

Founding Editor's Viewpoint

The Homosexual and Transgendered Individual: Deviant or Part of the Normal Human Continuum?

Some of the most provocative and predictable questions I am asked concern the biology of persons who don't fit the traditional societal concept of heterosexuality. One woman (whose question I found particularly poignant) told me that her 5-year-old daughter, an anatomically female child, insisted that she was a boy and wanted to dress, behave, and be treated as a boy. "I believe her and I want to know what I can do to help her," she told me.

I think it's time those of us involved in gender-specific science construct an organized, informed, and straightforward reply to questions like hers. Certainly we have reams of solid information about the anatomy, chemistry, and performance of the sex-specific brain. We also understand the crucially important fact that the intrauterine brain is organized to be male or female in a process that is temporally independent of the formation of the genitals. Hormones have an important role in that process but so do genes¹ and the intrauterine-maternal environment.²

An extremely useful part of a new monograph from the Institute of Medicine, *The Health of Lesbian, Gay, Bisexual and Transgender People*,³ is a thoughtful and comprehensive summary of the history of societal views of lesbian, gay, bisexual, and transgendered people:

Historically, lesbians, gay men, bisexual individuals and transgender people have not been understood and accepted as part of the normal spectrum of the human condition. Instead, they have been stereotyped as deviants. Although . . . they share with the rest of society the full range of health risks, they also face a profound and poorly understood set of additional health risks due largely to social stigma.

The monograph is more than a mandate to understand the health concerns of these populations; it prompts us to consider the possibility that a sense of gender, sexual preference, and sexual behavior are not moral choices but a function of brain phenotype—inescapable and unalterable.

The literature from the biomedical community documenting the characteristics of brain anatomy and function in heterosexual and homosexual individuals is extensive. Ivanca Savic-Berglund, associate professor and senior consultant neurologist at the Karolinska Institute, heads a team of some of the most interesting and competent of the scientists looking at the sex-specific characteristics of the human brain. Using positron emission tomography and magnetic resonance imaging techniques, she and her colleagues have demonstrated cerebral asymmetry in heterosexual males and homosexual women but found none in homosexual males and heterosexual women. There were also sex-atypical amygdala connections in homosexual subjects.⁴ In another pair of important studies, she mapped the activity of the brain in response to putative pheromones in homosexual men⁵ and lesbian women.⁶ She showed that different brain areas are activated in heterosexual and homosexual individuals in response to compounds shown to induce sex-specific effects on the autonomic nervous system, mood, and sexual arousal. Brain activity in homosexual men resembled that of heterosexual women, whereas brain activity of homosexual women was similar to that of heterosexual men.

In several excellent reviews, Swaab has described the sequence of gonadal development in the sixth week of pregnancy and the subsequent sexual differential of the brain.^{7,8} He reviews the structural differences in the brain that are related to sexual orientation and gender identity and comments on the importance of hormones, either endogenous or environmental, in the sexual differentiation of the brain. He summarizes current concepts of the role of the X chromosome in determining sexual orientation and the impact of birth order on the occurrence of homosexuality in men. Even social

factors (maternal stress) can affect the sexual preference of the developing child in utero. In contrast, he states, very little evidence supports the idea that postnatal social factors have a significant impact on sexual orientation.

In short, there is abundant evidence that the structure and function of the human brain determines the sense of gender identity and the sexual preferences and behavior of the individual. The foundation for all of this is established in utero and evolves further in response to the surge of hormones at the time of puberty, which act on the sex-specific scaffolding of the brain that is laid down before birth. Most of us would conclude from the data that gender identity, sexual preference, and sexual behavior are programmed in us during intrauterine development and further predictably tailored at crucial periods post partum. Savic is more cautious: when asked whether sexual orientation is determined at birth, she answered, “I want to be extremely cautious—My study [see reference 6] does not tell us anything about whether sexual orientation is hardwired in the brain. It doesn’t say anything about that.”⁹

Nevertheless, when one considers the overwhelming evidence that the brain is sex specific and that the development of the brain is orchestrated by a whole variety of influences that include genes, hormones, and environment, it is reasonable to conclude that there is a biologically determined spectrum of variations in the sexual phenotype in any group of individuals. Research data support the idea that gender identity, sexual preference, and sexual behavior are the result of intrauterine programming of the developing brain. These data have vitally important implications for the way society views and treats those that deviate from the “expected” norm.

Other disciplines share what I think is our reluctance to come to grips with solid statements about the many issues that surround sexual variation. For example, bioethicist James Nelson, a fellow at the Hastings Center and professor of philosophy at Michigan State University, pointed out that transsexualism has “remained largely invisible to bioethics,” a reality that he thinks “should be seen as remarkable.”¹⁰ He asks, “Is gender dysphoria a disease? Can one recognize the existence of a pathology without pathologizing its subject?” He calls for an examination of how the biomedical community has framed and pursued the discussion of how to view and to “treat” the transgendered individual.

The new Institute of Medicine’s monograph should prompt more than a consideration of how to improve the health of sexual minorities; it should prompt us to consider the neurobiological basis for their phenotypes. The answer to whether sexual preference and behavior are biologically determined is tremendously important; we cannot improve human health without a better understanding of how we come to be the persons we are. Surely those of us who claim to be experts in gender-specific medicine should lead the way to consolidating answers to these fundamentally important questions.

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