

How Changeable Is Gender?

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THANKS to Caitlyn Jenner, and the military's changing policies, transgender people are gaining acceptance — and living in a bigger, more understanding spotlight than at any previous time.

We're learning to be more accepting of transgender individuals. And we're learning more about gender identity, too.

The prevailing narrative seems to be that gender is a social construct and that people can move between genders to arrive at their true identity.

But if gender were nothing more than a social convention, why was it necessary for Caitlyn Jenner to undergo facial surgeries, take hormones and remove her body hair? The fact that some transgender individuals use hormone treatment and surgery to switch gender speaks to the inescapable biology at the heart of gender identity.

This is not to suggest that gender identity is simply binary — male or female — or that gender identity is inflexible for everyone. Nor does it mean that conventional gender roles always feel right; the sheer number of people who experience varying degrees of mismatch between their preferred gender and their body makes this very clear.

In fact, recent neuroscience research suggests that gender identity may exist on a spectrum and that gender dysphoria fits well within the range of human biological variation. For example, Georg S. Kranz at the Medical University of Vienna and colleagues elsewhere reported in a 2014 study in *The Journal of Neuroscience* that individuals who identified as transsexuals — those who wanted sex reassignment — had structural differences in their brains that were between their desired gender and their genetic sex.

Dr. Kranz studied four different groups: female-to-male transsexuals; male-to-female transsexuals; and controls who were born female or male and identify as such. Since hormones can have a direct effect on the brain, both transsexual groups were studied before they took any sex hormones, so observed differences in brain function and structure would not be affected by the treatment. He used a high-resolution technique called diffusion tensor imaging, a special type of M.R.I., to examine the white matter microstructure of subjects' brains.

What Dr. Kranz found was intriguing: In several brain regions, people born female with a female gender identity had the highest level of something called mean diffusivity, followed by female-to-male transsexuals. Next came male-to-female transsexuals, and then the males with a male gender identity, who had the lowest levels.

In other words, it seems that Dr. Kranz may have found a neural signature of the transgender experience: a mismatch between one's gender identity and physical sex. Transgender people have a brain that is structurally different than the brain of a nontransgender male or female — someplace in between men and women.

This gradient of structural brain differences, from females to males, with transgender people in between, suggests that gender identity has a neural basis and that it exists on a spectrum, like so much of human behavior.

Some theorize that the transgender experience might arise, in part, from a

quirk of brain development. It turns out that the sexual differentiation of the brain happens during the second half of pregnancy, later than sexual differentiation of the genitals and body, which begins during the first two months of pregnancy. And since these two processes can be influenced independently of each other, it may be possible to have a mismatch between gender-specific brain development and that of the body.

Is it really so surprising that gender identity might, like sexual orientation, be on a spectrum? After all, one can be exclusively straight or exclusively gay — or anything in between. But variability in a behavior shouldn't be confused with its malleability. There is little evidence, for example, that you really can change your sexual orientation. Sure, you can change your sexual behavior, but your inner sexual fantasies endure.

In fact, attempts to change a person's sexual orientation, through so-called reparative therapy, have been debunked as quackery and rightly condemned by the psychiatric profession as potentially harmful.

Of course, people should have the freedom to assume whatever gender role makes them comfortable and refer to themselves with whatever pronoun they choose; we should encourage people to be who they really feel they are, not who or what society would like them to be. I wonder, if we were a more tolerant society that welcomed all types of gender identity, what the impact might be on gender dysphoria. How many transgender individuals would feel the need to physically change gender, if they truly felt accepted with whatever gender role they choose?

At the same time, we have to acknowledge that gender identity is a complex phenomenon, involving a mix of genes, hormones and social influence. And there is no getting around the fact that biology places constraints on our capacity to reimagine ourselves and to change, and it's important to understand those limitations.

The critical question is not whether there is a range of gender identity — it

seems clear that there is. Rather, it is to what extent and in which populations gender identity is malleable, and to what extent various strategies to change one's body and behavior to match a preferred gender will give people the psychological satisfaction they seek.

Although transsexualism (defined as those who want to change or do change their body) is very rare — a recent meta-analysis estimated the prevalence at about 5 per 100,000 — it garners much media attention. What do we really know about how these individuals feel and function in their new role?

The data are all over the map. One meta-analysis published in 2010 of follow-up studies suggested that about 80 percent of transgender individuals reported subjective improvement in terms of gender dysphoria and quality of life. But the review emphasized that many of the studies were suboptimal: All of them were observational and most lacked controls.

Dr. Cecilia Dhejne and colleagues at the Karolinska Institute in Sweden have done one of the largest follow-up studies of transsexuals, published in PLOS One in 2011. They compared a group of 324 Swedish transsexuals for an average of more than 10 years after gender reassignment with controls and found that transsexuals had 19 times the rate of suicide and about three times the mortality rate compared with controls. When the researchers controlled for baseline rates of depression and suicide, which are known to be higher in transsexuals, they still found elevated rates of depression and suicide after sex reassignment.

This study doesn't prove that gender reassignment per se was the cause of the excess morbidity and mortality in transsexual people; to answer that, you would have to compare transgender people who were randomly assigned to reassignment to those who were not. Still, even if hormone replacement and surgery relieve gender dysphoria, the overall outcome with gender reassignment doesn't look so good — a fact that only underscores the need for

better medical treatments in general for transgender individuals and better psychiatric care after reassignment.

Alarmingly, 41 percent of transgender and gender nonconforming individuals attempt suicide at some point in their lifetime compared with 4.6 percent of the general public, according to a joint study by the American Foundation for Suicide Prevention and the Williams Institute. The disturbingly high rate of suicide attempts among transgender people likely reflects a complex interaction of mental health factors and experiences of harassment, discrimination and violence. The study analyzed data from the National Transgender Discrimination Survey, which documents the bullying, harassment, rejection by family and other assorted horrors.

On a broader level, the outcome studies suggest that gender reassignment doesn't necessarily give everyone what they really want or make them happier.

Nowhere is this issue more contentious than in children and adolescents who experience gender dysphoria or the sense that their desired gender mismatches their body. In fact, there are few areas of medicine or psychiatry where the debate has become so heated. I was surprised to discover how many professional colleagues in this area either warned me to be careful about what I wrote or were reluctant to talk with me on the record for fear of reprisal from the transgender community.

If gender identity were a fixed and stable phenomenon in all young people, there would be little to argue about. But we have learned over the past two decades that, like so much else in child and adolescent behavior, the experience of gender dysphoria is itself often characterized by flux.

Several studies have tracked the persistence of gender dysphoria in children as they grow. For example, Dr. Richard Green's study of young boys with gender dysphoria in the 1980s found that only one of the 44 boys was gender dysphoric by adolescence or adulthood. And a 2008 study by Madeleine S. C. Wallein, at the VU University Medical Center in the

Netherlands, reported that in a group of 77 young people, ages 5 to 12, who all had gender dysphoria at the start of the study, 70 percent of the boys and 36 percent of the girls were no longer gender dysphoric after an average of 10 years' follow-up.

THIS strongly suggests that gender dysphoria in young children is highly unstable and likely to change. Whether the loss of gender dysphoria is spontaneous or the result of parental or social influence is anyone's guess. Moreover, we can't predict reliably which gender dysphoric children will be "persisters" and which will be "desisters."

So if you were a parent of, say, an 8-year-old boy who said he really wanted to be a girl, you might not immediately accede to your child's wish, knowing that there is a high probability — 80 percent, in some studies — that that desire will disappear with time.

The counterargument is that to delay treatment is to consign this child to psychological suffering of potentially unknown duration. This is a disturbing possibility, though much can be done to help alleviate depression or anxiety without necessarily embarking on gender change. But rather than managing these psychological symptoms and watchfully waiting, some groups recommend pharmacologically delaying the onset of puberty in gender dysphoric children until age 16, before proceeding to reassignment. Puberty suppression is presumed reversible, and can be stopped if the adolescent's gender dysphoria desists. But the risks of this treatment are not fully understood. Even more troubling, some doctors appear to be starting reassignment earlier. Some argue that the medical and psychiatric professions have a responsibility to respond to the child as he or she really is.

But if anything marks what a child really is, it is experimentation and flux. Why, then, would one subject a child to hormones and gender reassignment if there is a high likelihood that the gender dysphoria will resolve?

With adolescents, the story is very different: About three quarters of

gender dysphoric teens may be “persisters,” which makes decisions about gender reassignment at this age more secure.

Clinicians who take an agnostic watch-and-wait approach in children with gender dysphoria have been accused by some in the transgender community of imposing societal values — that boys should remain boys and girls remain girls — on their patients and have compared them to clinicians who practice reparative therapy for gays.

I think that criticism is misguided. First, there is abundant evidence that reparative therapy is both ineffective and often harmful, while there is no comparable data in the area of gender dysphoria. Second, unlike sexual orientation, which tends to be stable, gender dysphoria in many young people clearly isn't. Finally, when it comes to gender dysphoria, the evidence for therapeutics are simply poor to start with: There are no randomized clinical trials and very few comparative studies examining different approaches for this population.

Given the absence of good treatment-outcome data, how can anyone — whether transgender activist, parent or clinician — be sure of the best course of action?

There is obviously a huge gap between rapidly shifting cultural attitudes about gender identity and our scientific understanding of them. Until we have better data, what's wrong with a little skepticism? After all, medical and psychological treatments should be driven by the best available scientific evidence — not political pressure or cherished beliefs.

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