

A Difference in Hypothalamic Structure Between Heterosexual and Homosexual Men

The question has long been asked: "Are differences in sexual preference dictated solely by psychosocial factors, or does biology play a determining role?" LeVay¹ has examined the brains of heterosexual and homosexual males to determine whether there might be neuroanatomic differences that are related to sexual preference. Such a difference was found in the interstitial nuclei of the anterior hypothalamus (INAH-3) cell group.

Allen et al² have shown that the volume of the cell group called INAH-3, which participates in the regulation of male-typical sexual behavior in nonhuman primates, is more than twice as large in males as in females. LeVay postulated that the brains of members of either sex who are attracted to females might differ from the brains of those who are attracted to males. Examining the anterior hypothalamus in 41 middle-aged individuals (16 presumed heterosexual males, 19 homosexual males, and 6 heterosexual females), LeVay found that the INAH-3 cell group differed in size between the homosexual and heterosexual males and that the INAH-3 cell group of the homosexual males resembled the structure found in females. This finding suggests that the INAH region is dimorphic with regard to sexual orientation, and may represent a biologic basis for sexual preference and orientation. In this study, LeVay examined the brains of homosexual men but not homosexual women. Previous studies in rats by Rhees et al³ have shown that size differences in this part of the hypothalamus are influenced by levels of circulating androgens during a sensitive perinatal period; thus, exposure to altered androgen levels during this period may, at least in rats, affect sexual behavior in adult life.

References

1. LeVay S. *Science* 1991;253:1034.
2. Allen LS, et al. *J Neurosci* 1989;9:497.
3. Rhees RW, et al. *Dev Brain Res* 1990;42:17.

Editor's comment: *LeVay's study indicates that structural differences may indeed exist between the brains of heterosexual and homosexual males, a possibility that would move homosexuality further from the outdated definition of a psychiatric "disease" to one of a normal biologic variation. These findings, together with the hormone studies in rats, raise some interesting ethical questions regarding whether attempts might be made to prevent homosexuality in the future by prenatal hormone treatment or other biologic manipulation. Since there have been animal studies indicating that increased prenatal exposure to maternal stress hormones results in a higher frequency of homosexual offspring, it is also interesting to speculate that homosexuality might actually serve as an ecologic contraceptive — overcrowding results in increased maternal stress hormone production, which results in more homosexual offspring, which results in fewer productive unions, etc.*

Finally, these studies are complicated in that some of the subjects (both homosexual and heterosexual) died of AIDS, but certainly the results will trigger additional and much-needed work on this question.

For further speculation, the reader is referred to an article entitled "Are Gay Men Born That Way?" (Time magazine, September 9, 1991).