

In a world where people are routinely defined by societally imposed definitions of gender, ethnicity, skin color and sexual preference (to name just a few), individuals who don't fit classic interpretations of such are often marginalized and treated as "other" or inferior. The assumption that one can (or should) be fitted into a series of boxes that suit the expectations of others can be a demeaning and damaging experience for those who defy compliance and seek to establish or expand upon recognized norms. Unfortunately, people who don't adhere to commonly accepted classifications are likely to encounter disapproval, rejection, hatred and violence.

One population that is particularly susceptible to negative judgment and opposition is that which identifies as *transgender*. This term is used to describe someone whose gender identity or expression differs from society's expectations as a result of being designated male or female at birth. Though the vast majority of people identify within these biological definitions, it may be surprising to learn that, in addition to psychologically identifying with a different gender, there are also over forty *congenital* conditions that are known collectively as *disorders of sexual development*. This nomenclature has been disputed since its inception because its opponents argue that it "pathologizes benign characteristics." Despite the resistance, it is currently the accepted term for a broad range of conditions that includes combinations of male and female characteristics. This group is known as *intersex* and, kept to its strictest definition, should include only conditions in which chromosomal sex is inconsistent with phenotypic sex (how the gene is expressed, aka, the genitals) and those in which the phenotype is not classifiable as male or female. This would consist of approximately .018% of the population. *Disorders of sexual development* present tangible physical and genetic characteristics that are likely the result of hormone imbalances, genetic mutations, chromosomal abnormalities and other undetermined causes.

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Billie Lee grew up in a small town in Indiana

during the nineties and spent the first several years of her life as a boy. As a young child, she was confused by her own conflicted experience of gender identity – and with good reason. Though her genitalia categorized her as male at birth, she identified internally as female. As such, she exhibited mannerisms and characteristics that were seen as feminine, and therefore discouraged. Adding to the confusion was Billie’s development of breast tissue at a young age. These physical contradictions and her internal struggle with gender were the source of intense bewilderment and she was ultimately diagnosed with OCD and depression. At one point, her pediatrician even told her parents that she would, “turn out to be gay.”

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At birth humans are labeled “male” or “female” based on the appearance of the genitals, but this may soon be an outdated mode of classification. People who don’t identify as (or genetically fall into) classic definitions of male and female often face struggles that begin in early childhood. Once they are able to express themselves, children who are transgender report feelings of being in the wrong body, and eventually a desire to have their bodies match their brains. As opposed to those who are born intersex, this group doesn’t necessarily exhibit physical or genetic anomalies.

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Billie's own confusion about her gender, along with her doctor's prediction and her parents' belief that she would "eventually be gay," caused her to believe that indeed she *was* a homosexual male and "came out" as such. That might have been where her story ended, but even as she attempted to conform to life as a gay man, she was acutely aware that her mind and her body were still not properly aligned.

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Before proceeding to theories about how transgenderism occurs, some knowledge of how fetuses develop is critical. All mammals start as females, with both male and female sex organs eventually developing from the same tissue. Males only begin to develop at six or seven weeks gestation, when the *Sry gene* of the Y chromosome is expressed and initiates the development of testes. The testes, in turn, begin to produce testosterone, much of which is converted into estrogen. These hormones then act together on the brain to introduce the cellular process of masculinization. Despite the development of male or female genitalia however, people who are transgender feel that their exterior physicality and appearance doesn't match with how they identify internally. **For these individuals, it's not, "I wish I was female," or "I want to be male," it's a definitive "I am."** This experience is not to be confused with sexual identity, as transgenders can identify as gay, lesbian, straight or asexual.

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Billie's experience is typical in that her inner and outer identities were not in sync. Unfortunately, she could not have known that "coming out" as a gay man would not reconcile her gender issues. Once Billie had an opportunity to speak with a therapist about her gender identity issues however, that all changed and she embarked on the journey of becoming who she believes she was meant to be.

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In the *Diagnostic and Statistical Manual of Mental Disorders* the term *gender dysphoria* is used to describe the experience of being transgender. The transgender community, however, decries this classification as shameful because it assumes that the condition is a psychiatric disorder, which evokes negative connotations. In fact, the World Health Organization is working to declassify transgender identity as a mental disorder. And this might be the right move. Sexual anatomy and gender identity are actually the result of separate processes that occur at different times and along different neural pathways prior to birth. What causes the brain to develop one way and the body to develop another? The short answer is that we don't know, but it's likely that these processes are affected by many biological influences along the way. Though nothing has been proven definitively, research is being done to investigate a number of compelling possibilities.

One theory posits that being transgender is the result of a hormonal imbalance that occurs when the fetal brain is differentiating into a male or female brain. This idea may hold water because exposure to sex hormones early in development has permanent effects on sex-related behavior and reproductive anatomy and function. There is also some evidence of transgender people having poor hormonal sensitivity in the womb. Animal studies have shown that significant differences can occur in female offspring depending on who they were adjacent to in utero. Research suggests that hormonal transfer by male fetuses can masculinize females developing next to them and can ultimately affect anatomical, physiological and behavioral characteristics after birth. Though scientists continue to hypothesize that

hormonal imbalances in utero may be a contributing factor to transgenderism, there is still much research to be done before this is an accepted theory.

Researchers have also developed competing theories about anatomically relevant differences in the brain. Human brains consist of some anatomy that is *sexually dimorphic*, (structural differences between males and females that go beyond sex organs). This knowledge has been used to compare transgenders' brains with their *cisgender* counterparts (people whose identity and gender corresponds with their sex as determined at birth). The results are mixed, but some studies report that brains of transgenders examined at autopsy, as well as those studied via imaging, have shown greater physical similarities with the brains of the sex with whom they internally identify. Again, the reasons for these findings are not definitive. The similarities (or lack thereof, depending on the study) can neither confirm nor deny that the genetic anatomy has a correlational or causational connection to the brain structure. In other words, it is not known if the brain structure develops independently of gender, or even if experiencing oneself as transgender may have an effect on the brain's development.

Gender identity is undoubtedly a complex combination of biological, psychological, social and cultural influences. We are many years away from fully understanding how these factors coalesce to create the disconnect between the mind and the body in transgender people, but experts agree that a child's internal experience of gender identity should be respected and affirmed.