

Girls Are... Boys Are... : Myths, Stereotypes & Gender Differences

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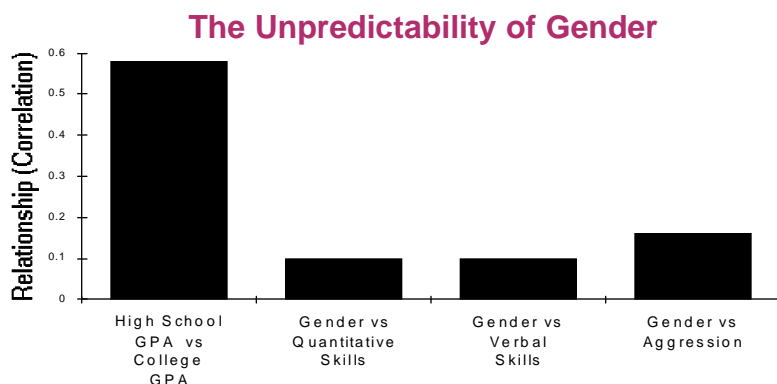
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How Much Does Gender Count?

As educators, and as people, we tend to assume that females and males are different — are indeed “opposite sexes.” We see someone’s sex as an important predictor of their abilities and interests and assume that if we know someone is a girl or a boy, we know a lot about them.

That assumption is wrong! Knowing someone’s sex may tell us a lot about them biologically but it tells us very little about them in other ways. Knowing someone is a woman does not tell us if her athletic ability is closer to Martina Navratilova’s or a couch potato’s. Knowing someone is a man tells us nothing about whether his math skills reflect those of an Einstein or a math phobic.

Sex is not a good predictor of academic skills, interests or even emotional characteristics. In fact, as the graph below indicates, sex is a bad predictor.



Predictive relationships (also called correlations) range from 0 (no relationship) to 1 (a perfect relationship). The relationship between birth and death is a “perfect 1,” which means once you are born, it can be predicted with total certainty that you will die. The closer the relationship is to 1, the better the prediction.

The relationship between high school GPA (Grade Point Average) and college GPA is .6. This is a fairly high relationship which means that if you have a high high school GPA, the odds are your college GPA will also be high.

The relationship between sex and quantitative skills is about .1, as is the relationship between sex and verbal skills. This is a very low relationship which means that if all we know about you is that you are a woman, then we don’t know if your quantitative (or verbal skills) are high, low or in between.

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How Big Are the Differences?

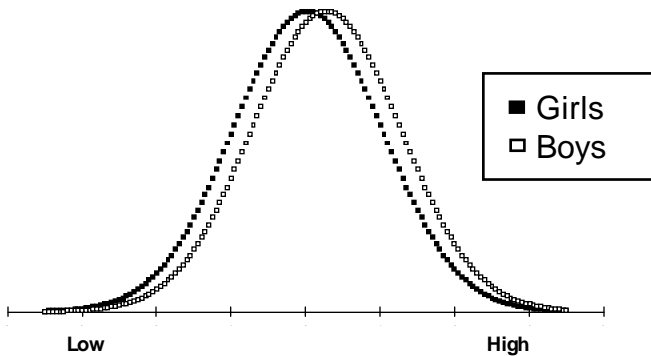
There is a lot of talk about “sex differences” and a lot of research and writing as well. The reality is that girls as a group and boys as a group are more alike than they are different.

Differences between individual girls or between individual boys are much greater than those between the “average” girl and the “average” boy. Yet we tend to generalize from the “average” girl or boy to individuals. And averages can be very deceiving. Consider:

The average temperature of Oklahoma City is 60 degrees — but that tells us little about what the temperature is going to be on any specific day — particularly since in Oklahoma City the temperature can range from -17 to 113.

Similarly, knowing that in 1992 the National Assessment of Educational Progress (NAEP) math achievement score of the average 17-year-old girl was 297 out of 500 and for the average 17-year-old boy was 301, tells us little about the math achievement of individual girls and boys.

When hundreds of studies of math-related skills are examined and summarized, as the following graph shows, there is almost a complete overlap between the scores of girls as a group and the scores of boys as a group:



As the graph shows, some girls are very good at math and so are some boys. Some boys are bad at math and so are some girls. The overlap is much larger than the difference.

Overall, sex differences tend to be smaller than most other demographic differences. For example, the 1992 NAEP 12th grade science tests found, on a 500 point scale, differences of:

- 48 points by race (White vs. African American)
- 19 points by type of school (Private vs. Public)
- 11 points by sex (Male vs. Female)
- 9 points by geographic location (Northeast vs. Southeast).

Myths and Realities

I. MYTH: “Real” women don’t do math.

Related myths: You’re too pretty to be a math major.
Women are qualitative; men are quantitative.

Results:

High school girls who think of math as a “male thing” are less likely to go on in math and are less likely to do well in math.

Girls are much less apt than equally talented boys to go into math-related careers including engineering and the physical sciences.

Solutions: We all should:

- stop saying things like “Women aren’t good in math.”
- challenge others, both students and adults, when they make stereotypic comments about girls and math.
- provide girls and boys with lots of examples of women and girls who are successful in math and science (and who are also cool).

II. MYTH: There is a biological basis for sex differences in math.

Related myths: There is a sex-linked math gene.
Hormones cause everything.

Results:

Parents have lower expectations for girls in math and science.

Some educators use the “math gene” as an excuse for their own gender-biased classroom behaviors.

Biology is used to justify the smaller number of girls on math/science teams and the smaller number receiving math/science awards.

Solutions: We should all:

- be aware that while there is no evidence of a “math gene,” there is a lot of evidence that practice and encouragement improves math and science skills for girls (and for boys).
- provide students with needed practice and encouragement
- read “scientific” studies with a critical eye, looking for what are facts and what are opinions.

III. MYTH: **Girls learn better from female teachers.**

Related myths: Role models must always be of the same sex as the student.

Results:

Some female teachers feel that being a woman is enough to encourage girls, and it isn't necessary to do anything else.

Some male teachers feel that it isn't possible to reach girls so it isn't necessary to try.

Some adults and students feel that girls avoid classes taught by men.

Solutions: Explain to others:

- it makes little difference to most students whether they are taught by a man or a woman. It is the quality of the teaching, not the gender of the teacher, that matters.
- while teachers treat male and female students differently, this is true for both female and male teachers. The gender of the teacher has little or no effect on how they treat girls and boys.
- while women and men can teach girls well (or poorly), if students never see women teaching math or science, the myths about who does and doesn't do math and science are reinforced.

IV. MYTH: **It is not necessary to look at the interaction of gender and race when dealing with girls in math and science.**

Related myths: If something applies to White girls it also applies to African American and Hispanic girls.
If something applies to African American boys it also applies to African American girls.

Results:

There is little research about African American and Hispanic girls and about the best ways to encourage them in math and science.

There is potential for African American and Hispanic girls to be ignored and to feel invisible.

Solutions:

- demand that information be broken down by gender and race.
- when looking at results, look for both similarities and differences.
- when analyzing your own classes, look at what is happening in terms of gender and race.
- sometimes just look at statistics for African American or Hispanic girls.

Why Do Myths Persist?

Myths based on gender and on race persist, despite the evidence to the contrary. So where did they come from and why do they continue? The following are just some of the reasons:

I. History

It is a common belief that because men are the principal producers in “modern” society that this has always been the case. In fact in earlier times when women were the main food-gatherers and producers, there were matriarchal societies where women had high status, were preeminent as cultivators and were glorified as goddesses. As late as the 2nd century BC, the major deities in European culture were women.

There are a variety of theories as to why this changed. Some like Reed felt that with the evolution of private property women lost their place in productive, social and cultural life and their worth sank along with their former status. Others like DeBeauvoir felt that change occurred when it was established that men as well as women were involved in the reproductive process. Napoleon felt:

“Woman is our property we are not hers because she produces children for us — we do not yield any to her. She is therefore our possession as the fruit tree is that of the gardener.”

Researchers also used women’s reproductive capacity to conclude women’s intellectual inferiority, and then turned around and concluded that using the intellect would destroy reproductive capacity. For example:

Female students were concluded to be pale, in delicate health and “prey to monstrous deviations from menstrual regularity.”
(Clarke, 1873, last printing 1963!)

The woman who uses her brain loses her “mammary function first and had little hope to be other than a moral and medical freak.”
(Hall, 1905)

Women are “closer to children and savages than to an adult civilized man.” (Le Bon, 1879, reported in Gould, 1981)

At times in history it has been said that women are better than men. At other times it has been said that men are better than women. Both are wrong.

II. Research's Emphasis on Differences

Social science research is based on a search for differences. Since we don't look for similarities, we don't find them and thus perpetuate an overemphasis on the differences between girls and boys.

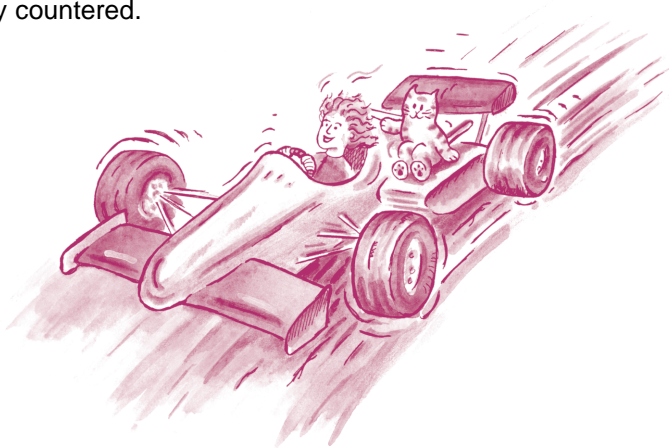
Differences are at the basis of research design and theory. Differences can be proved while similarities cannot. The concept of "statistically significant differences" is widely accepted and used — there is no general concept of statistically significant similarities. Thus in a research study, if you find differences, you have something. Your research is more likely to be seen as meaningful, and it is more likely to be published than it would be if you didn't find differences. Finding similarities isn't currently an option, regardless of what your data say.

When research focuses on differences and when differences are all that is reported, difference-based stereotypes are reinforced and continued.

III. The Allure of Oversimplification

Complexity is hard, simplicity is easy. To deal with complexity we often revert to simplicity — we tend to categorize and make judgements based on that categorization.

Stereotypes are easy to fall into. When we see a woman do something really stupid in a car, many of us say "woman driver"; but when we see Lyn St. James win Rookie of the Year at the Indianapolis 500, very few of us say, "Wow, is that woman driver stereotype wrong." Thus are stereotypes reinforced, but rarely countered.



Is It Real or Is It a Stereotype?

It's a stereotype if it ascribes characteristics to an individual based solely on group membership. For example, it is a stereotype to assume a tall thin young African American male is a basketball player or that an Asian student is good in math.

It's probably a stereotype if it describes how girls and boys are "supposed" to be. For example, the statement that "Susie will be better than Ed at babysitting because she is a girl" is a stereotype.

It's probably a stereotype if a book, toy or tool is described or pictured as "for boys" or "for girls." For example, a chemistry set that only pictures boys is stereotypic; a book about growing up that is listed as "for boys" is not necessarily stereotypic although it may have stereotypes in it.

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This brochure is one of a series on equity in coed classes. Other brochures are:
Making It Happen: Pizza Parties, Chemistry Goddesses & Other Strategies that Work for Girls and Others
Whose Responsibility Is It? Making Coeducation Work in Math & Science: The Administrator's Role
Why Me? Why My Classroom? The Need for Equity in Coed Math and Science Classes

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