

Research on the Transgender Brain: What You Should Know

Expanding knowledge of the brain and gender identity

What's going on in your brain plays a large role in determining the gender you identify with — and researchers working with transgender people are just starting to understand how.

Being transgender has nothing to do with sexual identity. As one doctor puts it, “Sexuality is about who you're attracted to. Gender is about who you are.”

Where does gender originate?

In the birthing process, a medical professional will declare your baby a boy or a girl based on their sexual organs — but does this determine their [gender](#)?

“We're trying to change the understanding of gender,” says psychiatrist [Murat Altinay, MD](#). “That's one of my big goals. The main question I'm asking is, ‘Where is the gender?’”

We know that as an embryo forms, the genitalia specializes into either male or female. But what about development in the brain?

“The brain and the body can go in different directions,” Dr. Altinay says. “Gender is not only in our genitalia; there's something in the brain that determines gender.”

Male, female and transgender brains

“The male and female brain have structural differences,” he says. Men and women tend to have different volumes in certain areas of the brain.

“When we look at the [transgender](#) brain, we see that the brain [resembles the gender](#) that the person identifies as,” Dr. Altinay says. For example, a person who is born with a [penis](#) but ends up identifying as a female often actually has some of the [structural characteristics](#) of a “female” brain.

And the brain similarities aren't only structural.

“We're also finding some [functional similarities](#) between the transgender brain and its identified gender,” Dr. Altinay says.

In [studies](#) that use MRIs to take images of the brain as people perform tasks, the brain activity of transgender people tends to look like that of the gender they identify with.

“Research in these areas is extremely limited, and more research needs to be done to find conclusive results,” Dr. Altinay notes. “But we're already seeing definite trends.”

Though these differences in brain structure and function are important markers for gender determination, it isn't always as simple as male or female.

[Some research](#) shows the brains of transgender people are somewhere in between, sharing characteristics of both male and female brains, Dr. Altinay says.

This is consistent with the growing understanding that gender exists on a spectrum, with people identifying not only as male or female but also as genderqueer, genderfluid or nonbinary. These terms

refer to gender identities that incorporate a [variety of gender characteristics](#).

Understanding gender dysphoria

In a world that still misunderstands, discriminates against and victimizes transgender people, research demonstrating that gender develops in the brain could have important implications for transgender people, Dr. Altinay says.

There's also hope that this research will give us a new [understanding of gender dysphoria](#) — the psychological distress that many transgender people experience because their assigned gender doesn't match the way they see themselves, he says.

“If we can define gender dysphoria better, we can tailor [treatments](#) for it,” he says.

Those treatments involve taking steps to help a transgender person live as the gender they identify with. This may include medical transition — with hormones or [surgery](#) in some cases — as well as with therapy.

“A lot of transgender people who are diagnosed with bipolar disorder or [depression](#) or [anxiety](#) are actually suffering from gender dysphoria,” Dr. Altinay says. “The hope is that we'll be able to properly diagnose these people and treat them appropriately so they don't develop depression and anxiety.”