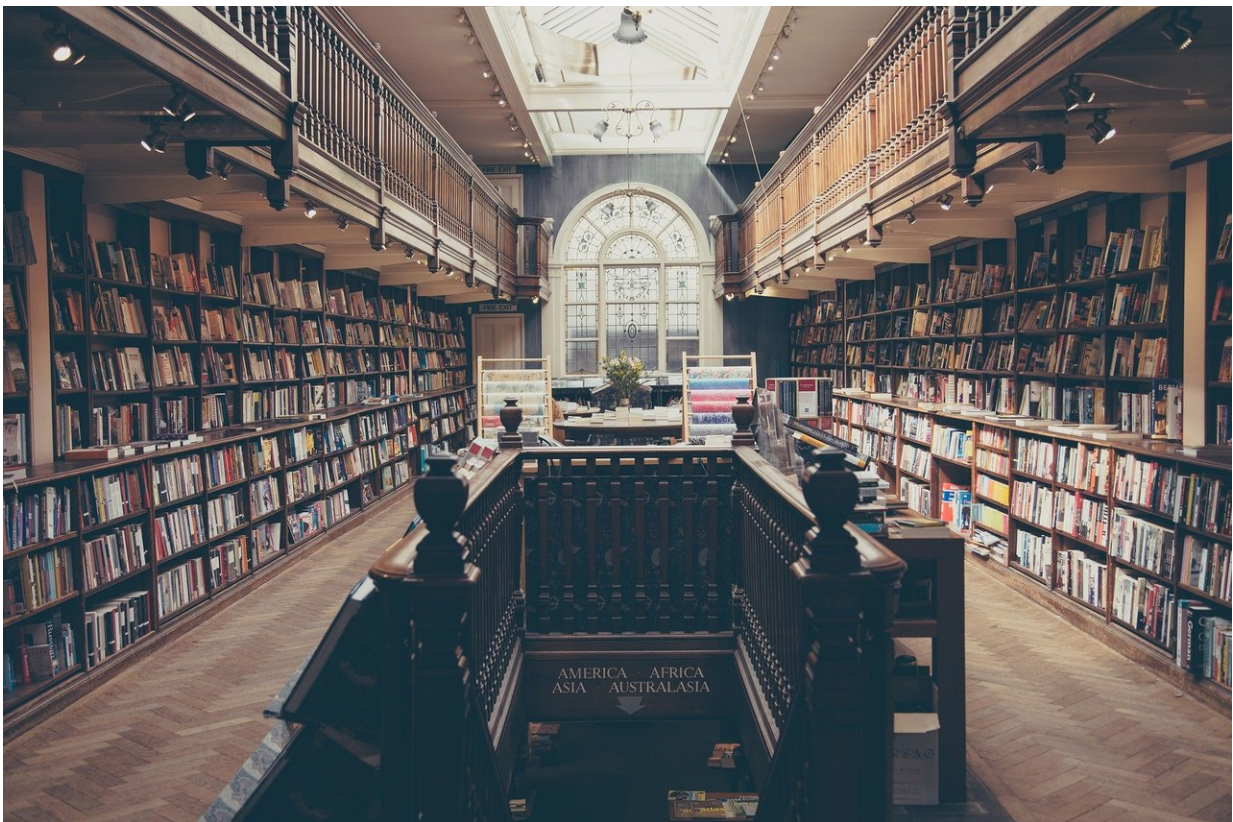


'Doing science,' rather than 'being scientists,' more encouraging to those underrepresented in the field

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Over the course of a school year, elementary school children lose confidence that they can "be scientists," but remain more confident that

they can "do science," finds a new psychology study by researchers at New York University and Princeton University.

The work, which appears in the journal *Developmental Science*, also found that [children](#) think more adults in their community can "do [science](#)" than "are scientists," suggesting that children have more inclusive views of who can do science, even while they might hold stereotypes about who can be a scientist.

"Action-focused language—instead of identity-focused encouragement—leads children to hold more inclusive beliefs about who can succeed in science and bolsters science efficacy and interest, particularly among children from ethnic minority groups that are underrepresented in science," explains Marjorie Rhodes, an associate professor in NYU's Department of Psychology and the senior author of the study.

The results are consistent with those reported earlier this year by Rhodes' research team. In a February study that appeared in the journal *Psychological Science*, the researchers found that asking young girls to "do science" leads them to show greater persistence in subsequent science activities than does asking them to "be scientists." The samples in these previous studies were primarily white, however, and the researchers hypothesized that the benefits of action-focused language would extend more broadly (to children of both genders) in more racially, ethnically, and economically diverse samples.

In the new *Developmental Science* study, which was led by Ryan Lei, an NYU post-doctoral research fellow, and also included Sarah-Jane Leslie, a professor of philosophy and dean of the Graduate School at Princeton University, and Emily Green, an NYU research scientist, the researchers studied more than 300 [elementary-school children](#) in Brooklyn and the Bronx over the course of the school year. Children in the study were

primarily Hispanic, but reflected the racial diversity of their surrounding communities and were roughly evenly split between boys and girls.

"Studying a more diverse population is crucial if we want to understand and ensure efforts to improve science engagement work for everyone," says Lei. "That we see similar effects across children of different backgrounds in these communities suggests that using action-focused language could be a promising strategy to help a large number of children stay engaged in science."

The researchers measured children's interest and self-efficacy in science three times across the course of a school year (once in the fall, once in the middle of the school year, and once in the late spring). Half of the children were asked at each point how interested they were in "being a scientist" and how good they thought they were at "being a scientist," whereas the other half were asked how interested in and good they thought they were at "doing science." The questions may be viewed at <https://osf.io/56fg9/>.

The results showed that, over the course of the school year, children's confidence and interest in "being a scientist" declined. By contrast, they maintained confidence and interest in their capacities to "do science," thereby showing that persistent curiosity in science is linked to messages about actions and not identity.

The researchers also examined what might underlie these effects by asking how children see the group of people who "do science" or "are scientists." To measure this, Rhodes and her colleagues asked the children to think of all the parents of the kids at their [school](#) and to judge how many of those parents either "were scientists" or "did science." Results showed that children thought more adults in their community "did science" than "were scientists," and these beliefs partially accounted for the effects of language on their own interest and

efficacy.

"These findings suggest that using identity-focused language with children, such as asking them to 'be a scientist,' can, in fact, backfire whenever children have reason to question if they are really a member of the group," explains Rhodes. "Such reasons to question can come from social stereotypes—such as a belief that few people from a child's community can grow up to be a scientist."

"This research indicates that a subtle change in how we talk about science with children—using more action-oriented language—can potentially guard against declines in children's science interest and self-efficacy," she adds.

More information: Ryan F. Lei et al, Children lose confidence in their potential to "be scientists," but not in their capacity to "do science", *Developmental Science* (2019). [DOI: 10.1111/desc.12837](https://doi.org/10.1111/desc.12837)

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