

Key Findings from Project Scientist

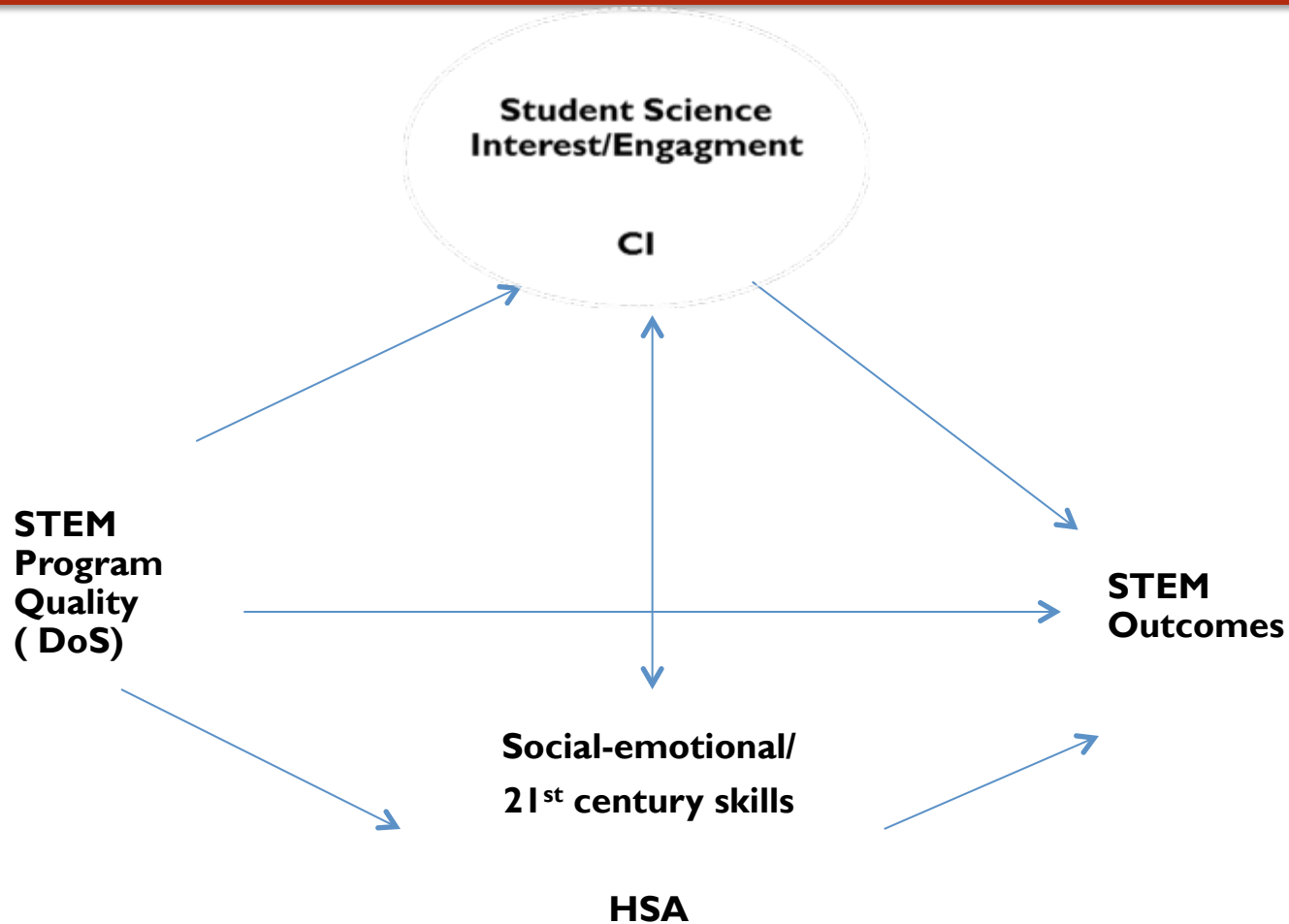
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**September
2014**

The Common Instrument Project

- The Common Instrument was developed with the support of the Noyce Foundation in 2010.
- Builds from research that identified STEM engagement and interest as important aspects of STEM learning and career pathways.
- Improves assessment capacity of STEM in after-school programs, summer camps, clubs, and other venues outside of school time.
- Provides the field with a valid, reliable and easy-to-use measure appropriate for use across a wide range of student populations

Mechanisms through which program quality impacts outcomes



The Common Instrument (CI): Measures students' Science interest

- **4-point scale: Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA)**
- **uni-dimensional: 10 items**
- **High internal validity; α is typically ≥ 0.90**
- **Shows modest to high correlation with other science items/scales**
 - National Assessment of education Progress (NAEP)
 - Test of Science Related Attitudes (TOSRA)
 - Program for International Science Assessment (PISA)

Younger Students (Ages 4-11)

The Common Instrument (CI) Pre/Post Test Survey 4-11



Today's Date:

Month		Day		Year	

Birthday:

Month		Day		Year	

First Name:

Last Name:

Science Interest: The Common Instrument

For each of the following statements, please circle the number that best describes what you think about the statement. Mark only one answer please!



	Strongly Disagree	Disagree	Agree	Strongly Agree
1. Science is something I get excited about.	1	2	3	4
2. I like to participate in science projects.	1	2	3	4
3. I like to see how things are made (for example, ice-cream, a TV, an iPhone, energy, etc).	1	2	3	4
4. I am curious to learn more about science, computers or technology.	1	2	3	4

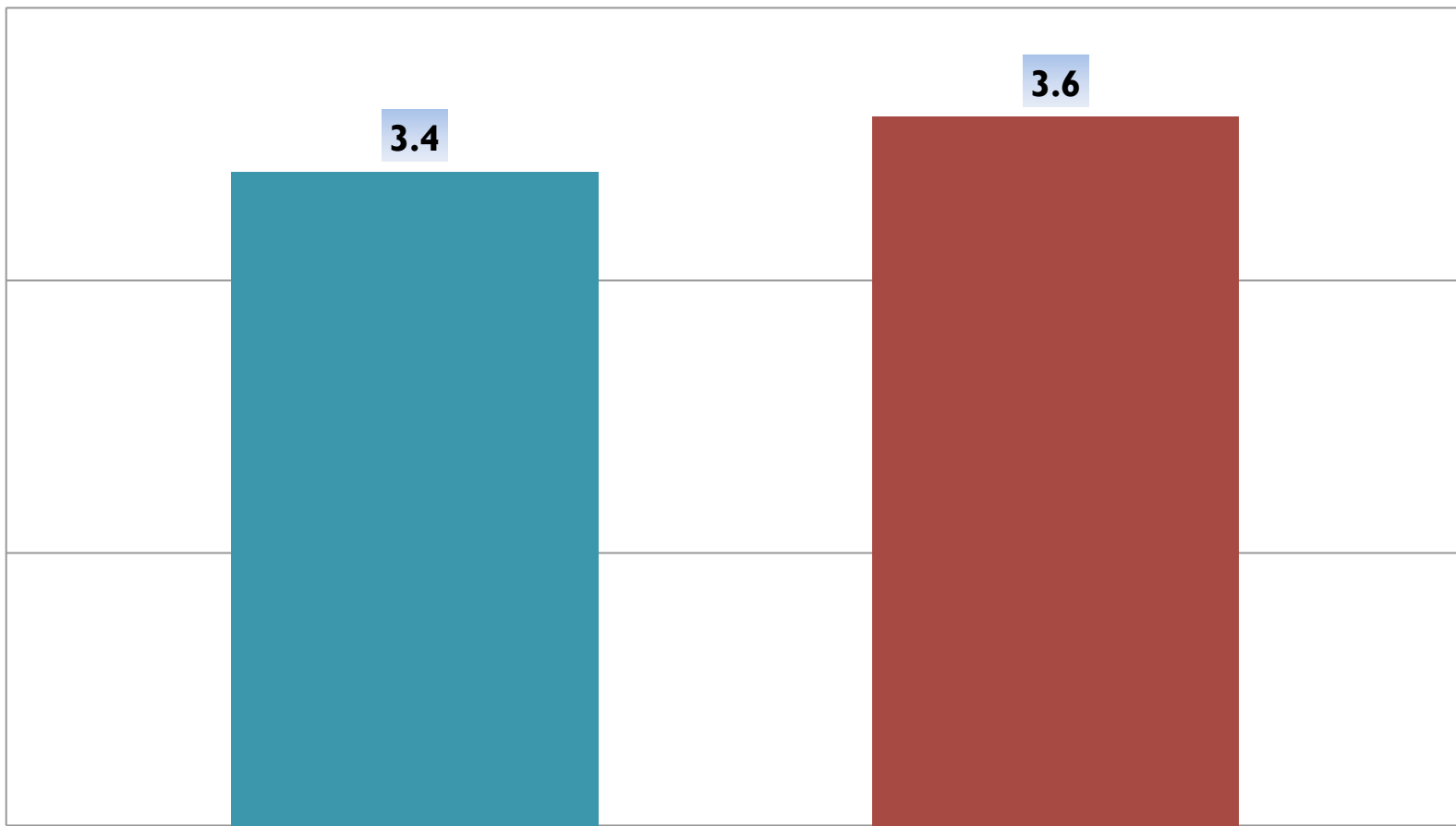
Science Interest at the Beginning and End of the Program, Ages 4 to 11 (n = 166)

Strongly Agree 4.0

Agree 3.0

Disagree 2.0

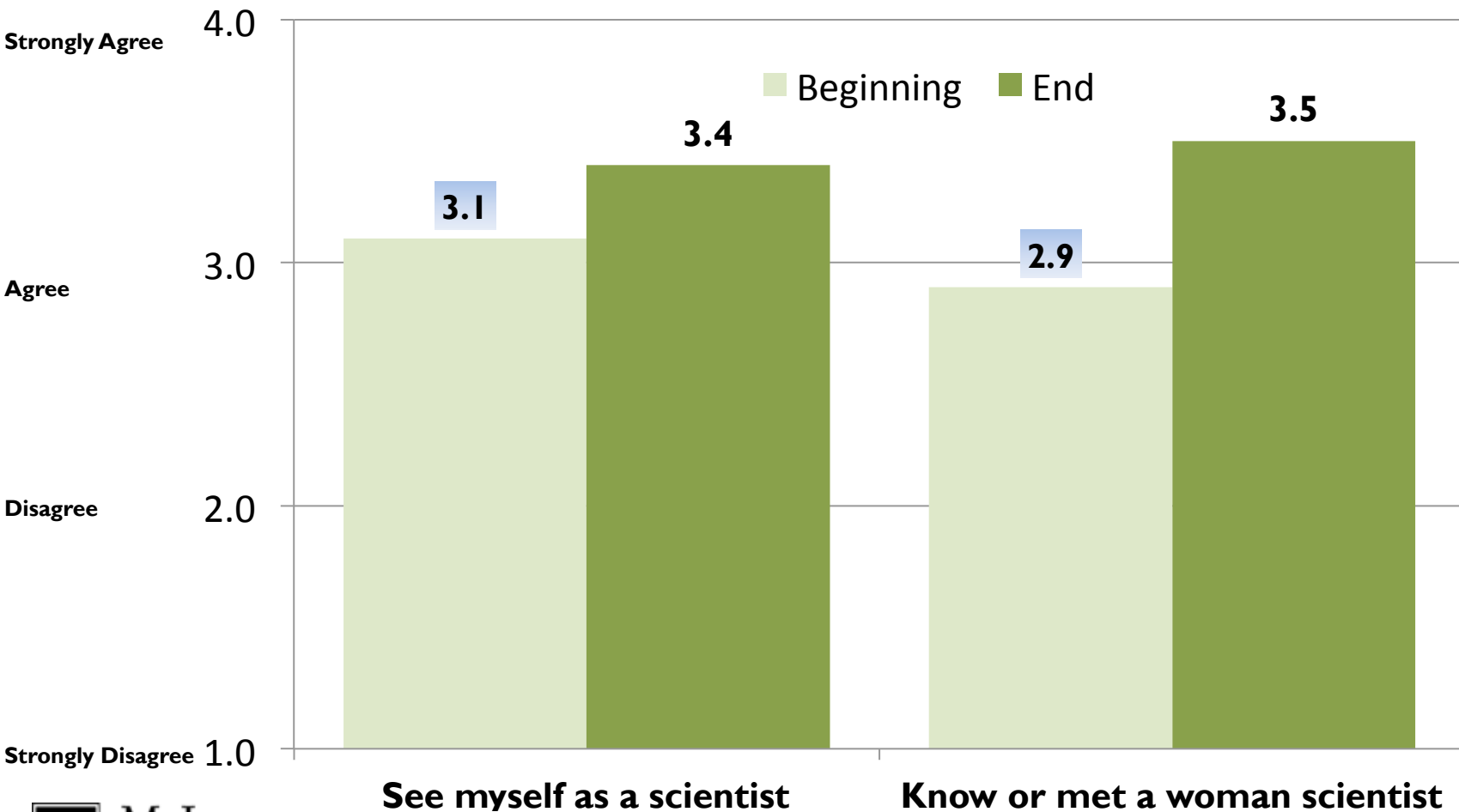
Strongly Disagree 1.0



■ Beginning

■ End

Program Participation and Becoming or Knowing a Woman Scientist, ages 4 to 11



Older Students (Ages 12 and Above)

The Common Instrument (CI) Pre/Post Test Survey 12+



HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL



McLean HOSPITAL
HARVARD MEDICAL SCHOOL AFFILIATE

Today's Date:

Month		Day		Year	

Birthday:

Month		Day		Year	

First Name:

Last Name:

For each of the following statements, please answer how much you **DISAGREE** or **AGREE** with the following statements by circling the number that best describes what you think about the statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. Science is something I get excited about.	1	2	3	4
2. I like to participate in science projects.	1	2	3	4
3. I like to see how things are made (for example, ice-cream, a TV, an iPhone, energy, etc).	1	2	3	4
4. I am curious to learn more about science, computers or technology.	1	2	3	4
5. I want to understand science (for example, to know how computers work, how rain forms, or how airplanes fly).	1	2	3	4
6. I get excited about learning about new discoveries or inventions.	1	2	3	4
7. I pay attention when people talk about recycling to protect our environment.	1	2	3	4
8. I am curious to learn more about cars that run on electricity.	1	2	3	4
9. I would like to have a science or computer job in the future.	1	2	3	4
10. I like online games or computer programs that teach me about science.	1	2	3	4

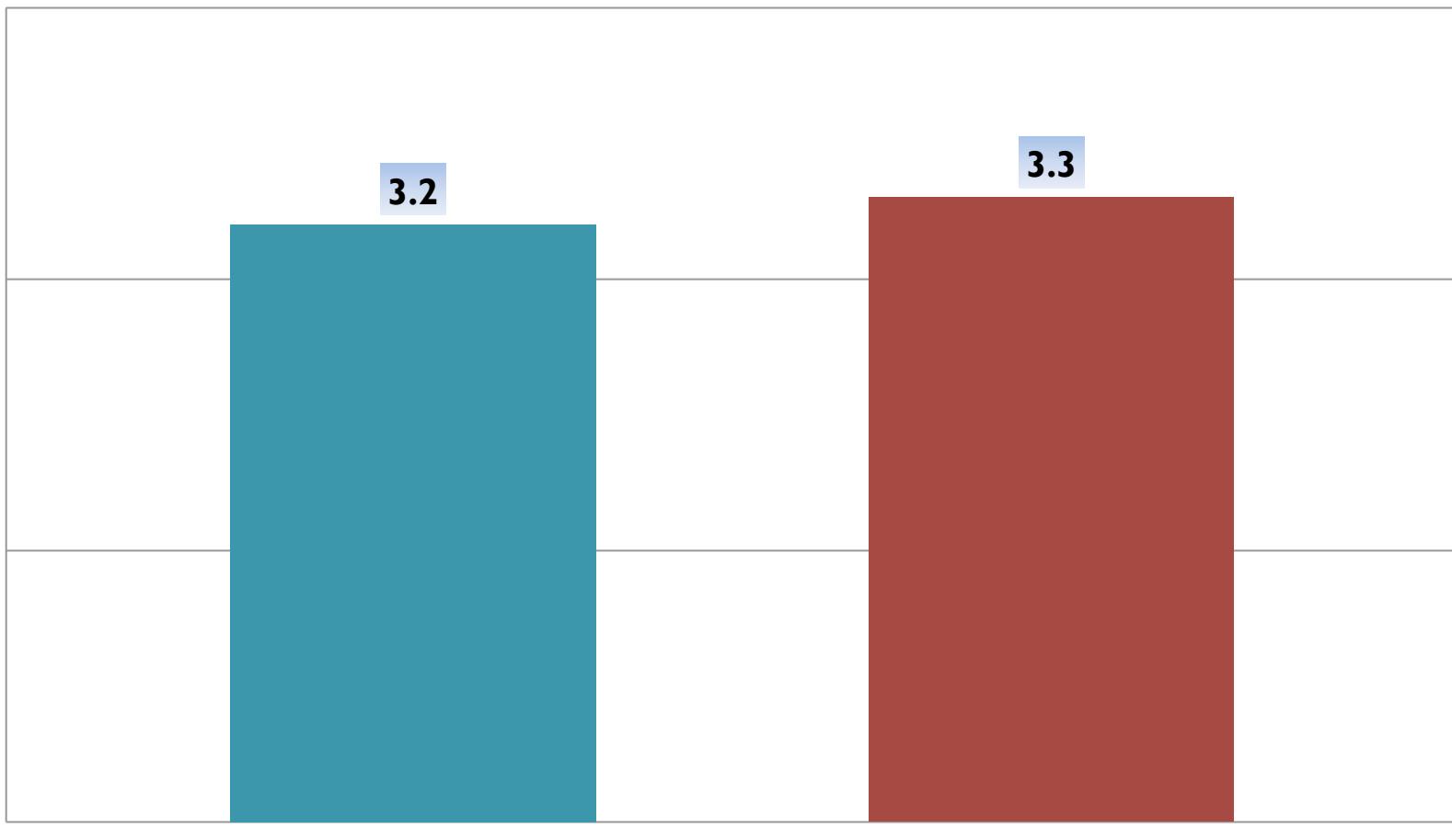
Science Interest at the Beginning and End of the Program, ages 12 and above, n = 18

Strongly Agree 4.0

Agree 3.0

Disagree 2.0

Strongly Disagree 1.0



■ Beginning

■ End

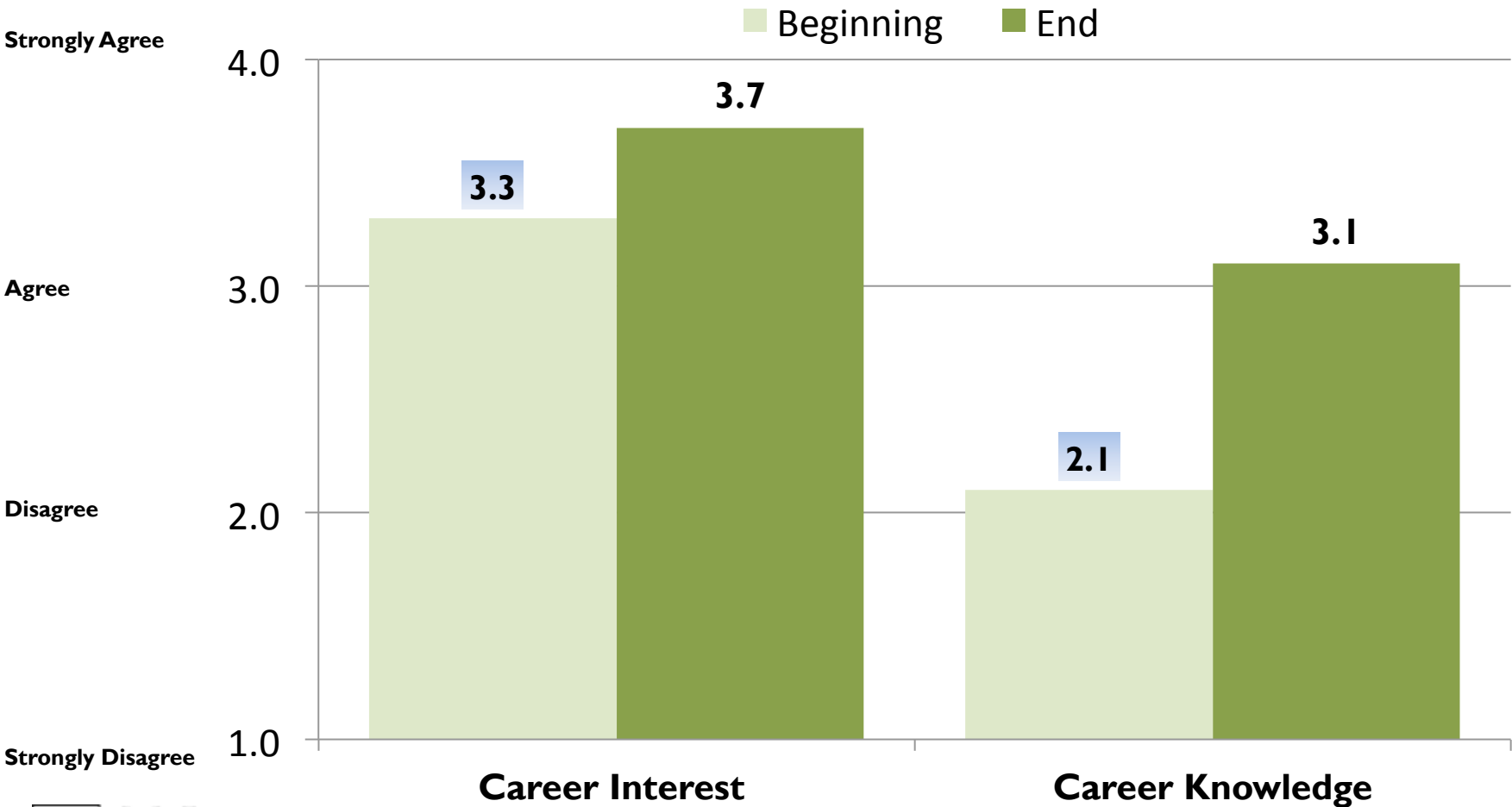


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Program Participation and Science Career Interest and Knowledge, Ages 12 and Above, n = 18



What is the Holistic Student Assessment (HSA)?

- The HSA is a validated tool developed from years of research on resiliency and socio-emotional development.
- The HSA contains 14 subscales that assess students' social and emotional development and life skills within three broad domains:
 - Resiliencies
 - Relationships
 - Learning/School Engagement.
- The HSA can be used as part of Early Warning data systems to identify students who show social, emotional, and developmental barriers to academic learning and life skills.
- It can also be used to evaluate program impacts.

The Holistic Student Assessment (HSA) Retrospective Subscales



First Name:

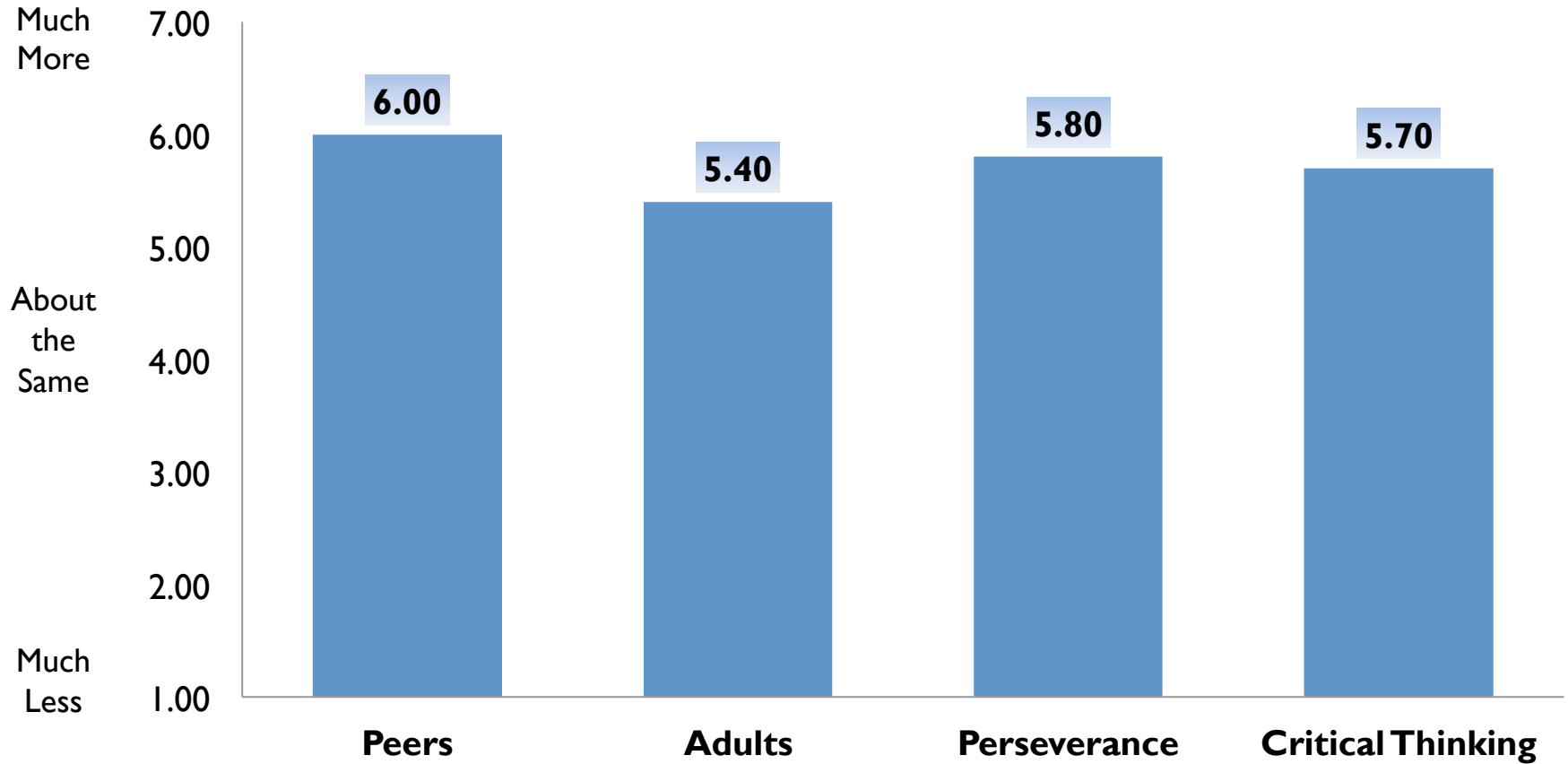
Last Name:

Please circle the number that best describes what you think about the statement. Mark only one answer per line please!

<i>Thinking about how you feel today compared to the beginning of this program...</i>		Much Less Now			About the Same			Much More Now
27.	There are adults who are interested in what I have to say.	1	2	3	4	5	6	7
28.	I like to figure out how things work.	1	2	3	4	5	6	7
29.	When I try to accomplish something, I achieve it.	1	2	3	4	5	6	7
30.	When I see another kid who is hurt or upset, I feel sorry for them.	1	2	3	4	5	6	7
31.	I think about the future of the world.	1	2	3	4	5	6	7
32.	Exercise is important to me.	1	2	3	4	5	6	7
33.	I think a lot about how I can make a difference in the world.	1	2	3	4	5	6	7
34.	I defend myself against unfair rules.	1	2	3	4	5	6	7
35.	I like being active.	1	2	3	4	5	6	7
36.	I feel bad for other kids who feel sad or have problems.	1	2	3	4	5	6	7
37.	I stand up for things that matter to me.	1	2	3	4	5	6	7
38.	I say what I think even if adults or friends disagree.	1	2	3	4	5	6	7
39.	I try to understand the world I live in.	1	2	3	4	5	6	7
40.	Other people's feelings matter to me.	1	2	3	4	5	6	7
41.	I like being physically active and moving my body.	1	2	3	4	5	6	7

Social-Emotional and 21st Century Skills

Ages 12 and Above, n = 18



Draw a Picture of a Scientist (DAST)

- Drawing Week I Day I @PS (male)



Week 1 Day 1: **29.5%** of drawings featured male scientists

Week 1 Day 5: Only **12.5%** featured male scientists

- Drawing Week I Day 5 @PS (female)



Summary of Key Findings

- Student interest in science was higher at the end of the program compared to the beginning for both age groups.
- Younger students (ages 4 to 11) were significantly more likely to see themselves as a scientist, and have met a woman scientist after program participation.
- Students in the 12+ group were significantly more likely to have higher amounts of science career interest and science career knowledge at the end of the program compared to the beginning.
- Overall, students reported positive changes in indicators of social-emotional/21st century skills.

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