Braaains! Are male and female ones "hardwired" differently? [1]

Dear Alice,

Are guys and girls psychologically hardwired to think differently?

Answer

Dear Reader,

If you do a quick search on the Internet on the terms "brain" and "gender difference," you're likely to see thousands or tens of thousands of hits. Like you, researchers, psychologists, and many others have wondered whether the sexes think differently because of brain differences. The short answer is that it may not be possible to know for sure. Some brain structures and functions do seem to be differentiated based on biological sex. However, it's not at all clear that this is due to preset "hardwiring." It's equally likely (and perhaps more probable) that differences are a result of genetic, social, and environmental forces.

Now, it's true, studies show some physical, structural differences between the brains of biological females and males. Size (of the overall brain, as well as of the lobes) can differ, as well as percentage of white matter (the tissue in the brain that contains nerve fibers and assists with nerve signaling). While on average females may have less white matter than males, studies also suggest that the white matter in male brains degenerate at a faster rate than the white matter in female brains. Note that size does not correlate with capacity or conductivity, and some studies show that some female brains show evidence of higher connectivity (the organization of white matter—the part of the brain that transmits signals between neurons), possibly leading to higher efficiency. Sometimes, difference just means different, and not better or worse: studies suggest that males show higher connectivity of their amygdala (the part of the brain that controls memory, emotions, and decision-making) on the left side, while for females it is on the right.

At the heart of your question is the issue of brain development. It's worth noting that the brain, while one of the most complex networks in the body, isn't really "hardwired" in either sex. Although the brain is set up during fetal development, in the latter part of embryological development and shortly after birth, there are a series of massive "pruning" events. This is when extra, redundant, or non-useful brain cells die off, leaving space for the rest of the necessary neurons. As much as 50 percent of an infant's neurons are lost shortly after birth, and some of this loss could be due to environmental cues. Through childhood, adolescence, and adulthood, the brain continues to develop in response to many dynamic...
processes and in a changing environment. Because of this, it may never be possible to know exactly how much of human (let alone specific to biological sex) thought, behavior, and action is shaped by predetermined qualities of the brain itself and how much is due to outside influences.

With all that said, there are observable differences in anatomy, physiology, and neurochemistry among male and female brains. One notable difference can be found in the rates and courses of psychiatric illnesses like schizophrenia, and eating disorders in males and females. Autism spectrum disorder is more common in males, and schizophrenia and eating disorders tend to manifest differently among male and female patients. And though these types of differences can be identified, it’s not to say that they are due to something inherent in the sexes. Human thoughts are remarkably variable and can be informed by so many things: historical time period, education, resources, social and cultural forces, and phase in life. Long story short, Reader, the human mind may be difficult to characterize in a binary way.

Alice!
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