

Boys Versus Girls: How Are They Different?

Boys and girls are different — obviously. But maybe not as much as most parents think

Susan Spicer

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I have one son and one daughter, and their proclivities and interests are remarkably gender stereotypical. On any given Saturday during their growing years, Sam was most likely building Lego or roaring around the yard with his buddies, playing a boisterous game of capture the flag. Meanwhile, Annie was upstairs with a friend putting together the perfect outfits to play-act what they called "Derek and Odette" — the romantic story of their favourite movie. At school, Sam hated cursive writing, complaining all the time that his arm hurt. But he could do math problems in his head. Annie found math challenging, but she was a whiz in language arts — she once read a story she'd written aloud to the whole school at an assembly.

I didn't set out to inculcate gender stereotypes, but perhaps I did unwittingly. If I'd worked with Sam on his fine-motor skills more diligently or encouraged Annie to build Lego along with her brother, might they have had different experiences? Or were they expressing a destiny prescribed by biology? Is it actually true that boys are made of frogs and snails and puppy dog tails, while girls are all sugar and spice?

I'm not the only parent who's scratched her head over this one. You prohibit violent toys in your home, but your seven-year-old son is obsessed with turning sticks into guns or swords. Your own uniform is jeans and a T-shirt, but your four-year-old daughter loves anything pink and frilly. And while these penchants may make you grin

and shrug, you don't want your daughter to struggle with fractions — or your son with spelling — if they don't have to. Plus, you'd like your daughter to see herself as more than the object of romantic attraction and your son to be unfettered by codes that say it's not manly to show his feelings.

So how much can you — or should you — do about sex differences? Do our sons and daughters have varying needs depending on their chromosomes? Here's how the experts tackle some of parents' most common questions about sex differences.

British neuropsychologist Anne Moir famously said "different" two decades ago when she published *Brain Sex*. She points to research that shows that the corpus callosum, what Moir calls the "telephone exchange between the left and right sides of the brain," is bigger in females. In Moir's view, this means there's more connection between the two hemispheres in a female brain, which translates into a better ability to understand and verbalize emotions.

Factors other than brain structure also determine sex differences, says Moir. All fetuses begin as sex neutral; exposure to testosterone during the first trimester is what builds boy bodies and brains. "If there are high levels of testosterone in utero, there's more rough-and-tumble play in kids, more aggressive behaviour and better spatial ability," says Moir. "Individuals exposed to low testosterone in the womb are much gentler, more nurturing and more

sociable.”

These arguments dominated the discussion of sex differences for a long time. But when Lise Eliot, a neuroscientist at the Chicago Medical School of Rosalind Franklin University of Medicine and Science, set out to confirm them while doing research for her 2009 book *Pink Brain, Blue Brain*, she discovered that most sex differences aren't so much innate as learned.

What amazed Eliot, as she worked through the evidence, is how malleable the brain is. “Yes, there are small innate differences,” she says. “But we should be aware of how they become magnified by parenting and marketing.” Baby boys may have a slight biological edge when it comes to spatial ability, but because they are so socially encouraged to do things like play with blocks and build model airplanes, this ability is often strengthened in them more than it is in girls.

According to Toronto journalist and science writer Alanna Mitchell, other researchers are even more skeptical about innate differences. Mitchell spent a year interviewing neuroscientists and educators around the world and came to the conclusion that the brains of boy and girl newborns are “equal” at birth. She reports that “barring tragic malformation, all newborn brains contain about 100 billion neurons, the nerve cells capable of communicating with each other electrochemically.” As kids grow and learn, “synaptic connections” between these neurons — and networks between those connections — are formed, a process that continues throughout life. This, in essence, is how a brain is “built” over time.

No matter where they come down on the nature-nurture question, scientists today agree about the brain's changeability, what they call “neuroplasticity.” Plus, there is consensus on the idea that there's much more variation within the sexes than between them. All of which suggests that, whatever differences do exist between male and female brains, they need not limit boys or girls in any meaningful ways.

Many parents of boys say “yes.” An obsession with anything on wheels is so strikingly consistent among boys, they say, it just has to be built in.

But research suggests that culture is at least as big an influence as biology over the toy preferences of young children. Up until the age of nine months, both boys and girls prefer dolls to trucks. “By age three,” says Eliot, “boys will spend 70 percent of their time playing with trucks, while the girls gravitate to dolls.” So why the shift?

Partly it's developmental. “Kids do need to gender- identify by age three,” says Eliot. “And they don't want any ambiguity.” But parents also reinforce gender identity. By age five, according to Eliot, girls will split their time evenly between cars and dolls, while boys studiously avoid “girl toys.” Eliot suggests this is partly because of messages adults send — we're OK with the idea that girls can do anything, but effeminate behaviour in boys is still largely shunned. “Studies show that parents react and discourage a boy who wants to put on his sister's fairy costume,” says Eliot.

The onus is on us to weigh how much we reinforce our own ideas about gendered play. “It's more comfortable to accept that stereotypical behaviours are innate rather

than learned,” says Eliot. “No one wants to accept that we might stereotype our children.”

Karen Bisschop says when 10-year-old Eric is frustrated by the video game he’s playing, he tends to clench his fists and get mad at the TV. Meanwhile, his sister Beth, who is six, will go to her mom and say, ‘Eric’s really having trouble. Can you help him?’”

A greater capacity for empathy is often attributed to girls. According to Eliot, as young children, girls do outperform boys in the capacity to recognize emotion in other people. But it’s a small gap at birth that widens with age, suggesting it’s mostly learned.

One innate difference, says Eliot, is that baby boys tend to cry and fuss more than baby girls, partly because boys are a bit less physiologically mature at birth. It may be that parents interpret the irritability as anger, says Eliot, and are not as emotionally supportive with boys. If this becomes a pattern, boys may learn not to express emotion, which can then get translated into what Vancouver educator and author Barry MacDonald calls the “boy code” — the idea that you have to be tough and not show your feelings.

At birth, all children are capable of learning to express their feelings and recognize emotions in others. “Babies — both male and female — are riveted by social stimuli,” says Eliot. We need to set aside notions that girls are too emotional or that crying is a sign of weakness in boys. “Fathers, in particular, need to recognize that they are their boys’ role models when it comes to expressing emotion,” says MacDonald.

In his book, ***Boy Smarts: Mentoring Boys for Success at School***, MacDonald tells the story of a young boy who climbed a tree at recess and wouldn’t come down. When the principal asked him why he’d gone up in the first place, the boy said, “It’s the only thing that I’m good at.”

There’s been an avalanche of books and articles in recent years describing a “boy crisis.” Experts point to statistics that show boys are scoring lower academically and have higher rates of behaviour problems than girls. A 2000 study of kindergarten children in BC’s Central Okanagan found that within their first year of formal schooling, 12 percent of boys compared with two percent of girls required extra learning support.

One of the key pieces of information to emerge from the sex-difference research is that girls and boys are on different learning curves. Boys are struggling, says Moir, because girls develop verbal and fine-motor skills one to four years ahead of them. Boys start failing when they’re asked to sit at a desk and work with a pencil and paper before their brains are ready to do so.

“Boys’ difficulty sitting still comes up over and over,” says Ron Clavier, a Toronto neuroscientist. He points to evidence that moving around triggers the brain’s processing capacity in boys. If we demand that they sit still and pay attention, he says, their brains may not be working to their full potential.

Family physician and psychologist Leonard Sax says some boys and girls do better in single-gender classrooms because lessons can be tailored to their strengths. Sax is well known as the author of books, such as

Why Gender Matters and *Boys Adrift*, and as the executive director of the National Association for Single Sex Public Education (NASSPE) in the US, a group that advocates for the availability of single-sex public education. NASSPE holds that, when teachers have the right training, single-gender classrooms can motivate girls to take more interest in subjects, for example, like math and science and boys in art and drama.

One area of concern for boys is a lag in language skills. Lise Eliot says boys begin talking about a month after girls — a small gap. But by grade four, they're 20 percent behind in reading. "This isn't about prenatal testosterone," she says. "It's practice that makes the difference." Girls get more practice because adults elicit more conversation from them, and because they talk more with each other. Parents need to look for ways to get boys talking, whether

by tossing a ball in the backyard or playing a video game together.

The same patterns emerge with girls and math. They start out roughly on par with boys in kindergarten and tend to do fine until high school. Eliot says girls would benefit from being encouraged to play in ways that demand 3-D visualization, with blocks and building toys, for example, and video games such as Tetris.

These "cross training" opportunities, as Eliot calls them — where we help kids catch up, boys verbally and girls spatially — can lessen some of the negative impacts of gender stereotypes. Sex-difference research is best used to help us understand what kids can do, not what they can't do. Because the brain, as Alanna Mitchell puts it, should be seen "not as a limiter, but as a platform."