I. Information on the Ontogeny of Human Sexual Orientation

Sexual orientation is a component of human sexual differentiation. Research over the last 15 years has sketched in the major aspects of sexual differentiation in mammals.

Ellis and Ames (1987) have written a very fine tutorial describing the ontogeny of mammalian sexual orientation (300 references):

- Mammalian sexual development usually expresses chromosomal pairing: females have an "XX" pairing of the sex chromosome; males have an "XY" pairing. The chromosomal pairing can be called the karyotypic sex of a person. [The picture of an organism's paired chromosomes arranged from largest to smallest is known as a karyotype.]
- The prototype mammal is female. Male characteristics reflect specific biochemical interventions in the development of the individual. If some or all of the active interventions are blocked, the male characteristics will not occur.
- There are four aspects of sexual differentiation and organization: genital (reproductive organs), neurological (differences in brain structure and functioning), secondary sexual characteristics (breast development, facial hair, etc.), and behavioral (sexual orientation and sex-typical behaviors).
- Each of these aspects may be "inverted" (the individual has the characteristics of the other sex) with respect to the individual's karyotypic sex ("XX" or "XY" chromosome pairing).
- Sexual orientation is revealed by a consistent preference for sexual relations with same-sexed or other-sexed partners. If there is a degree of ambivalence about the partner's sex, the person is bisexual. Sexual orientation is not altered by occasional sexual experiences with noncongruently sexed partners by choice or in the absence of alternative sexual outlets.
- Sexual differentiation relevant to sexual orientation occurs in hypothalamic areas of the brain (in 1987 the preoptic anterior nucleus, ventromedial nucleus, and anterior nucleus were known).
- Brain sexual differentiation develops as "female" unless there are high levels of testosterone (an androgen) in which case "male" brain differentiation occurs. In human beings, hypothalamic differentiation begins about the middle of the second month of gestation and is completed by the middle of the fifth.
- Primate neurological sexual differentiation can be affected by four different interventions: (a) direct manipulation of androgen levels during gestation; (b) pharmacological blocking or augmentation of the effects of androgens; (c) exposure of the pregnant female to stress (which can depress androgen levels); (d) immune-system responses to androgens.
- Inversion of sexual behavior (males presenting to other males) has been produced in rodents and possibly monkeys by rearing in unisex peer groups. Rodent sexual differentiation is not complete at birth; the rearing conditions may have lowered testosterone levels and thus altered the rodent sexual differentiation. The rodent literature is thus not directly generalizable to primate ontogeny. In monkeys, unisexual rearing seems to create a general
unease with other-sexed peers and awkwardness in responding to sexual overtures from the other sex. Continued exposure to peers of both sexes "heterosexualizes" the monkeys' behavior.

- Sexual orientation is a continuum from exclusive heterosexuality, through various degrees of bisexuality, to exclusive homosexuality. Sexual orientation is definitely not a binomial or trinomial categorical variable.
- Sexual orientation is permanent and cannot be changed. Therapies that purport to change sexual orientation are, in all likelihood, reporting changes in sexual behavior of bisexual persons—not of the sexual orientation of homosexual persons.
- "To summarize the human evidence ... sexual orientation is mainly the result of neurological factors that are largely determined prenatally, even though they do not fully manifest themselves until adolescence or adulthood." (Ellis & Ames, 1978, p. 248).
- The sexual-differentiation model Ellis & Ames propose suggests that a significant proportion of male homosexual-orientation is a result of maternal stress during the first and second trimesters of pregnancy.

Entry into more recent research findings is provided by the paired articles by LeVay & Hamer (1994) and Byne (1994).

LeVay & Hamer summarize the evidence for a neurological basis of sexual orientation: histological investigation of adult human brains shows the INAH3 cell group (third interstitial nucleus of the anterior hypothalamus in the medial preoptic region of the hypothalamus) to be approximately three times larger in men than women and that gay men had INAH3 cell groups no larger than women. If this difference were present at birth it might have arisen as a result of atypical hormone levels during fetal development (the mechanism described by Ellis & Ames) or it could have occurred as a result of intrinsic differences in the way individual brains respond to androgens during development. Such intrinsic differences in brain development might be a result of genetic differences. Therefore, LeVay & Hamer describe research which shows gay men are more likely to have gay brothers than are straight men and that gay-male relatives of gay men are predominantly from the mother's lineage (maternal uncles and cousins)—evidence supporting a genetic root for sexual orientation. Finally LeVay & Hamer indicate research which shows a possible genetic marker (Xq28) in a region of the X chromosome (inherited from a male's mother)—a region which could contain hundreds of genes (the interpretation of research which seeks genetic markers is always difficult and problematic).

Byne's paper (1994) provides balance for interpreting not only the research described by LeVay & Hamer (1994) but for additional research in this area. Byne discusses methodological (How is "sexual orientation" to be operationally defined?), substantive (There are several studies which fail to replicate neurological differences in brain areas between males and females.), and conceptual (Why aren't a large proportion of males diagnosed with prenatal

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1There are, of course, considerable individual differences in the volume of the INAH3 cell groups. Inferential statistical tests of the measurements in the data set indicate the likelihood of incorrectly concluding the volumes are different when they are in actuality the same is less than one in a thousand (p < .001).
androgen deficiency homosexual?) limitations of research which explores the manner in which biological factors influence sexual orientation.

Burr's (1993) article is an accessible introduction to the particulars of the hormonal-controlled neurological changes underlying sexual differentiation. Unfortunately, Burr's article fails to discuss the effects of stress during pregnancy as a presumptive basis of homosexual orientation. He instead speculates about a genetic cause (read "homosexual gene"), basing his argument on the "fruitless" gene in Drosophila that creates a bisexuality mimic in male fruit flies. The beginning of Burr's article is a short summary of the history of homosexuality and describes some of the horrific attempts at a "cure" by some members of the medical profession.

But sexual orientation and sexual behavior are not the only components of sexual differentiation. McCormick & Witelson (1991) have extended the research on cognitive differences between men and women to show a cognitive pattern in homosexual males that is intermediate between that of heterosexual males and heterosexual females. The genesis of these cognitive differences may be neurological or societal. The significance of McCormick & Witelson's finding is that sexual orientation is only one of the several ways sexual differentiation may affect brain organization and cognitive functioning.

Hooker (APA, 1992) was the first to demonstrate that homosexual orientation was not pathological. In 1957 she demonstrated that experienced clinicians could not identify otherwise healthy homosexual individuals on the basis of the "appropriate" psychological tests. The research tradition she began, ultimately resulted in the action of the American Psychiatric Association to delete homosexuality from its classifications of emotional and mental illnesses in 1973.

Money's (1988) book is important for broadening sexual orientation from the sex of the person with whom you prefer to have sexual relations to the sex of the person with whom you can romantically bond (erotic orientation). If you recast the rhetoric of the gay activist movement into "erotic orientation," it makes more sense. Lesbian/Gay activists want their erotic orientation to be recognized as a legitimate variation of the human condition. Gay/Lesbian activists argue that the sex of "domestic partners" should be unimportant to society. The members of erotic and romantic partnerships, straight or gay, want to nurture each other and share a life together. All domestic partners (married, cohabiting, or homosexual) should be able to make binding medical and funereal decisions whenever the need arises. After all, is one "flaunting" one's homosexual

3The general conclusion that males have higher scores on spatial tests while women score higher on fluency tests has recently been re-examined using a meta-analysis approach (Hyde, Fennema, & Lamon, 1990; Hyde & Linn, 1988). These authors conclude the gender differences are small or nonexistent.
orientation by walking hand-in-hand or kissing good-bye at an airline terminal-
-public behaviors which are perfectly acceptable when done by a heterosexual
couple.

READING LIST
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II. Inclusivity on Campus

The Campus Context
• Some significant proportion of your student population is not
heterosexual; for argument's sake, let's assume 15% (5% now or later will
understand they are homosexual; an additional 10% is or will struggle
with significant homosexual feelings). Only a few of your
non-heterosexual students will be out to anyone. Most will be dealing
with sexual orientation issues alone and completely in the closet.

• In most of contemporary American culture, any sexual orientation
that is not strictly heterosexual is stigmatized. Consequently, few non-
heterosexual persons are visible. Those who are visible may be
marginalized and, more than likely, definitely not mainstream. Non-
heterosexuals who are out are risking ostracism as well as verbal and
physical abuse. Remember, hate crime against homosexuals has
drastically increased in the last few years.

• Usually adolescents can confide in parents or other family members
when they are facing problems. This is not automatically true when the
problem is a sexual orientation issue. Every homosexual person knows
someone whose parents "kicked them out of the family." Talking about
your sexual orientation is realistically risking estrangement from those
you love the most.
• Early in the "coming out process," almost all non-heterosexual students will have internalized cultural values that homosexuality is wrong, sinful, dirty, and degrading. They may feel they are doomed to an unhappy, shallow, lonely, second-class life. They may feel they are not worthy to be full citizen's in the life of the community. Furthermore, these students will more than likely feel those persons who are out of the closet are indeed degraded and sinning individuals with whom one should not associate. This cluster of beliefs and feelings is internalized homophobia.

• Every closeted non-heterosexual is hiding a secret. Guarding the security of that secret involves a significant portion of that person's cognitive and emotional resources. Closeted persons are constantly monitoring themselves to control where and whom they look at, what they say, how they move, what they reveal in casual conversation. These concerns hamper free communication. Guarding this secret probably prevents many students from affiliating with your campus' lesbian, gay, and bisexual support group.

• Everyone, knowingly or unknowingly, interacts with non-heterosexual persons everyday--teachers, family members, room-mates, colleagues, etc.

**Increasing Campus Inclusivity**

• What are your feelings, beliefs, and assumptions about homosexuality? Garnets, Handcock, Cochran, Goodchilds, & Peplau (1991) have described issues and topics of relevance to psychotherapy with homosexual clients. Because psychotherapy is the quintessential helping-relationship, the issues that are described are important in the helping-relationship of teachers towards students.

Garnets, et al., discuss exemplary and inadequate therapeutic attitudes and responses to homosexual clients for the arenas of assessment ("You really aren't homosexual. you're just acting out problems related to your father" [the client was mid-30's]), intervention ("You only think you've come to terms with your sexual orientation, your problem is not 'general social anxiety'"), relationships ("Couple therapy isn't appropriate to this 'kind' of relationship; go to 'gay bars' and date other people"), family (a lesbian is told her two sons would "mind her" better if they saw her dating a man; they would be helped in overcoming their "masculinity" crisis), and therapist expertise and education (therapy consists of answering the therapist's questions about homosexual life).
• In the same way classroom language has altered to avoid a sexist bias, there is a perceived need to remove a heterosexism bias. In 1991 the American Psychological Association published guidelines to help avoid unconscious heterosexual bias in language.

The APA guideline details the preferred terminology (e.g., orientation not preference; lesbians, gay males, and bisexual persons not homosexuals)

The guidelines also describe three goals which language reform can help to achieve. (1) The existence of lesbians, gay men, and bisexual persons can be recognized. Discussions and references to "husband," "wife," "girl friend," "boy friend" can be recast as, for example, "significant other." "Marital status" does not elicit an accurate description of contemporary living arrangements. "Sexual intercourse" should not be a synonym for "sexual activity." Not all sexually active women wanting to avoid pregnancy need take contraceptive precautions. Wade & Cirese (1991) hew closely to this principle: Unless the research they describe is directly limited to heterosexual couples, they use inclusive language. Because part of the purpose of altering campus language is to foster the development of students and counter homophobia, it's worthwhile to use lesbians, gay men, and bisexual persons as examples in situations that do not directly involve sexual relationships--homosexuality is a general way of relating and living. (2) Language should not inaccurately stereotype or categorize non-heterosexual persons. Grouping lesbians, for example, into a "special populations" category which includes "drug-abusers" is not appropriate. "Lesbians" is a status designation; the other designates persons who are being treated. (3) Lesbians, gay males, and bisexual persons should always be compared with parallel groups. Gay males are part of the general public. It would be inappropriate to compare gay men to normal men, for example.

• The student life/student affairs office on your campus is likely to be a further source of information. The American College Personnel Association (ACPA) has been very active in organizing information about working with gay, lesbian, and bisexual students. ACPA has developed a number of resources which describe some of the factors which identify some of the special needs of non-heterosexual students.

• King (1988) provides ideas for incorporating bisexual, lesbian, and gay issues into the psychology curriculum.

Another readily available source of information is the report of the President's Select Committee for Lesbian and Gay Concerns of Rutgers.
Rutgers Office of Student Life Policy has also produced a video, "A Little Respect: Lesbian and Gay Students on Campus" which is worth viewing.

- "We're here. We're queer. We have e-mail."--the slogan of Digital Queers (an organization of gay, lesbian, and bisexual persons who are out [of the closet] in the workplace).

Bisexual, lesbian, and gay persons are using electronic mail to share news, overcome the feeling of isolation, and forge a sense of community. On many campuses, students automatically have access to Bitnet or the Internet for email when they receive a computer account. Thus even on small and/or conservative campuses, students who are seeking information about nonheterosexual orientations have a readily available source. At the same time e-mail correspondence can provide an accepting and sympathetic audience for persons struggling with sexual identity issues.

One campus-oriented e-mail list is GayNet (To subscribe, send a message to majordomo@queernet.org; the first and only line in the body of the email should read "subscribe gaynet" but without the quotation marks).

Queer Resources Directory (QRD) is an electronic research library specifically dedicated to sexual minorities. QRD acts as a repository and disseminator of information. This library can be accessed several ways:

WWW: the URL is "http://vector.casti.com/pub/QRD/.html/QRD-home-page.html"
Gopher: Point your gopher client to vector.casti.com
WAIS: database "/wais/qrd" on port 210
FTP: ftp to vector.casti.com and log in as "anonymous"
BBS: (510) 568-9461
Email: Send an email message containing "help" to ftpmail@vector.casti.com.

READING LIST

State University of New Jersey, Rutgers. (1989). In every classroom: The report of the president's select committee for lesbian and gay concerns. Author.