

How well-meaning statements can spread stereotypes unintentionally

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While saying "girls are as good as boys at math" is meant as encouragement, it can unfortunately backfire.

Although well-meaning, the statement commonly expressed by parents and teachers can subtly perpetuate the stereotypes they are trying to debunk, said Stanford scholars Eleanor Chestnut and Ellen Markman in a new paper published in *Cognitive Science*.

On the surface, the [sentence](#) tries to convey that both sexes are equal in their abilities. But because of its grammatical structure, it implies that being good at math is more common or natural for boys than girls, the researchers said.

Markman and Chestnut tested the effects of the sentence, as well as variations like swapping "girls" with "boys," on a group of English-speaking adults. They found that most people associate a natural math ability with the gender written in the second part of the sentence – what grammatically is known as the complement.

"Considering that several fields with large gender gaps like computer science and physics value raw talent, [statements](#) that imply that boys are naturally more talented could be contributing to women's underrepresentation," said Chestnut, the lead author on the paper that formed part of her Stanford doctoral dissertation work.

"Adults, especially parents and teachers, should thus try to avoid consistently framing one gender as the standard for the other," she said.

The power of language

The difference between "girls are as good as boys at math" and "girls and boys are equally good at math" may not be obvious, but each carries a slightly different meaning.

The first statement contains a so-called subject-complement structure, which compares girls to boys. "Boys" is the complement or a standard

against which "girls," the subject, is examined. In other contexts, English speakers use this structure to compare one object to another that's considered more typical or common. That's why it sounds better to say "tents are like houses" instead of "houses are like tents," or "zebras are like horses," not "horses are like zebras."

The second sentence has a subject-subject structure and puts both girls and boys in the same position in the sentence, without comparing the two.

Markman and Chestnut surveyed 650 English-speaking adults from the United States to better understand how people perceive the subtle difference between such statements even if they do not realize it.

"Language can play a huge role in how we perceive the world," said Chestnut, who is now a postdoctoral scholar at New York University. "It's important to identify parts of language that taken all together can influence us in one way or another, unknowingly."

The researchers divided study participants into five conditions, each with 128 people.

Participants read variations of a paragraph that summarized research that showed a lack of gender differences in math skills. The text for each condition was almost identical except for a subtle difference in how the main finding was framed. Participants read text with one of four statements: "girls do just as well as boys at math," "boys do just as well as girls at math," "girls and boys are equally good at math," and "boys and girls are equally good at math."

After reading the text, participants in all conditions were asked which gender they considered to be more naturally skilled at math.

Of those participants who read a text that included "girls are as good as boys at math," 71 percent said boys have more natural math ability. But only 32 percent of participants said the same after reading a text that contained "boys are as good as girls at math," according to the research.

"We thought that swapping 'boys' and 'girls' in the sentence would have an effect, but we didn't expect a full reversal of the stereotype," said Markman, the Lewis M. Terman Professor and Senior Associate Dean for the Social Sciences in the Stanford School of Humanities and Sciences.

When the researchers explicitly asked participants if they thought the sentence "[girls](#) are as good as boys at [math](#)" was biased in any way, people rated the statement as unbiased. This shows that the power of such statements to imply inequality occurs without listeners realizing it, the researchers said.

Measuring effects of framing

Chestnut and Markman encourage people to pay attention to how they talk when they describe genders. They suggest choosing subject-subject structures and avoiding subject-complement sentences that frame one gender as the standard.

Chestnut hopes to research further how much text in the media and other public discussions, online and offline, uses subject-complement sentences that frame men as the standard that women are compared against. Chestnut and Markman are also currently working on studying how such differences in framing affect children and whether subject-complement statements of equality teach children stereotypes about gender.

"We are not saying, 'Never say this or that,'" Chestnut said. "But if this

type of language is everywhere and if we're habitually using it, it all could matter. To achieve gender equality, we should critically analyze our language so that we can identify and then correct the ways we implicitly reinforce the belief that men are the dominant, higher-status [gender](#)."

More information: Eleanor K. Chestnut et al. "Girls Are as Good as Boys at Math" Implies That Boys Are Probably Better: A Study of Expressions of Gender Equality, *Cognitive Science* (2018). [DOI: 10.1111/cogs.12637](#)

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