 Claims of sex differences fall apart.


Among certain parents, it is an article of faith not only that they should treat their sons and daughters alike, but also that they do. If Jack gets Lincoln Logs and Tetris, and joins the soccer team and the math club, so does Jill. Lise Eliot, a neuroscientist at Rosalind Franklin University of Medicine and Science, doesn't think these parents are lying, exactly. But she would like to bring some studies to their attention.

In one, scientists dressed newborns in gender-neutral clothes and misled adults about their sex. The adults described the "boys" (actually girls) as angry or distressed more often than did adults who thought they were observing girls, and described the "girls" (actually boys) as happy and socially engaged more than adults who knew the babies were boys. Dozens of such disguised-gender experiments have shown that adults perceive baby boys and girls differently, seeing identical behavior through a gender-tinted lens. In another study, mothers estimated how steep a slope their 11-month-olds could crawl down. Moms of boys got it right to within one degree; moms of girls underestimated what their daughters could do by nine degrees, even though there are no differences in the motor skills of infant boys and girls. But that prejudice may cause parents to unconsciously limit their daughter's physical activity. How we perceive children—sociable or remote, physically bold or reticent—shapes how we treat them and therefore what experiences we give them. Since life leaves footprints on the very structure and function of the brain, these various experiences produce sex differences in adult behavior and brains—the result not of innate and inborn nature but of nurture.

For her new book, Pink Brain, Blue Brain: How Small Differences Grow Into Troublesome Gaps—And What We Can Do About It, Eliot immersed herself in hundreds of scientific papers (her bibliography runs 46 pages). Marching through the claims like Sherman through Georgia, she explains that assertions of innate sex differences in the brain are either "blatantly false," "cherry-picked from single studies," or "extrapolated from rodent research" without being confirmed in people. For instance, the idea that the band of fibers connecting the right and left brain is larger in women, supposedly supporting their more "holistic" thinking, is based on a single 1982 study of only 14 brains. Fifty other studies, taken together, found no such sex difference—not in adults, not in newborns. Other baseless claims: that women are hardwired to read faces and tone of voice, to defuse conflict, and to form deep friendships; and that "girls' brains are wired for communication and boys' for aggression." Eliot's inescapable conclusion: there is "little solid evidence of sex differences in children's brains."

Yet there are differences in adults' brains, and here Eliot is at her most original and persuasive: explaining how they arise from tiny sex differences in infancy. For instance, baby boys are more irritable than girls. That makes parents likely to interact less with their "nonsocial" sons, which could cause the sexes' developmental pathways to diverge. By 4 months of age, boys and girls differ in how much eye contact they make, and differences in sociability, emotional expressivity, and verbal ability—all of which depend on interactions with parents—grow throughout childhood. The message that sons are wired to be nonverbal and emotionally distant thus becomes a self-fulfilling prophecy. The sexes "start out a little bit different" in fussiness, says Eliot, and parents "react differently to them," producing the differences seen in adults.

Those differences also arise from gender conformity. You often see the claim that toy preferences—trucks or dolls—appear so early, they must be innate. But as Eliot points out, 6- and 12-month-olds of both sexes prefer dolls to trucks, according to a host of studies. Children settle into sex-based play preferences only around age 1, which is when they grasp which sex they are, identify strongly with it, and conform to how they see other, usually older, boys or girls behaving. "Preschoolers are already aware of what's acceptable to their peers and what's not," writes Eliot. Those play preferences then snowball, producing brains with different talents.
The belief in blue brains and pink brains has real-world consequences, which is why Eliot goes after them with such vigor (and rigor). It encourages parents to treat children in ways that make the claims come true, denying boys and girls their full potential. "Kids rise or fall according to what we believe about them," she notes. And the belief fuels the drive for single-sex schools, which is based in part on the false claim that boy brains and girl brains process sensory information and think differently. Again, Eliot takes no prisoners in eviscerating this "patently absurd" claim. Read her masterful book and you'll never view the sex-differences debate the same way again.

**Two Myths and Three Facts About the Differences in Men and Women's Brains**

**MYTH 1 Women’s brains are more balanced**
"It is true that men use one side of their brain to listen while women use both sides," says the Suite 101 website with misplaced confidence.

This is a variation of the popular idea found in many books and websites that men depend more than women on one hemisphere or the other for particular functions (especially language), and related to this, that women have a chunkier corpus callosum—the bridge of neurons that connects the two brain hemispheres.

One source of the myth is a theory proposed by the late US neurologist Norman Geschwind and his collaborators in the 1980s, that higher testosterone levels in the womb mean the left hemisphere of male babies develops more slowly than females, and that it ends up more cramped. But the Geschwind claim is not true: John Gilmore and his team scanned the brains of 74 newborns and found no evidence for smaller left hemispheres in male babies compared with females. Also debunking the idea of greater lateralisation in male brains, a meta-analysis by Iris Sommer and her colleagues of 14 studies, involving 377 men and 442 women, found no evidence of differences in language lateralisation between the sexes. On the thickness of the corpus callosum, Mikkel Wallentin reviewed the evidence in a 2009 paper, including post-mortem and brain imaging studies. “The alleged sex-related corpus callosum size difference is a myth,” he wrote.

**FACT 1 Men’s brains are bigger**
Men do have bigger brains than women, even taking into account their larger bodies. This has been documented time and again. To take just one example, Sandra Witelson and her colleagues weighed the brains of 58 women and 42 men post-mortem and found the women’s were 1248 grams on average, compared with 1378 grams for the men. Note, there’s an overlap between the sexes, so some women will have larger brains than some men. A Danish study of 94 brains published in 1998 estimated that the larger male brain volume translated into an average 16 per cent greater amount of neurons in the neocortex of men versus women.

**FACT 2 There are sex differences in the size of individual brain structures**
The hippocampus, a structure involved in memory, is usually larger in women; the amygdala, a structure involved in emotional processing, is larger in men. It’s also true that the cortical mantle (made up of grey matter) is thicker in women, and that women tend to have a higher ratio of grey to white matter (white matter being the kind of brain cells that are insulated). However, it’s important to note that these differences may have more to do with brain size than with sex—in other words it could be that smaller brains tend to have a higher ratio of grey matter, and it just happens that women tend to have smaller brains.

**MYTH 2 Sex-related brain differences explain behavioural differences between the sexes**
According to John Gray, author of Why Mars and Venus Collide, men are prone to forgetting to buy the milk because of their more localised brain activity (as quoted by Cordelia Fine).

It’s tempting to see the brain differences between the sexes, mythical or otherwise, and think that they explain behavioural differences; such as men’s milk amnesia, their superiority on mental rotation tasks or women’s advantage with emotional processing. In fact, in many cases we simply don’t know the implications of the sex-related brain differences. It’s even possible that brain differences are responsible for behavioural similarities between the sexes. This is known as the “compensation theory” and it could explain why men and women’s performance on various tasks is similar even whilst they show different patterns of brain activity. Bearing this in mind, readers should treat with extreme scepticism those evangelists who draw on supposed sex-related brain differences to support their claims about the need for gendered educational practices.

It’s also important to remember that behavioural differences between the sexes are rarely as fixed as is often made out in the media. Cultural expectations and pressures play a big part. For instance, telling women that their sex is inferior at mental rotation tends to provoke poor performance; giving them empowering information, by contrast, tends to nullify any sex differences. Related to this, in countries that subscribe less strongly to gender-stereotyped beliefs about ability, women tend to perform better at science. These kind of findings remind us that over-simplifying and over-generalising findings about gender differences risks setting up vicious self-fulfilling prophecies, so that men and women come to resemble unfounded stereotypes.

FACT 3 Sex-related brain differences matter
Whilst we should be cautious about how we interpret sex-related brain differences (Cordelia Fine reminds us that “the male brain is like nothing in the world so much as a female brain”), it’s important not to take political correctness too far and deny that differences do exist. The neuroscientist Larry Cahill makes this point in his 2006 paper “Why sex matters for neuroscience”, in which he reviews many of the sex-related brain differences. Furthering our understanding of sex-related brain differences could help shed much needed light on conditions like autism and depression that tend to be found much more often in men and women, respectively.

Further reading—do read Delusions of Gender, The Real Science Behind Sex Differences by Cordelia Fine; Pink Brain, Blue Brain by Lise Eliot; and Brain Gender, by Melissa Hines. Avoid Why Men Don't Listen and Women Can't Read Maps by Barbara and Allan Pease; Why Mars and Venus Collide, by John Gray; and The Female Brain by Louann Brizendine.

http://www.psychologytoday.com/em/101421

*****Assignment*****

• Summarize the findings of the two articles
• Explain why you think it is (or is not) important to learn about differences between the brains of men and women
• Your answer should be in paragraph format