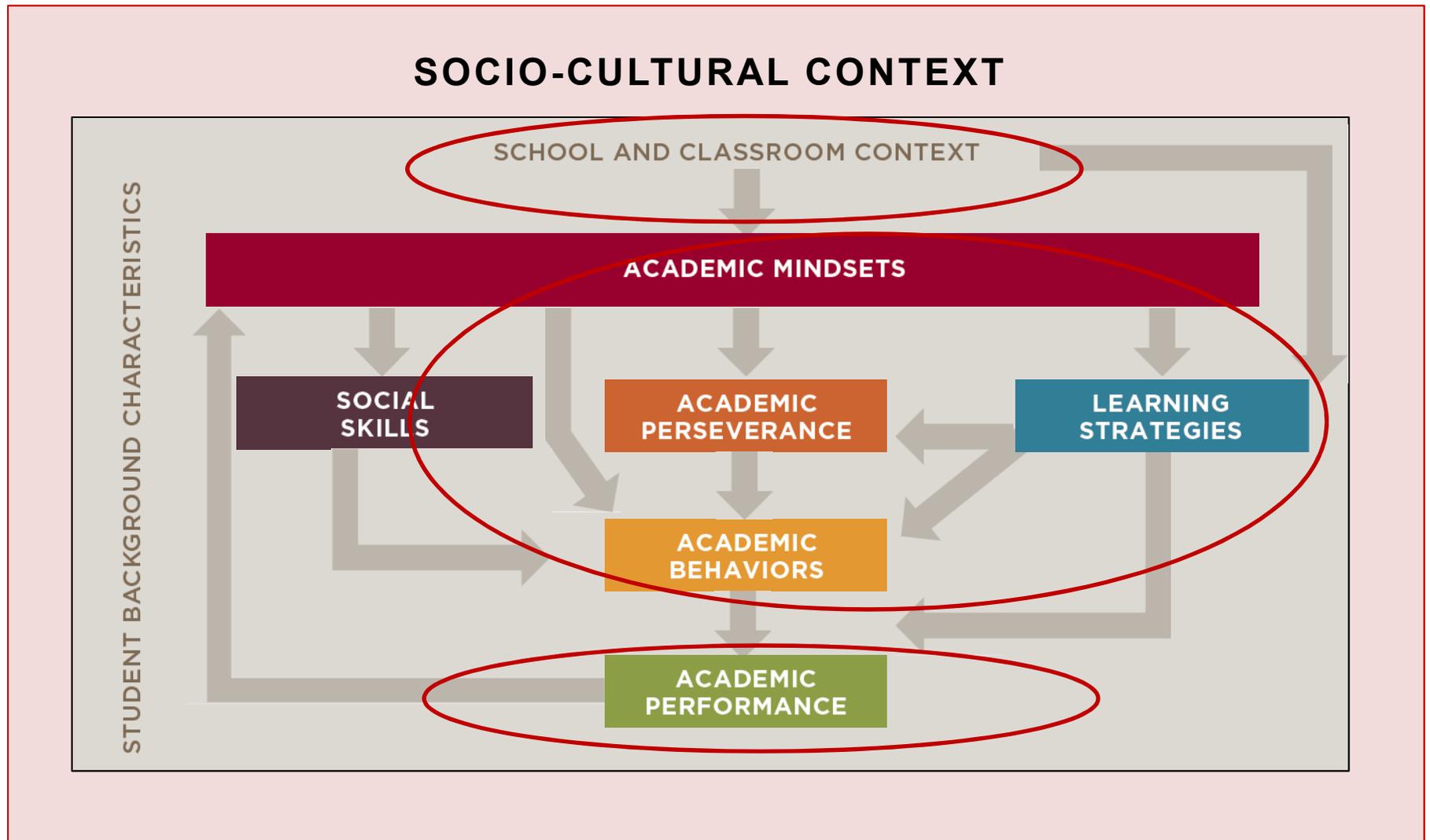
- Explicit messages are important:
 - Direct the Rider
 - Drink 1% or Skim
- Implicit messages are important:
 - Shape the pathway
 - Classroom systems, structures, policies, practices, opportunities, interactions, values, & norms



Classroom Context Variables measured by
Becoming Effective Learners Student Survey



CCSR Model: The Role of Noncognitive Factors in School Performance



Key Gaps Identified

- There is **no single existing instrument** that measures the factors that research suggests are important for student performance in *the context of the classroom*
 - Disambiguated, separable measures
 - Mechanisms, leverage points, and how it all fits together

Filling the Gap

- Best Measures of NPCF Must be able to capture:
 - The “heart” of the construct/concept
 - Both **properties of individual students** and **influence of students’ contexts**

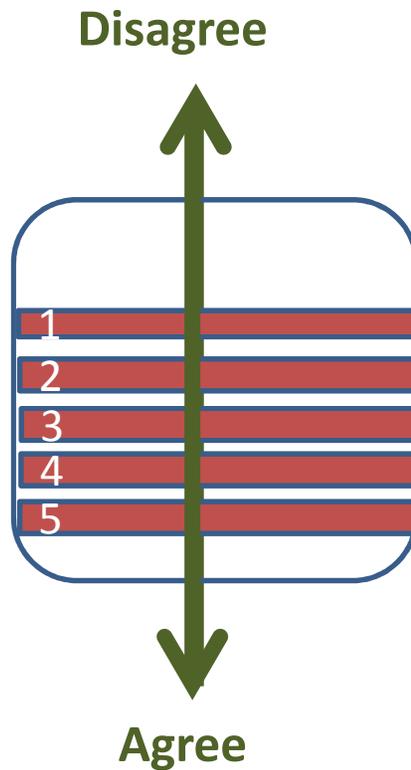
RASCH measurement

versus

Traditional survey measurement
of psychological constructs

Traditional psychological survey measurement:

1. Define a construct, sometimes “fuzzy”
2. Develop series of closely similar items to gauge the stability of person’s responses
3. Differentiate between people using response scales: focus on magnitude



Example: Measuring Growth vs. Fixed Mindset
(using Carol Dweck's items)

How true are the following statements:

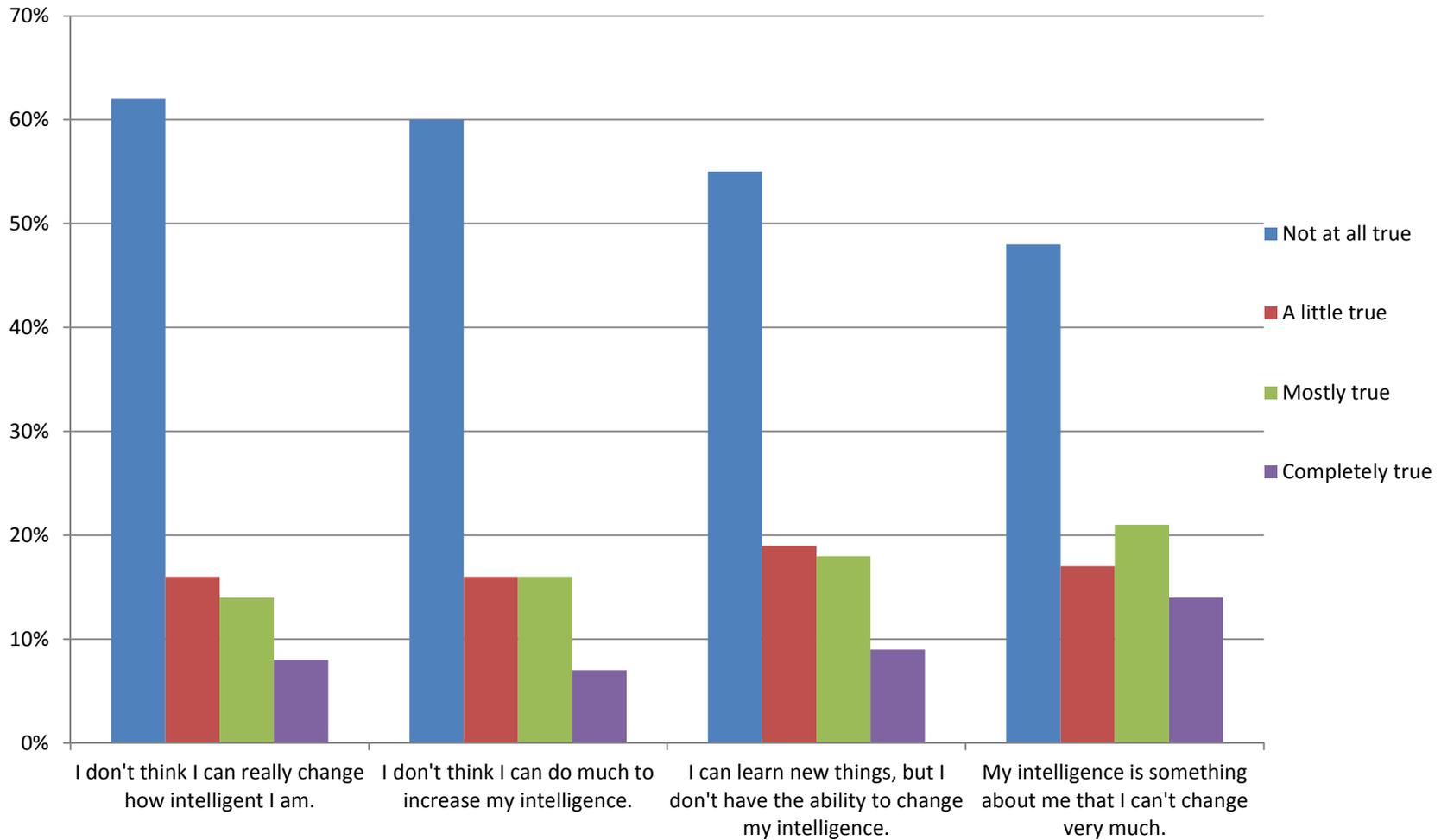
- My intelligence is something about me that I can't change very much.
- I don't think I can really change how intelligent I am.
- I can learn new things, but I don't have the ability to change my intelligence.
- I don't think I can do much to increase my intelligence.

Not at all true, A little true, Mostly true, Completely true

Becoming Effective Learners Student Pilot

- Large-scale web survey of students in grades 6-12
 - Part of sample responded about 2 different classrooms for many of the constructs
- 30 US Charter schools (N, 8000)
- 9 Chicago Public Schools (N, 600)

Theories of Intelligence: Fixed Mindset



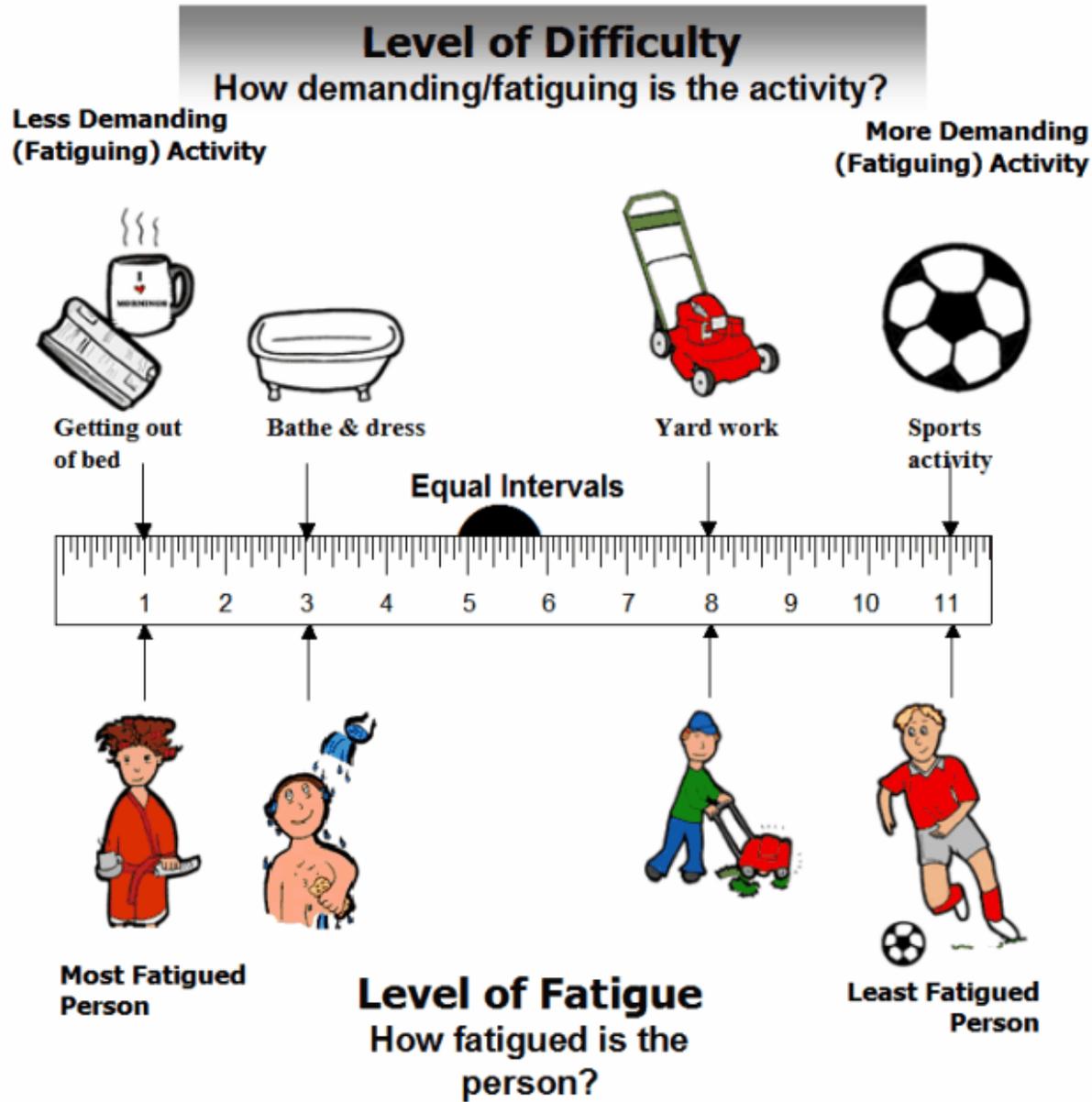


Figure: Measurement map of Fatigue. (Mallinson, 2001)

Rasch Measurement

- Using items of varying difficulty increases the accuracy of measurement
- Developed for cognitive assessments (standardized tests)
 - Difficulty on cognitive assessments vs. psychological assessments

Example:

Measuring a student's grasp of **multiplication**

Please select the correct answer for each of the following multiplication problems:

1) $9 \times 5 =$

2) $4 \times 3 =$

3) $8 \times 2 =$

4) $6 \times 1 =$

Example:

Measuring a student's grasp of **multiplication**

Please select the correct answer for each of the following multiplication problems:

1) $9 \times 5 =$

2) $4 \times 31 =$

3) $8.2 \times 2.6 =$

4) $637 \times 428 =$

5) $\frac{3}{5} \times \frac{2}{3} =$

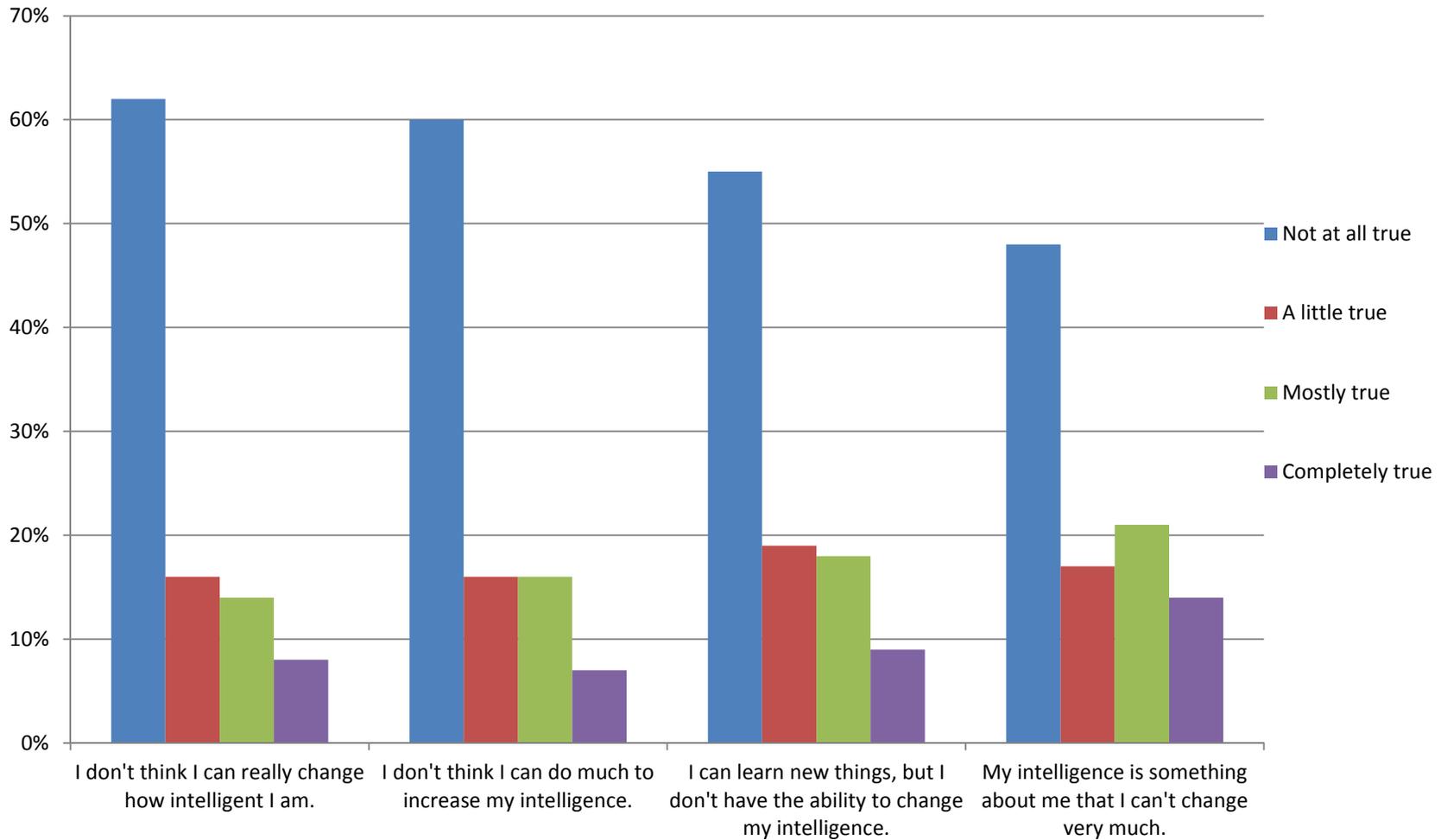
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Theories of Intelligence: Fixed Mindset



Item Difficulty in Rasch

- Tried to rewrite items of increasing difficulty when creating the survey using original scale as foundation
 - Needed to add EASIER items
- Difficulty is how easy or hard it is for someone to agree (endorse an item)

Example:

Fixed (Growth) Mindset

Revised Measure *BEL-S* Fall 2013

Theories of Intelligence: Fixed Mindset

How true are the following statements:

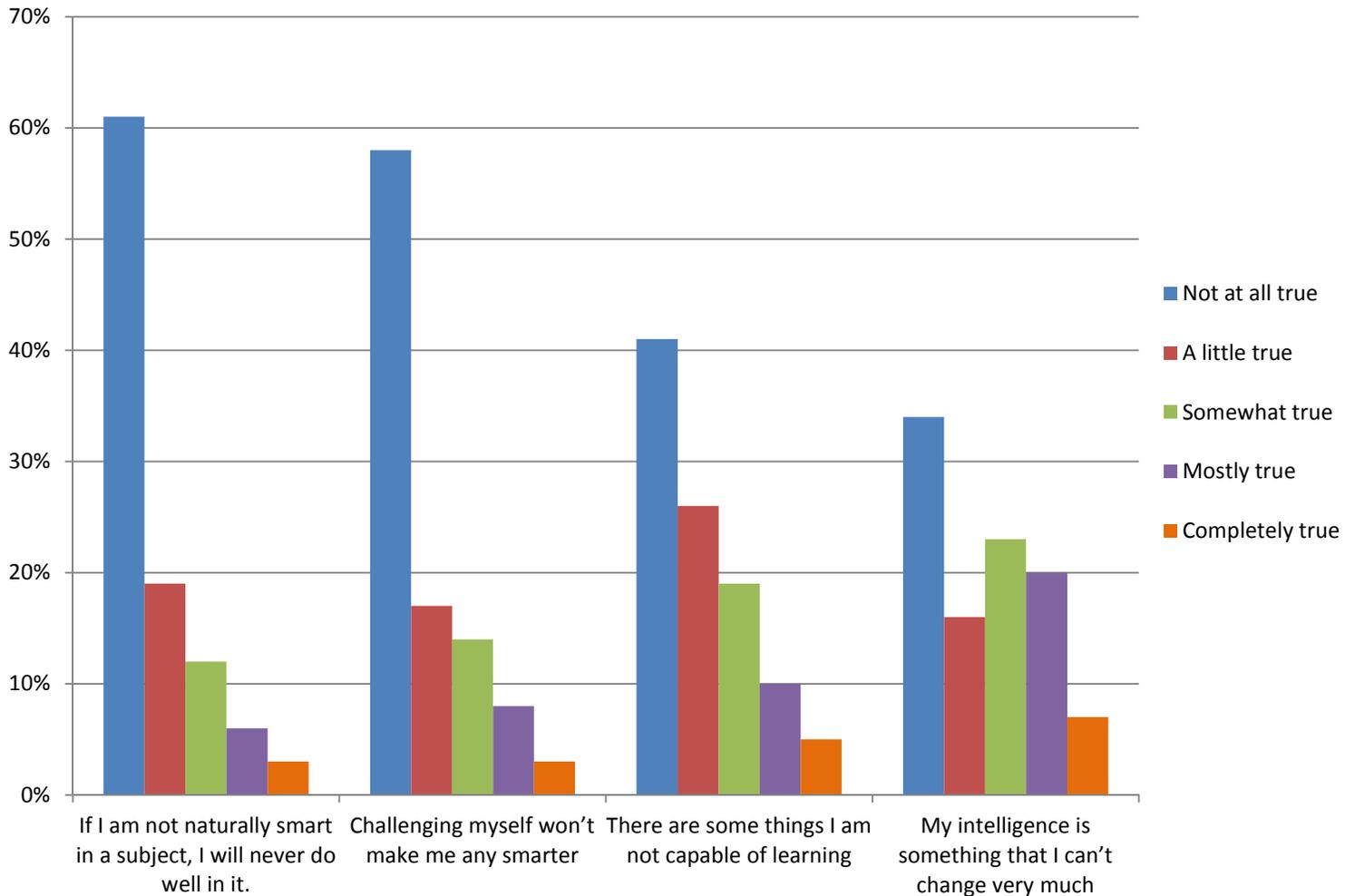
- My intelligence is something that I can't change very much.
- There are some things I'm not capable of learning.
- Challenging myself won't make me any smarter.
- If I'm not naturally smart in a subject, I will never do well in it.

Not at all true, A little true, Somewhat true, Mostly true, Completely true

Becoming Effective Learners T1

- Large-scale web survey of students in grades 6-12
- US charter schools (N, 8000)
- Chicago Public Schools (N, 650)

Theories of Intelligence: Fixed Mindset



Classroom Belonging Context

- Accuracy of category
- Assess qualitative differences

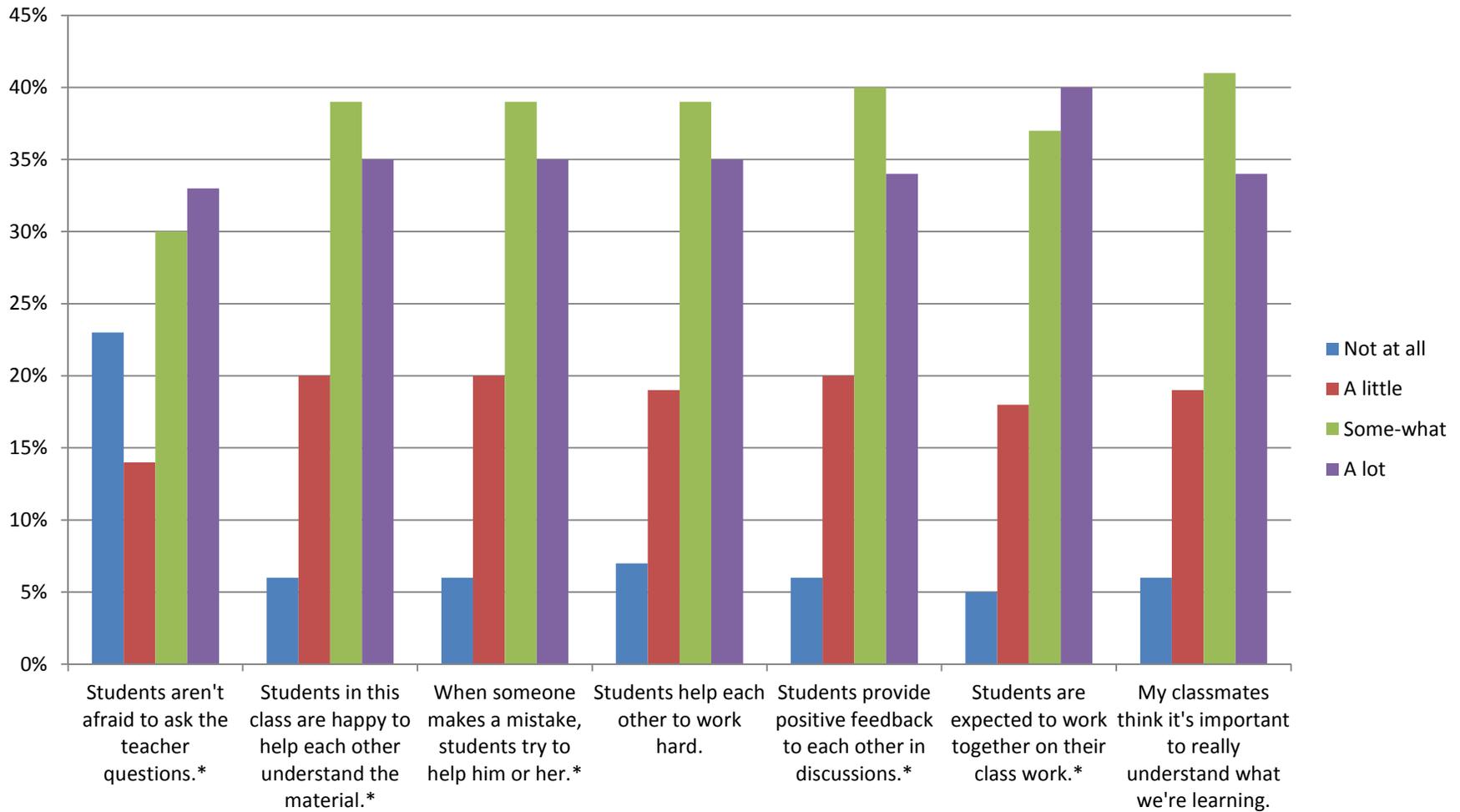
Belonging as a Classroom Condition

How much do the following statements describe your classmates in your [TARGET CLASS]?

- Students aren't afraid to ask the teacher questions.
- Students in this class are happy to help each other understand the material.
- When someone makes a mistake, students try to help him or her.
- Students help each other to work hard.
- Students provide positive feedback to each other in discussions.
- Students are expected to work together on their class work.
- My classmates think it's important to really understand what we're learning.

Not at all, A little, Somewhat, A lot

Belonging as a Classroom Condition



Classroom Belonging Context

- Needed to create a scale that layered the qualitative differences that exist in “high belongingness” classrooms versus “low belongingness” classrooms

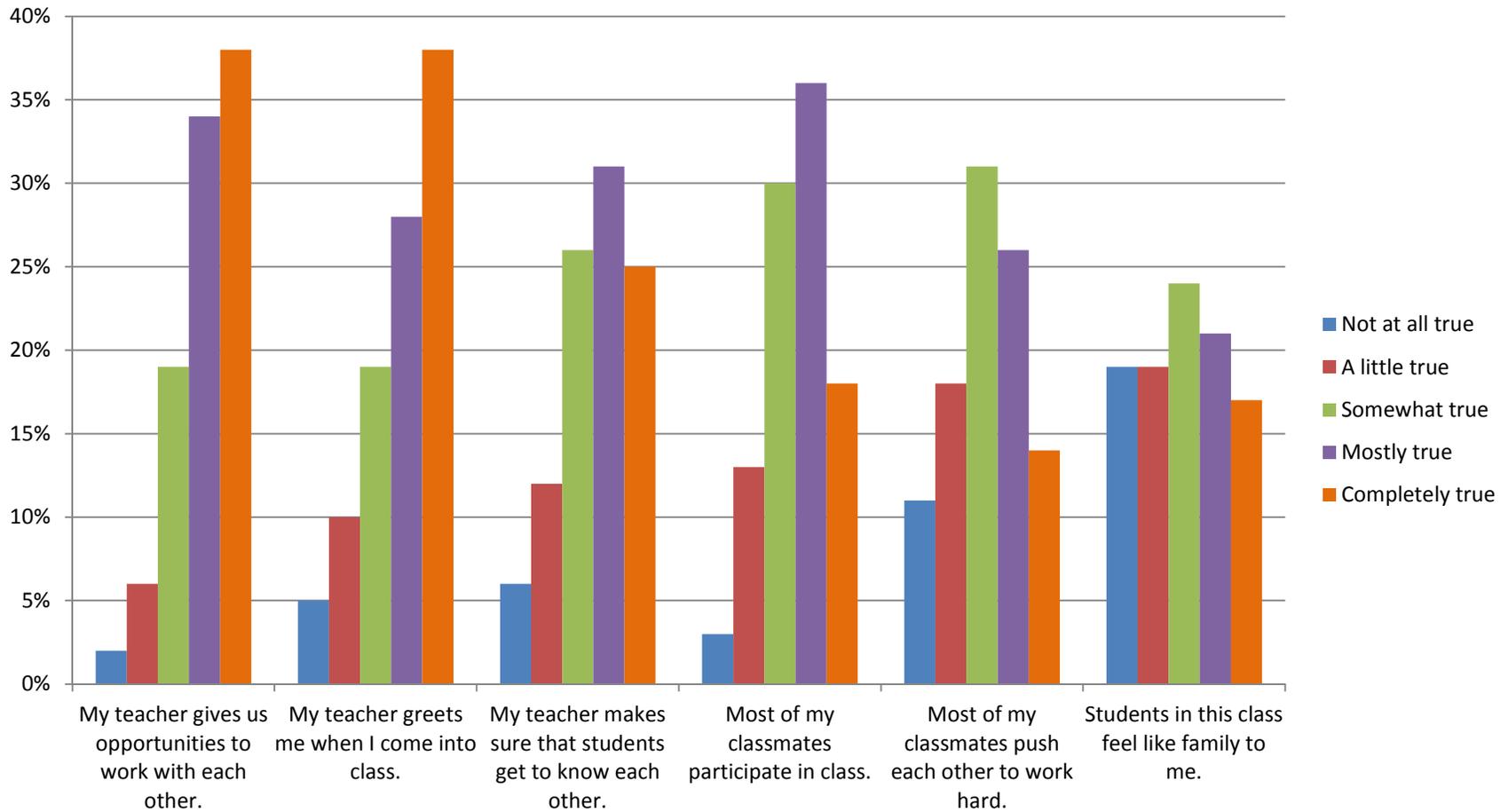
Belonging as a Classroom Condition

How true are the following in your [TARGET] class?

- My teacher gives us opportunities to work with each other.
- My teacher greets me when I come into class.
- My teacher makes sure that students get to know each other.
- Most of my classmates participate in class.
- Most of my classmates push each other to work hard.
- Students in this class feel like family to me.

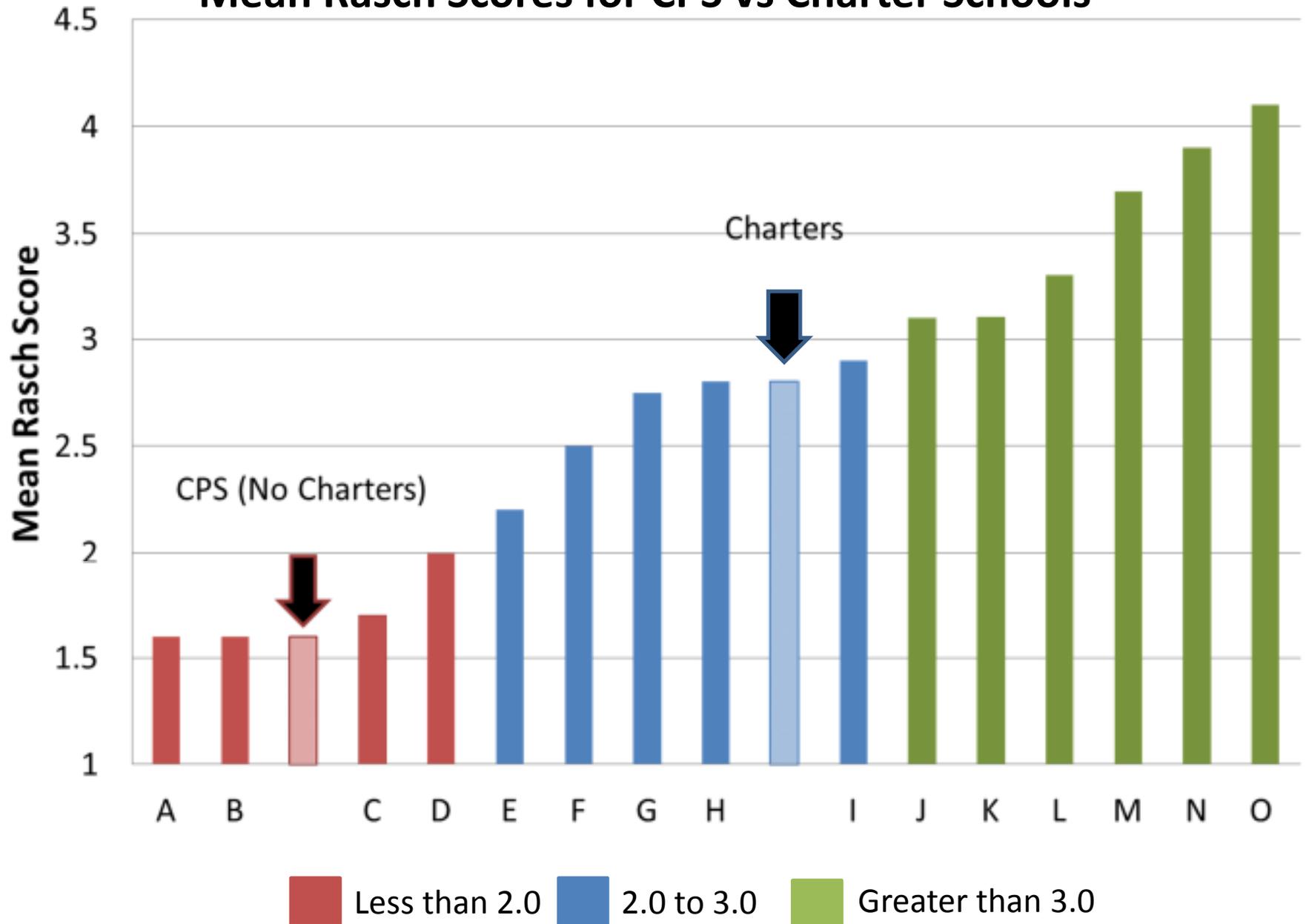
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Belonging as a Classroom Condition



Classroom Condition: Belonging

Mean Rasch Scores for CPS vs Charter Schools



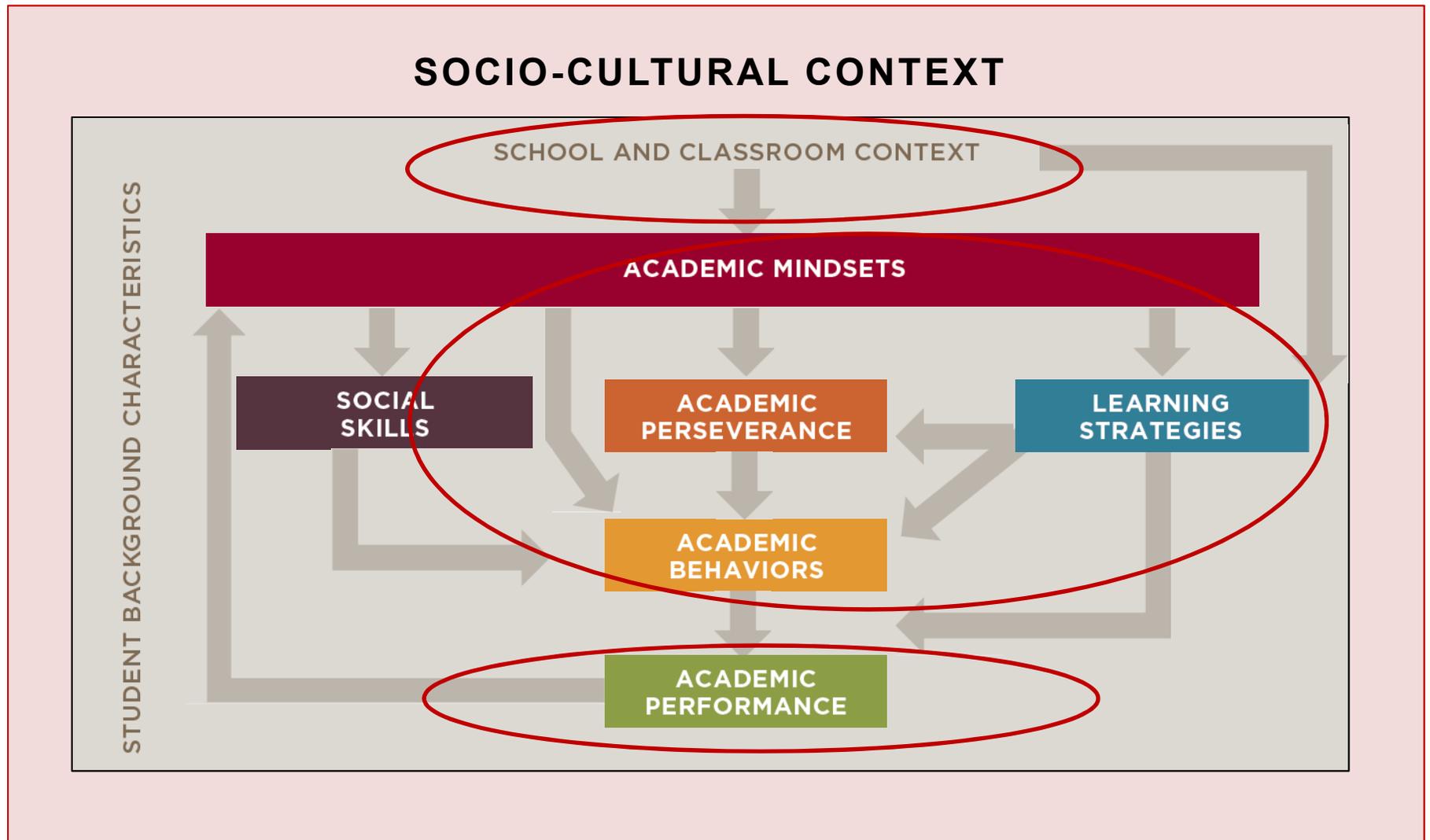
Take-aways: Rasch Measurement

- Range of item difficulties helps us to articulate quantitative & qualitative differences between contexts/people
- Improving precision also helps us better conceptualize the context or noncognitive construct
 - Distinctions among constructs
 - Understand how they're related to one another

Next Steps

- Analyses to test the model
 - Relative importance of various character factors for grades
 - Relative importance of various context factors for character

CCSR Model: The Role of Noncognitive Factors in School Performance



Challenges Ahead

- Measurement *has* improved
- Survey self-report still has a long way to go
 - Science of measurement \neq Demand
- Go, be researchers (or at least work with them)!
 - Addressing problems of practice

Thank you!

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