Transgender Science Recap

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It's always a good exercise to be able to simplify a complicated issue like the causal factors of transsexualism and transgenderism. So here goes.

Sex and gender do not mean the same thing. Sex (male, female) refers to primary (e.g. vagina) and secondary (e.g. brain) organs involved in reproduction. Gender refers to behavior (masculine, feminine).

When you are born you are assigned a sex and, in our culture, a corresponding binary gender behavior category. In our culture in is not permissible to change gender behavior categories and there are only 2—masculine and feminine. Kids learn about gender behavior categories by the age of 2-3.

When you are born, you also get a gender behavior predisposition like you might have predispositions for handedness or math or music. If not congruent with your assigned gender behavior category, this can cause a collision with cultural rules and norms. This collision can occur any time after about 3-4 years old and persists. We know that about gender predisposition by studying historical and geographical cultures which had 3-5 gender behavior categories and in some of these cultures it was possible, even encouraged to switch between them.

This gender predisposition is genetic as in DNA. Identical twins start out at conception with the same DNA. We know this from identical twin studies in which it is more likely than chance, that if one twin is transgender or transsexual, then the other twin will be as well. This does not occur with fraternal twins or in non-twin siblings that share the same mother and father but not the same exact DNA.

Transsexuals also have some similar DNA markers but only a few places on the DNA molecule have been examined. Both MTF and FTM have such markers although they are not in the same locations.

In addition to DNA markers there are body markers that indicate DNA involvement. Both MTF and FTM transsexuals are less right handed than controls and have low 2D:4D finger length ratios. (Contrary to some, finger length ratios are determined by DNA, not prenatal testosterone.) FTM have body markers in the teeth and hips.

We know that epigenetic factors are also at play. These are mutations or restrictions/promotions on the DNA molecule. We know they are at play because the relationship between identical twins, though strong, is not perfect. Epigenetic mechanisms must sometimes prevent one of the twin pairs from acquiring the incongruent gender predisposition. Since the inheritance of TSTG does not

seem to follow classical dominant/recessive gene patterns, epigenetic factors may also modify DNA to provide incongruent gender predisposition. Prenatal diethylstilbestrol and anti-epileptics are implicated in the latter phenomenon although the evidence is not conclusive. It would be more conclusive if investigators with access to large numbers of people exposed to DES actually asked if these people were TSTG. Most mothers and doctors know to stop taking/prescribing old style AEDs during pregnancy so (thank goodness) the numbers of TSTG people created by that route should have stopped. Exposure to other prenatal environmental factors, such as exposure to toxic materials and maternal stress may cause DNA mutations or alter DNA expression, but the evidence is currently not there to tell.

We can rule out the following candidate causal factors for TSTG:

1. Sexual arousal or fetishism (The arousal from crossdressing fades with exposure.)
2. Autogynephila (This notion is vaguely defined and seems to devolve into 1 (above)
3. Prenatal testosterone (This theory is rooted in East German eugenics and available scientific evidence refutes the theory. Some of the evidence comes from prenatal conditions in which testosterone should be abnormally low or high but there is no TSTG. Organization of gender begins with early DNA expression, long before testosterone is produced by the testes or adrenals. Measuring prenatal testosterone is currently beyond the state-of-the-art despite research papers it is responsible not only for TSTG but also for autism spectrum and dyslexia. As far as we know, there are no cases in which testosterone was injected into pregnant human mothers to avoid TSTG in males but the East Germans proposed this and played around with hormones in other areas such as athletics.
4. Family dynamics (Research indicates that neither your mama or your papa make you TSTG; however, TSTG behavior does induce parents to use violence against their TSTG kids.)
5. Conversion by peers. No evidence that this occurs although we do like to get together in clubs and conventions to compare notes.)
6. Psychodynamics. (Not really scientific theories and assume intervening variables that cannot be measured, e.g. complexes. No objective evidence for early trauma involvement assumed by some psychodynamics.)
7. Homosexuality (DNA markers are in different locations from those for TSTG. Some TSTG are homosexual but the two phenomena appear to be independent at this time.)

Current population frequency estimates for TSTG, are as follows:

- MTF TG: 1%
- FTM TG: .5%
- MTF TS: .1%
- FTM TS: .05%

Since most all population frequency estimates and surveys use different criteria and since TSTG estimates seem to be increasing (or at least admission of TSTG), these numbers cannot be precise. They are based on my rule-of-thumb analysis and on lower bound estimates where available. Nevertheless, they are several orders of magnitude higher than previous clinical nose counting. Newer methods of engineering estimation theory and survey are now available.

Transsexualism and transgenderism are not the result of a conscious choice because there is no such thing as conscious choice. Choice is determined by subconscious mechanisms or "widgets" before we become consciously aware in time of our choice. These subconscious mechanisms are mostly beyond conscious control. If it were not so, our brains would have to be much larger just to handle the sensory and control "wiring" for the widgets. Some of these widgets probably represent gender predisposition. There is evidence that the subconscious mechanisms vote on choices, weighted by the frequency of neural activity. We may ignore our gender predisposition for a time, temporarily diverted for example by job, military service or family but eventually it wields its behavioral influence.

There is no "cure" for transsexualism or transgenderism but many seek to heal themselves by marrying, going into military service or getting intensely involved with work or other important activity. TSTG join the military at a rate 20 times other folks. Since it appears that TSTG is mediated by DNA, a gene therapy "cure" is conceivable. However, if asked, many TSTG say that would refuse such a "cure" because they regard TSTG as a gift.

Transsexuals differ from transgender people in that they choose to change their bodies to better fit with cultural expectations. Some transgender people also seek body change but at a lower rate. Transsexuals usually go full time but a few transgender people do, too. Transsexual transition is generally safe if accomplished under medical supervision with periodic monitoring. Hormone Therapy (HT) is usually involved in transition. Hormone Replacement Therapy is a misnomer because nothing is being replaced and because WPATH simply calls it HT. HT is now safer because estradiol valeate has largely replaced ethinyl estrogen as the estrogen drug of choice. Transsexual transition is not a race and criteria for "success" varies with each individual. Only about 25% of transsexuals get transsexual genital plastic surgery (GPS), commonly called sex change surgery. Sexual reassignment surgery, gender confirmation surgery, genital reconstruction surgery, sex affirming surgery, gender realignment surgery are all misnomers for various reasons. Sex change is mainly external and incomplete; gender does not pertain to sex organs; congruent gender stays the same and does not need confirmation.

Transsexual transition sometimes results in changes in sexual orientation. About 25% of MTF become attracted to males after GPS. Approximately 40% of FTM become attracted to females but the change begins with HT.

So TSTG is caused by the collision between biological gender predisposition and cultural rules involved with gender behavior categories. The biology cannot yet be changed but the cultural rules could change as they have in the past for other behaviors.

About danabevan: Dana J. Bevan holds a Ph.D. from Princeton University and a Bachelors degree from Dartmouth College both in experimental psychology. She is the author of "The Transsexual Scientist" which summarizes both her experience and her research on the causal factors involved in transgenderism and transsexualism. It is available from Amazon. She is a transitioning transsexual and can be reached at danabevan@earthlink.net, on twitter @danajbevan or her website at http://danabevan.wix.com/danaresume.