

What is the point of spotting sex differences if science cannot explain them?

May 8 2014, by Saray Ayala-Lopez And Saray Ayala-Lopez



Do you have an answer, science? Credit: jasonpratt, CC BY

Differences between the sexes are one of those endlessly intriguing cases, begging for explanation. People categorised as belonging to different sex categories seem to behave differently, make different career choices, look differently, and so on. Both popular science and reputable scientific journals are replete with reports of sex differences in brain structure, cognitive capacities, behaviour, and so on. The long

catalogue features differences in anatomical structure of the hippocampus, spatial abilities, propensity to take risks or cooperate and the list goes on.

A [recent study](#) by a research team at the University of Pennsylvania lead by Madhura Ingahalikar added a new item: a difference in [brain connectivity](#). The researchers report that male brains have better connections within the hemispheres, while female brains are better connected across hemispheres.

Such scientific reports of sex differences are generally taken as causal explanations of our everyday observations, revealing to us the underlying reasons why women and men generally do things differently and seem to be skilled at different activities. Such interpretation in turn drives many to claim that females and males are two kinds of people, different by nature. These scientific studies and their authors are celebrated in the media for excellence in providing the much-sought-after explanations.

But do these studies really explain the differences that we observe around us? We expect causal explanations to reveal the mechanism that produces the phenomenon we want to explain. Studies that document another sex difference – be it in brain or behaviour – simply provide another observation, adding to the list of things to be explained. That is, they do the same thing that we, lay observers, do when we see differences with the naked eye: describe them.

Zooming in on the brain does not tell us everything. Images depicting different connectivity patterns in sex-categorised brains are, by themselves, just another observation. They do not tell us where the differences came from. They could be a product of internal or external factors, or both.

Research on [brain plasticity](#) shows experience can shape the brain

throughout the life-span. Cab drivers in London have [different neural structures](#) compared to people who don't have such an extensive navigation experience. Early bilinguals have [better connections](#) in some parts of the brain than monolinguals.

If we wonder why some people speak two languages and some people only speak one, would anyone accept "because their brains are different" as a sensible explanation? Probably not. The experience of learning another language likely brings about the difference in the brain, not vice versa. "Hidden from the naked eye" does not always mean "causally responsible for what is visible". The brain does not necessarily explain behaviour.

Just like with bilingual brains, sex differences in brain connectivity could be an effect of sexed experience, which in turn could be a product of sex differences in education and social expectations. There is plenty of evidence that expectations can account for many of the sex differences we observe. For example, evaluations of job applicants are influenced by knowledge of [applicants' gender](#), affecting who gets hired. Sex-biased expectations affect us from a very young age: people attribute different capacities and emotions to infants [depending on their gender](#), even when there are no such differences.

If we expect science to explain the differences we commonly see between people categorised as female and male, we have to demand something more than mere sophisticated (and technologically embellished) descriptions. Yet, it seems the joy of adding another item to the list of differences pushes the less sexy "why" question on the back burner.

This is not a crusade against descriptions. Descriptive science has value. Descriptions can lead to predictions. We had been able to describe the sun's trajectory across the sky and predict astronomic phenomena long

before we were able to explain them. But ultimately we wanted to understand the mechanism that produced our observations. We were not satisfied with descriptions alone. We care whether the sun rotates around the earth or vice versa. Likewise, it makes a big difference whether a person's reproductive role shapes their brain, cognition, and behaviour or whether sexed environment and behaviour shape their cognition, [brain](#) and bodies. Why don't we demand explanations of the mechanisms that produce observed [sex differences](#)?

Before accepting the claim that taxi drivers and bilinguals are "born that way", we would at least ask for a convincing explanation. So why are we so easy to please with the "nature makes us different" slogan when it comes to sex and gender, accepting fancy re-descriptions for causal explanations? Perhaps it is time to become a bit more demanding.

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