Promoting Students' Sense of Belonging in Computer Science

Presented by

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Welcome & Introductions!

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K-5 Math Instructional Specialist

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Goals Today

- Share research findings on K-12 students' sense of belonging in computer science
- Give you opportunities to engage with research findings
- Help you leave with action steps (equitable practices to implement in your classroom)

Join by Web

1. Go to **PollEv.com**
2. Enter **ALLISONMASTER689**
3. Respond to activity

Join by Text

1. Text **ALLISONMASTER689** to **22333**
2. Text in your message

What does belonging mean to you?

Fitting in

What does belonging mean?

- How involved and connected an individual feels in a particular environment
  - Feeling like you fit with people there
  - Feeling valued and comfortable

What makes you feel like you belong?

What makes you feel like you belong?

- Social cues
- Academic cues

- **What do teachers do to make students feel seen and capable?**

Key Ideas

- Gender disparities are often due to beliefs/psychology, NOT students' capabilities or inherent differences
- Teachers can send important messages through the language they use and interactions with students
- Sense of belonging has a powerful impact on students' STEM interest, persistence, and achievement

What Girls Tell Us about Belonging

Well, I feel like I kind of belong in computer science because it is a class I enjoy a lot now, and since I enjoy it, I'm actually willing to go to class to that one more.

I think I belong because now that I'm in Intro Computer Science I'm starting to like more technology than I did before and I'm starting to learn more stuff about technology.

But actually those concerns weren't true at all because everyone there is similar like me and there's a lot of girls in that class, so it makes me feel like more confident about being in that class too.

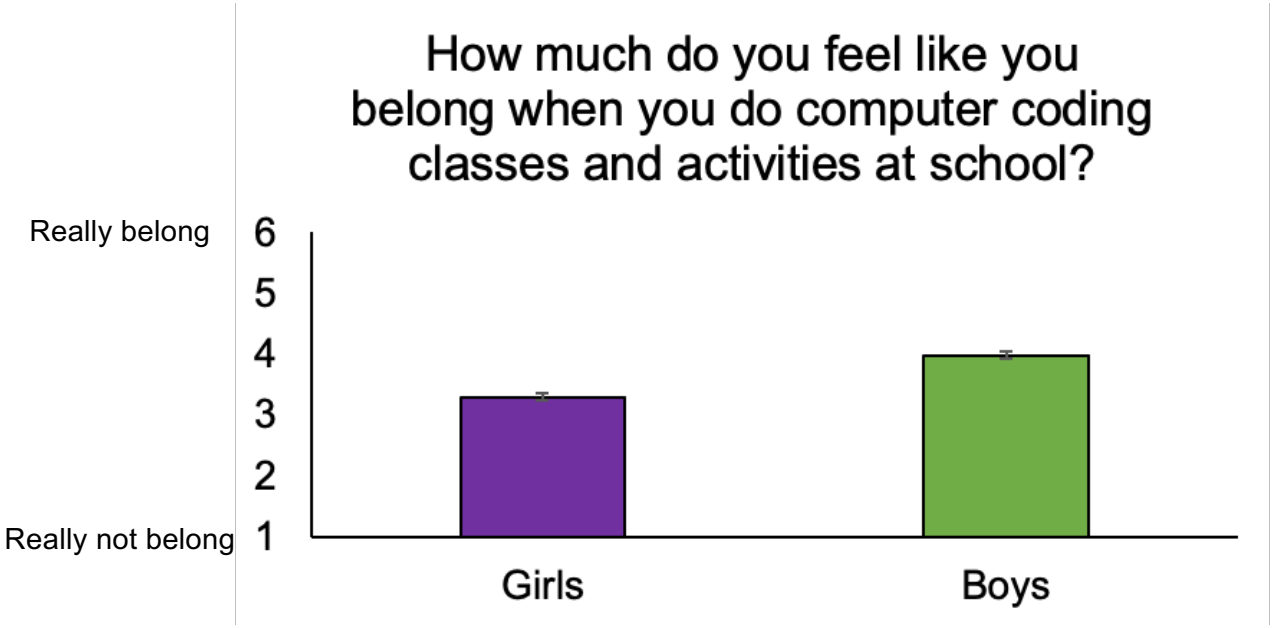
I was surprised by how much I could do in computer science class because at first I said that I was doubtful about it because I wasn't good at technology, but now that I kind of figured out the basics, it's actually pretty simple… I actually kind of enjoy it.

I was surprised. I was surprised of enjoying computer science because I didn't know things that I knew I could do.

"I feel like a lot of girls will be interested in Intro Computer Science because all of us are creative and if they would just give it an opportunity, they would see how creative they would be and how they can get their ideas and spread it and just inspire other people.

Girls Feel Less Belonging than Boys in Computer Science

- Fall 2020, public schools in Florida
- *N* = 1,261 (665 girls, 595 boys)
- Grades 6-12

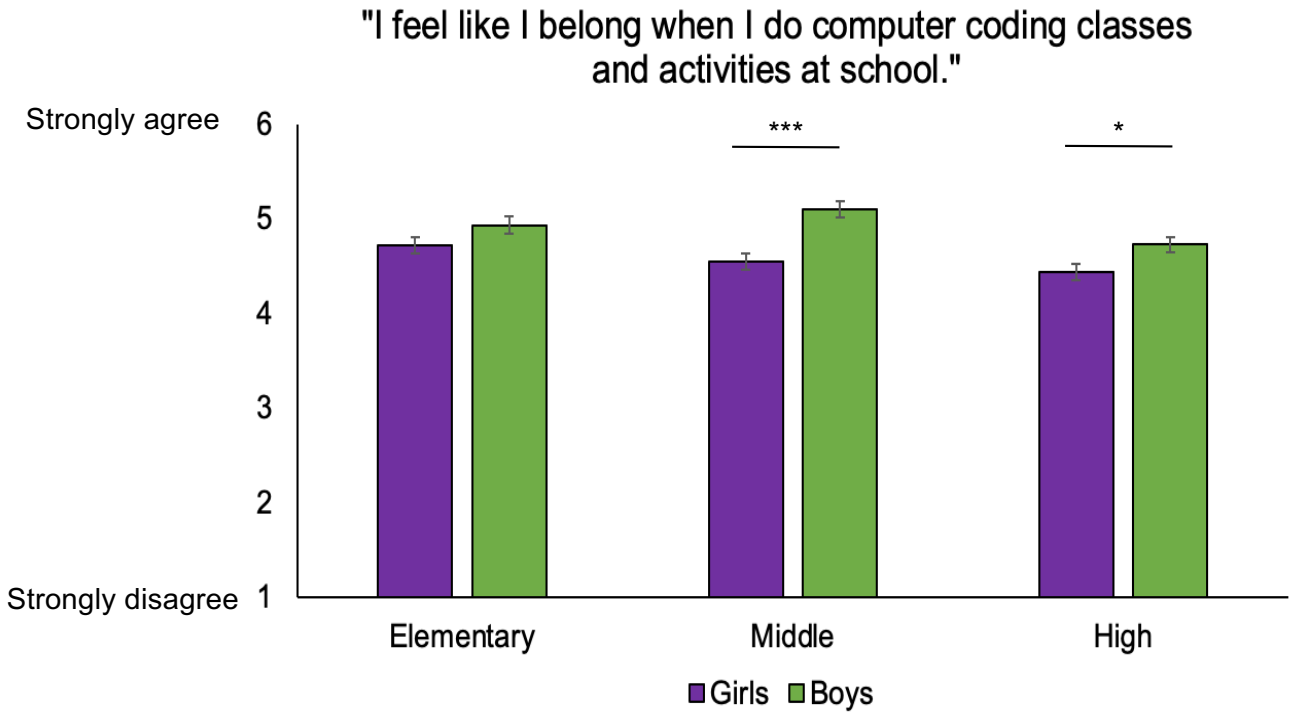


Adolescent girls' sense of belonging in computer science is 23% lower than boys' belonging.

****p* < .001

Girls Feel Less Belonging than Boys in Computer Science Starting in Middle School

- Winter 2018, public schools in Rhode Island
- *N* = 1,488 (742 girls, 746 boys)
- Elementary (Grades 1-5), Middle (Grades 6-8), and High (Grades 9-12) School

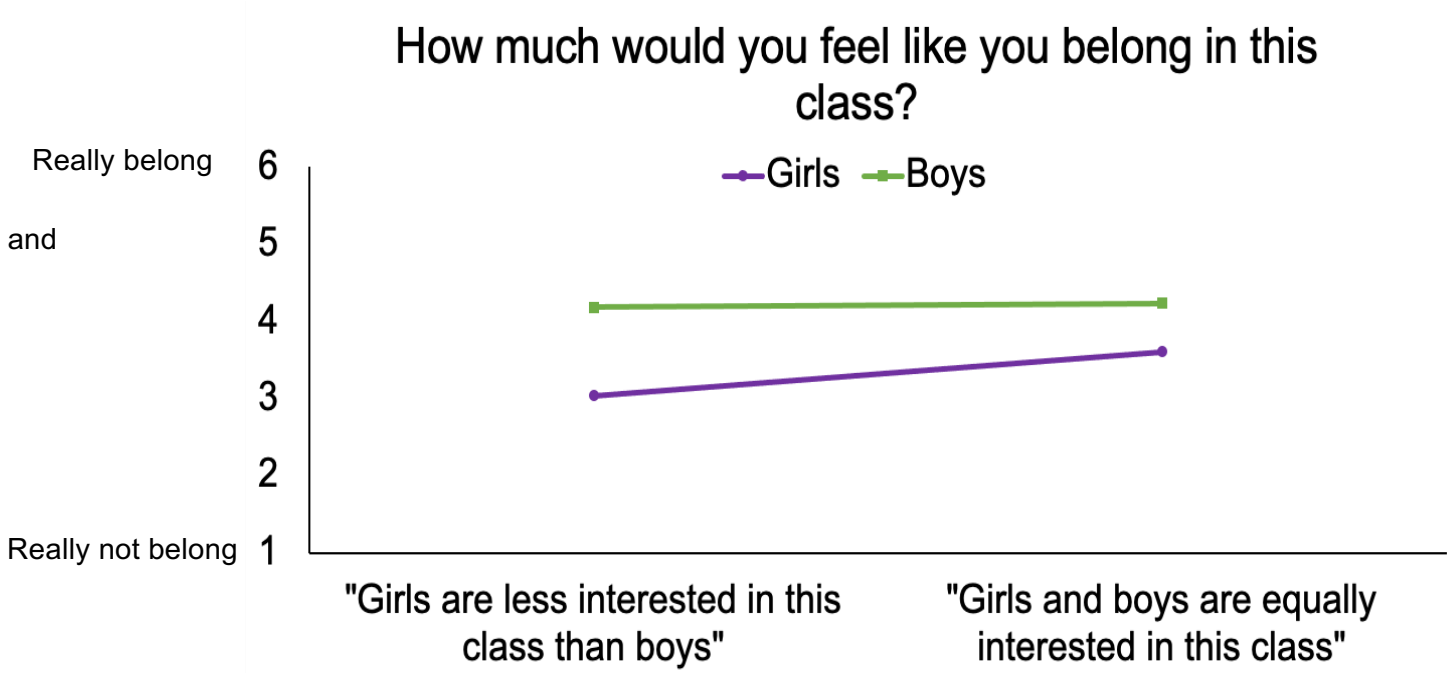


The gender gap in belonging in computer science is biggest in middle school.

****p* < .001; **p* < .05

Stereotypes Decrease Girls' Belonging

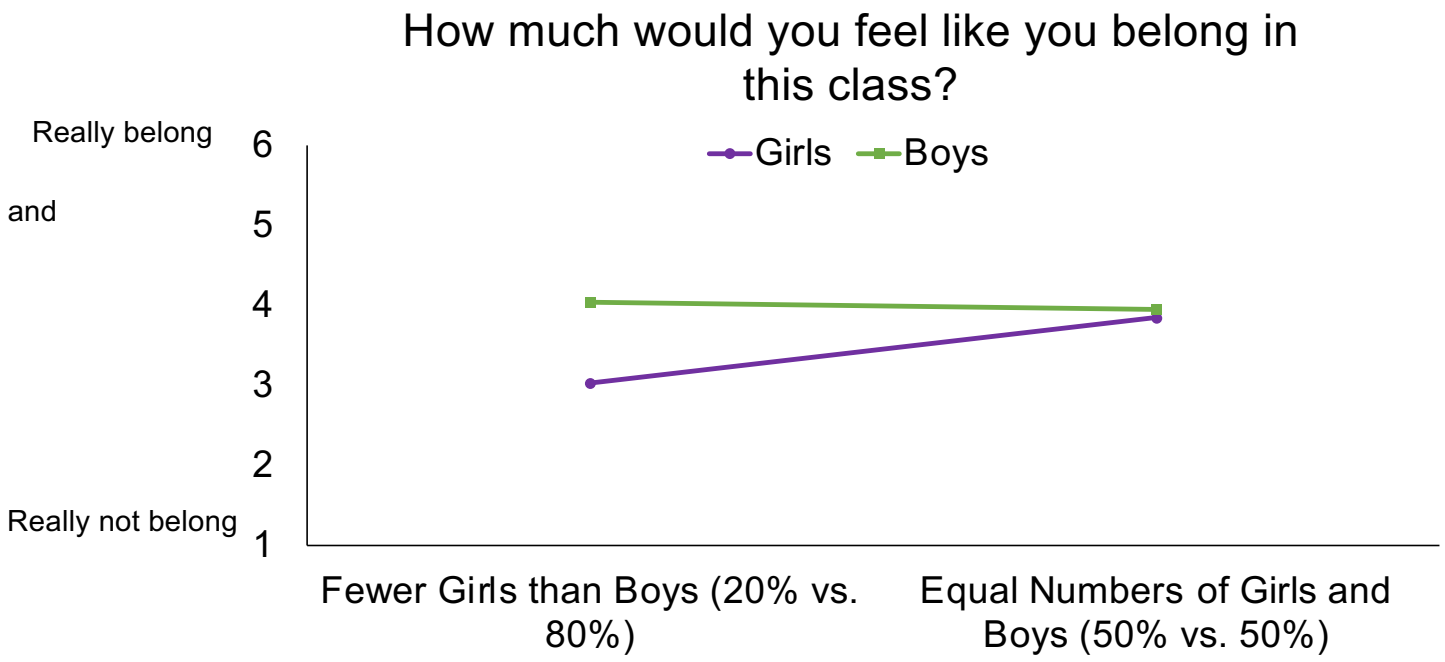
- Winter 2022, public schools in FL and OH
- *N* = 183 (84 girls, 99 boys)
- 8th graders



Stereotypes that girls are less interested than boys in computer science classes make them feel a lower sense of belonging in those classes.

Underrepresentation Decreases Girls' Belonging

- Winter 2022, public schools in FL and OH
- *N* = 287 (125 girls, 140 boys)
- 8th graders



Knowing that most students (80%) are boys makes girls feel a lower sense of belonging in a computer science class.

Classroom Environments Affect Girls' Belonging

- Winter 2012, public schools in WA state
- *N* = 159 (77 girls, 82 boys)
- High school students

Stereotypically "geeky" classroom environments make girls feel like they don't belong in computer science classrooms.

Data Party Time!

- We're going to put you into small groups
- Walk around to each poster, discuss questions, and write answers on sticky notes
- We'll tell your group when to move on

Reflection

- What did you talk to your group about?
- Does this reflect your experiences? Were you surprised by anything?

What can you do in your classroom to promote belonging for students?

Thank you!
To learn more about our research:

Lab website: https://uh.edu/education/iamlab/

Twitter: @miss_robinson7, @AllisonMaster

Recent research: tinyurl.com/pnas2021

To participate in middle school intervention next year:

email amaster@uh.edu

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IAM Lab
Identity and Academic Motivation Lab