

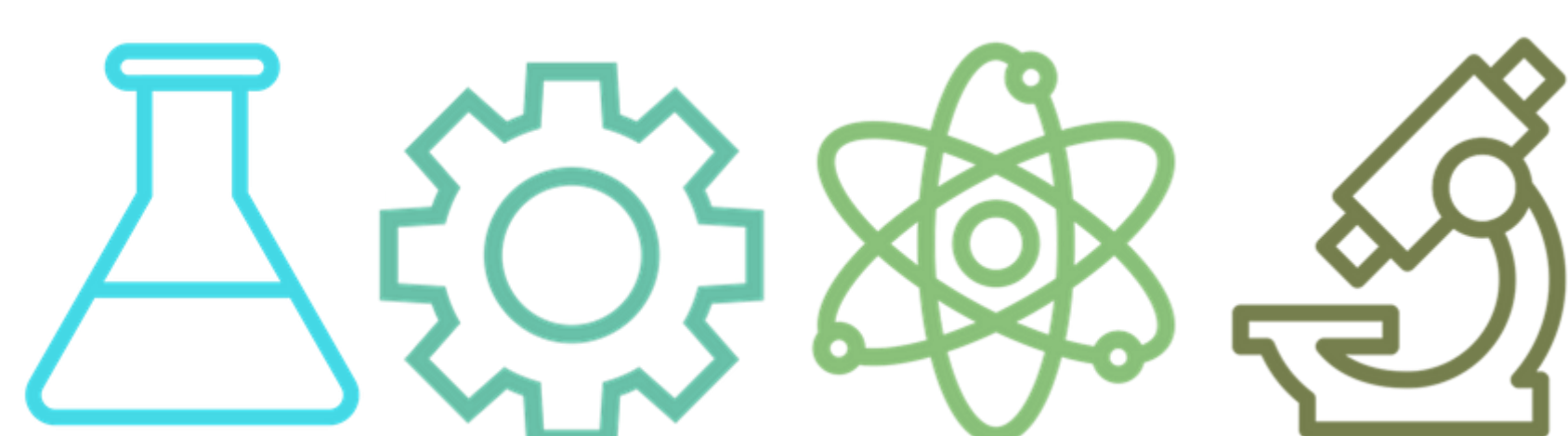
Access to this work was provided by the University of Maryland, Baltimore County (UMBC) ScholarWorks@UMBC digital repository on the Maryland Shared Open Access (MD-SOAR) platform.

Please provide feedback

Please support the ScholarWorks@UMBC repository by emailing scholarworks-group@umbc.edu and telling us what having access to this work means to you and why it's important to you. Thank you.

Introduction

- Dramatic job growth in science-related fields (Langdon et al., 2011) over the past decade has led to a renewed focus on science education (DOE, 2015).
- Informal science experiences at home foster learning in familiar, culturally-relevant ways that classrooms cannot (Bell et al., 2004).
- Science learning at home is associated with higher child interest, confidence, and achievement in science at school (National Science Teachers Association, 2009; National Research Council, 2012).
- However, limited research has examined the home science experiences of elementary-school-aged children.



Current Study

- The current study explored parents' reports of elementary school children's home-based science experiences.

Research Questions

- What are parents' views about supporting their children's science learning at home?
- How confident are parents in supporting science learning?
- Who prompts engagement in science activities: parents, teachers, or children?
- How do views about and engagement in science differ from views and engagement in math, reading, and writing?
- What types of science activities are children engaging in at home?

Method

Participants ($N = 189$)

- 91% mothers, 82% White, and 77% college-educated.
- 50% of children were female, 36% first/second grade, 40% third/fourth grade, and 24% fifth/sixth grade.

Measures

- Online survey distributed via Qualtrics.
- Data drawn from larger study of academic engagement at home.
- Survey included rating scales and open-ended questions.
 - E.g., "How confident are you in your ability to support your child's science learning at home?" and "How important is it for you to support your child's science learning at home?"

Results

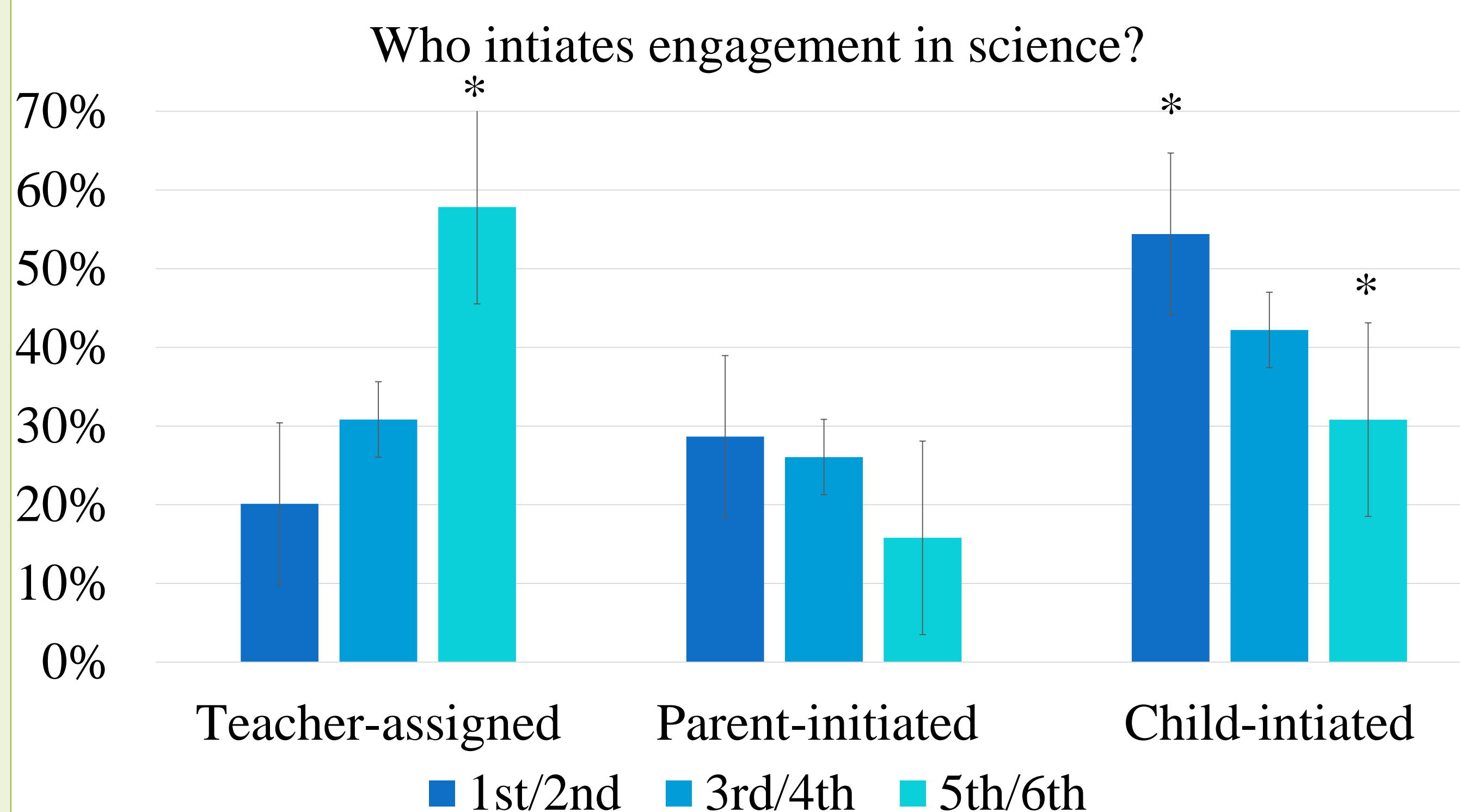
Parents' Views of Science at Home

- 77% of parents said science is *important/very important* to do at home.
 - Compared to other subjects, parents rated science as the *least important* subject to do at home compared to math ($p < .05$), reading ($p < .001$), and writing ($p < .05$) [$F(3,172) = 4.41, p < .05, \eta^2 = .025$].
- 75% of parents reported children found science *very/extremely enjoyable*.
 - Compared to other subjects, parents rated science as children's *most enjoyed* subject compared to math ($p < .001$), reading ($p < .05$), and writing ($p < .001$) [$F(3,174) = 14.20, p < .001, \eta^2 = .075$].

Confidence to Support Science

- 66% of parents said they were *confident/very confident* in their ability to support their children's science learning
 - Compared to other subjects, parents were *less confident* in their ability to support science than reading or writing ($p < .001$) [$F(3,158) = 4.71, p < .05, \eta^2 = .029$].

Science Engagement at Home



- Teacher-assigned work was most common in 5th/6th grade ($p < .05$).
- Parent-initiated *decreased* across grade but not significantly.
- Child-initiated activities were more common in 1st/2nd than 5th/6th ($p < .05$).

Science Activities ($N = 169$)

We asked parents, "Please describe the typical science activities your child does at home."

- "Experiments" ($n = 83$; 49%)
 - "He likes to make DIY (do-it-yourself) projects such as slime, constantly looks at how things interact with each other, and how they work."
 - "Creating science experiments like creating slime or growing crystals."

Results (cont'd)

Science Activities (cont'd)

- Science kits ($n = 30$; 18%)
 - "Science kits for making anything from soda to lip gloss."
 - "Sometimes I buy science kits (make a geode, KiwiCrates) and we do them together."
- Observational/explorative learning ($n = 57$; 34%)
 - "Mixing colors. Playing in the water with things that sink and float."
 - "I like to encourage environmental science exploration in our local area (parks, yard)."
- Use of digital or print media ($n = 40$; 24%)
 - "He watches YouTube kids videos, Nova on PBS..."
 - "Reading Popular Science and Muse magazines."
- Homework ($n = 34$; 20%)
 - "Science homework worksheets."
- Cooking/baking ($n = 23$; 14%)
 - "We love to bake in my house, so we are often mixing ingredients to make different baked goods."
- Does not engage in at science at home ($n = 18$; 11%)
 - "I guess he's too young for science?"
 - "Not much, most of her science is done in school."
- Types of science mentioned
 - Life science ($n = 39$; 23%)
 - Engineering and technology ($n = 23$; 14%)
 - Physical science ($n = 22$; 13%)
 - Earth and space science ($n = 10$; 6%)

Discussion

- Most parents reported engaging in a variety of science activities at home.
- Few parents indicated that no science was occurring at home ($n = 18$; 11%)
- Parents reported that children enjoy science more than other academic subjects. However, parents were less confident in their ability to support science than other subjects.
 - Parents and educators should seek to capitalize on children's enjoyment of science.
 - Educators may want to encourage parents to foster science at home by providing simple ideas/materials for use.
 - Well-made science media may also be a useful tool to help support children's science engagement at home.
- Future research should consider more socio-economically diverse samples and conduct interviews to learn about the quality of engagement.