

Theories of Sexual Orientation

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Various theories assume that sexual orientation is related to sex role orientation or to erotic orientation. Hypotheses derived from these two assumptions were tested in the present study. Heterosexual, bisexual, and homosexual undergraduate men and women were administered measures of their masculine and feminine attributes and their erotic fantasies. Results generally failed to support the hypotheses derived from sex role theories of sexual orientation; within each sex, homosexuals, heterosexuals, and bisexuals did not differ on measures of masculinity and femininity. Strong support was obtained for the hypothesis that sexual orientation relates primarily to erotic fantasy orientation. These latter results further supported a two-dimensional model of sexual orientation in which homosexuality and heterosexuality are treated as separate, independent factors.

Most theories about the nature of sexual orientation emphasize one of two assumptions: (a) that sexual orientation relates to a person's sex role orientation or (b) that sexual orientation relates to a person's erotic orientation. Although these assumptions have had a major impact on the development of theories, research, clinical practice, and even popular stereotypes, neither assumption has been adequately tested in past research.

Sex Role Orientation

Classical theorists in the area of human sexuality, including Ellis (1936), Krafft-Ebing (1887/1965), and Freud (1922/1959), placed sexual orientation within the context of an individual's overall sex role identity. These theorists closely associated sexual attraction toward women with a masculine sex role orientation and sexual attraction toward men with a feminine sex role orientation. Accord-

ingly, these theorists viewed heterosexuality as the normal concomitant of an "appropriate" sex role identity and homosexuality as the result of sex role inversion—that is, having or desiring to have characteristics of the opposite sex, including sexual attraction toward one's own sex. Freud (1922/1959), for example, proposed that an unresolved Oedipal complex would cause a young boy not only to identify sexually with his mother but also to "transform himself into her" (p. 40). Similarly, unresolved penis envy would cause a young girl to "manifest homosexuality, and otherwise . . . exhibit markedly masculine traits in the conduct of her later life, choose a masculine vocation, and so on" (p. 50).

Tripp (1975) has recently proposed a more complex relationship between sexual orientation and sex role. Tripp argues that homosexuals are strongly attracted to the sex role characteristics of their own sex—that homosexual men, for example, greatly esteem masculine attributes to the point of being sexually attracted toward men. Tripp states that this intense admiration for masculinity can arise in two types of men: men who themselves possess weak masculine attributes and who envy masculinity in others, and men who themselves possess strong masculine attributes and who identify with masculinity in others. On the average, homosexual men may not appear less

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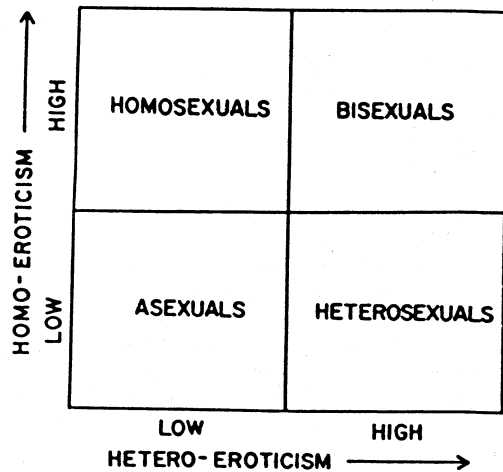


Figure 1. Four orientation categories generated by a two-dimensional model.

masculine than heterosexual men, but according to Tripp, homosexual men are more likely to show greater extremes of high or low masculinity. Tripp does not speculate about a similar process for homosexual women.

Although Tripp's hypothesis has never been tested directly, there has been research on the classical sex role inversion hypothesis. Some investigators have found greater masculinity among homosexual women or greater femininity among homosexual men (Manosevitz, 1971; Thompson, Schwartz, McCandless, & Edwards, 1973), whereas other researchers have found no sex role attribute differences (Aaronson & Gumpelt, 1961; Brown, 1958; Hooker, 1965). Unfortunately, the results of those studies, pro and con, may now be uninterpretable. Recent advances in the measurement of masculinity-femininity cast doubt on the validity of the bipolar, unidimensional scales used in past research (Constantinople, 1973).

More recently, Ward (reported in Spence & Helmreich, 1978) investigated the sex role inversion hypothesis using a more contemporary masculinity-femininity scale, Spence and Helmreich's Personal Attributes Questionnaire (PAQ). Ward found that samples of homosexual men and women differed significantly from college student norms on the PAQ, in the direction of sex role inversion. However, Ward's use of a college norm baseline is ques-

tionable. Ward recruited the majority of his subjects from gay bars, not from college campuses. Only 32% of his subjects were college students, and the mean age of his subjects (26 years) was considerably greater than that of the average college student. It was therefore inappropriate for Ward to compare these homosexuals against standard college student norms; the sex role differences he found could have been produced by age or academic affiliation differences.

The present study was designed to correct the problems associated with previous research and to test for a relationship between sex role attributes and sexual orientation by comparing the PAQ scores of homosexual, bisexual, and heterosexual men and women, all of whom were recruited from a college population.

Erotic Orientation

In contrast to theorists who emphasize an association between sex role and sexual orientation, other investigators have focused on the erotic nature of sexual orientation. According to this view, sexual orientation arises solely from an individual's acquired erotic responsiveness to stimuli associated with one sex or the other (Kinsey et al., 1948, 1953). Patterns of erotic response are represented by an individual's erotic fantasies or "scripts," which develop out of various learning processes and experiences (Gagnon & Simon, 1973; also see Byrne, 1977). Furthermore, any other characteristics associated with sexual orientation other than actual erotic responses, such as sex role identity and behavior, are merely the secondary effects of social labeling (Weinberg & Williams, 1974).

Kinsey's (1948, 1953) research laid the groundwork for viewing sexual orientation in terms of erotic fantasy. Kinsey argued that an individual's sexual orientation should be defined primarily in terms of the type, extent, and frequency of his or her erotic fantasies. On the basis of interviewing people about their erotic fantasies, Kinsey proposed the then-revolutionary idea that sexual orientation is a bipolar, unidimensional continuum from heterosexuality to homosexuality and that most people lie somewhere in the bisexual

middle of the scale rather than at either extreme.

Recently, Storms (1978) proposed a modification of Kinsey's unidimensional model of sexual orientation. He argued that homosexuality and heterosexuality may be separate, orthogonal erotic dimensions rather than opposite extremes of a single, bipolar dimension. This conceptual revision of Kinsey's model has obvious parallels to recent changes in theories of masculinity and femininity. Just as current sex role theorists argue that a person's degrees of masculinity and femininity can vary independently (Constantinople, 1973; Spence & Helmreich, 1978), it is possible that a person's homoerotic and heteroerotic orientations can vary independently. Similarly, just as a two-dimensional model of masculinity and femininity produces four sex role categories (undifferentiated, masculine, feminine, and androgynous), a two-dimensional map of erotic orientation produces four sexual orientation categories: asexual, heterosexual, homosexual, and bisexual—as seen in Figure 1.

The two-dimensional model of sexual orientation differs most clearly from Kinsey's unidimensional model in the position assigned to bisexuals. On Kinsey's unidimensional scale an individual loses degrees of one orientation as he or she moves toward the opposite end of the scale; thus, bisexuals are seen as half heterosexual and half homosexual or a compromise somewhere between the two extremes. In a two-dimensional system bisexuals are viewed as having high degrees of both homosexuality and heterosexuality, not moderate amounts of each.

Kinsey's unidimensional model and Storms' two-dimensional model lead to some similar predictions and some competing predictions about the erotic fantasies of individuals with different sexual orientations. Both models predict that homosexuals will have more fantasies about their own sex and fewer fantasies about the opposite sex than will heterosexuals. Both models also predict that bisexuals will have more same-sex fantasies than will heterosexuals and more opposite-sex fantasies than homosexuals. The two models differ in the following respect: Kinsey's model predicts that bisexuals will have fewer homoerotic fantasies than homosexuals and fewer hetero-

erotic fantasies than heterosexuals, whereas the two-dimensional model predicts that bisexuals will have equally as many heteroerotic fantasies as heterosexuals *and* equally as many homoerotic fantasies as homosexuals.

Although Kinsey has already collected voluminous data on people's erotic fantasies, it is not possible to test the present hypotheses with his results. Kinsey classified his respondents into various sexual orientation categories on the basis of their erotic fantasies rather than on the basis of some independent assessment of their sexual orientation. It would be tautological to draw any conclusions about the erotic fantasies of various sexual orientations when sexual orientation was defined by erotic fantasies. In the present study, samples of heterosexual, homosexual, and bisexual individuals were obtained without regard to subjects' erotic fantasies—namely, by asking subjects to assign themselves to the categories "gay," "straight," or "bisexual." Subjects' erotic fantasies were then assessed independently, using a two-dimensional measure of erotic fantasy, the Erotic Response and Orientation Scale (EROS).

In summary, the present study tested five hypotheses derived from two assumptions about the nature of sexual orientation. The first two hypotheses were drawn from theories that associate sexual orientation with sex role orientation.

1. Homosexual men will show lower masculinity and/or higher femininity scores, and homosexual women will show higher masculinity and/or lower femininity scores than will their heterosexual counterparts (Ellis, 1936; Kraft-Ebing, 1887/1965; Freud, 1922/1959).

2. Homosexual men (and possibly women) will show greater variability in their masculinity and/or femininity scores than will heterosexuals (Tripp, 1975).

The next three hypotheses were drawn from theories that associate sexual orientation with erotic orientation.

3. Homosexuals will report more homoerotic fantasy and less heteroerotic fantasy than will heterosexuals (Kinsey, 1948, 1953; Storms, 1978).

4. Bisexuals will report less heteroerotic fantasy than heterosexuals and less homo-

erotic fantasy than homosexuals (Kinsey, 1948, 1953).

5. Bisexuals will report as much heteroerotic fantasy as heterosexuals and as much homoerotic fantasy as homosexuals (Storms, 1978).

Method

Subjects

Two samples of subjects were selected. Seventy subjects (31 men and 39 women) were recruited from an undergraduate social psychology class at a midwestern state university. To insure a sufficient number of homosexual and bisexual respondents, an additional 115 subjects (55 men and 60 women) were recruited at meetings of gay student organizations and through gay friendship networks on the campus of the same university.¹

A biographical information questionnaire asked subjects their sex, age, and sexual orientation. Sexual orientation was determined in two ways. First, subjects assigned themselves on Kinsey's 7-point scale ranging from exclusively heterosexual to exclusively homosexual. Second, subjects assigned themselves one of three common sexual orientation labels: "straight," "bisexual," or "gay." These two measures corresponded perfectly. All subjects who marked the two most heterosexual values on Kinsey's scale also called themselves "straight", all subjects who marked the three middle values called themselves "bisexual", and all subjects who marked the two most homosexual values called themselves "gay."

For simplicity, subjects were divided into three groups based on their response to the label question. The heterosexual group contained 107 subjects (42 men and 65 women), the bisexual group contained 24 subjects (9 men and 15 women), and the homosexual group contained 54 subjects (35 men and 19 women).

Procedure

In addition to the biographical questions, each subject was also given two questionnaires—Spence and Helmreich's (1978) Personal Attributes Questionnaire (PAQ) and a questionnaire developed by the present author to measure erotic fantasies, the Erotic Response and Orientation Scale (EROS). Attached to the front of the questionnaires was a letter from the principal investigator that described the study as basic exploratory research on the sexual attitudes and feelings of college students, assured subjects of the confidentiality and anonymity of their responses, informed subjects that their decision to complete the questionnaires or not would be entirely voluntary, and invited subjects to contact the principal investigator if they had any questions or wanted a copy of the results when the study was completed.

Measures

Subjects' sex role attributes were measured by the PAQ, which contains three subscales: a masculinity

scale, a femininity scale, and a bipolar masculinity-femininity scale.

Subjects' erotic fantasy experiences were measured by the EROS, a 16-item questionnaire containing two subscales.² Each scale on EROS describes eight basic types of erotic fantasy experiences. On one scale, each of the eight erotic items is described with men as the object of the fantasy (the androerotic scale); on the other scale, women are described as the object of the fantasy (the gynoerotic scale). On each item, subjects are asked how often they have had that erotic fantasy during the past year, on a 7-point scale from "never" (0) to "almost daily" (6). The items were written in a Guttman scale format and cover a range of experiences from low intensity fantasies (thinking someone is sexually attractive) through moderate intensity fantasies (daydreaming about having sex with someone) to high intensity fantasies (masturbating while fantasizing sex with someone).

Results

Sex Role Orientation

The first two hypotheses, concerning the relationship between sexual orientation and sex role orientation, were tested by examining the scores of heterosexual, bisexual, and homosexual subjects (men and women separately) on the three subscales of the PAQ. These results are presented in Table 1. The hypothesis derived from Freud's theory and other inversion theories of sexual orientation, that homosexual men are less masculine and/or more feminine and that homosexual women are more masculine and/or less feminine than their heterosexual counterparts, was clearly disconfirmed by overall analysis of variance among the groups. As seen from the *F* values presented in Table 1, homosexuals, bisexuals, and heterosexuals did not differ significantly from each other on any of the three subscales of the PAQ.

In only two instances did overall *F* values among the three sexual orientation groups even

¹ Obviously, sampling is a problem with this study as with every other piece of research comparing groups of different sexual orientation. Attempts were made to go beyond the confines of gay social organizations by also recruiting subjects from homosexual friendship networks. Nevertheless, one must be conservative about generalizing the results of this study beyond the population of mostly "overt" college-age homosexuals and bisexuals.

² Copies of EROS are available on request from the author.

Table 1
Sex Role Attribute (PAQ) Means by Sex and Sexual Orientation

| PAQ scale | Sexual orientation group | | | | | | <i>F</i> | <i>p</i> |
|---------------|--------------------------|----------|----------|----------|------------|----------|----------|-----------|
| | Heterosexual | | Bisexual | | Homosexual | | | |
| | <i>M</i> | <i>n</i> | <i>M</i> | <i>n</i> | <i>M</i> | <i>n</i> | | |
| Masculine (M) | | | | | | | | |
| Men | 20.92 | 37 | 21.00 | 8 | 22.00 | 33 | <1 | <i>ns</i> |
| Women | 20.11 | 62 | 22.14 | 14 | 20.13 | 16 | 1.25 | <i>ns</i> |
| Feminine (F) | | | | | | | | |
| Men | 21.90 | 42 | 24.88 | 8 | 24.29 | 34 | 3.05 | .06 |
| Women | 24.41 | 63 | 24.53 | 15 | 25.21 | 19 | <1 | <i>ns</i> |
| M-F | | | | | | | | |
| Men | 16.02 | 42 | 14.00 | 8 | 14.81 | 32 | 1.65 | <i>ns</i> |
| Women | 12.82 | 63 | 13.13 | 15 | 15.06 | 17 | 2.52 | .09 |

Note. Subjects with missing data on a particular scale were excluded only from the analysis involving that scale. PAQ = Personal Attributes Questionnaire.

approach significance—men's scores on the feminine scale ($p < .06$) and women's scores on the bipolar masculine-feminine scale ($p < .09$). Although it is usually considered improper to analyze individual comparisons in light of a nonsignificant overall F value, such comparisons were made between heterosexual and homosexual subjects in these two instances. Using the most liberal a priori contrasts, both comparisons reached significance at $p < .05$, one-tailed, in the direction predicted by the sex role hypothesis, $t(81) = 2.21$ for men on the feminine scale and $t(92) = 2.24$ for women on the masculine-feminine scale. Thus, very weak support could be claimed for the sex role hypothesis, but only with the dubious suspension of conventional statistical safeguards.

The hypothesis derived from Tripp, that homosexual men (and possibly women) should exhibit greater variance than heterosexuals on the PAQ scales, was strongly disconfirmed by F tests of the variance among groups on each scale. Differences in variance among the groups produced Bartlett-Box F values of less than 1 on each scale for men and for women.

Erotic Orientation

The next three hypotheses, concerning a relationship between sexual orientation and erotic fantasy, were tested by examining subjects' scores on the Erotic Response and Ori-

entation Scale. Because EROS is a new instrument, its internal psychometric properties were assessed first. EROS contains two Guttman-format subscales, one measuring fantasies toward men (the androerotic scale) and one measuring fantasies toward women (gynoeerotic scale). A Guttman scalogram analysis was performed on each scale. These analyses indicated that the most reliable way of dichotomizing the items was to score 0 for each item a subject reported never having experienced and 1 for each item a subject reported having experienced at least occasionally, thus yielding a possible total score of 0 to 8 on each scale. This scoring procedure produced scales with excellent internal reliability (coefficients of reproducibility were .93 and .92 for the androerotic and gynoeerotic scales, respectively) and good internal validity in the sense of coherence and cumulativity (coefficients of scalability were .74 and .77). Almost identical scalogram values were obtained for the total subject sample and for just the primarily heterosexual class sample, suggesting that EROS is consistently reliable across sexual orientation groups.

Means and F values from one-way analyses of variance on each EROS scale across the three sexual orientation groups are presented in Table 2. These results strongly supported the general notion that people with various sexual orientations differ sharply in their

Table 2
Erotic Orientation (EROS) Means by Sex and Sexual Orientation

| EROS | Sexual orientation group | | | | | | F | p |
|-------------|--------------------------|----|-------------------|----|-------------------|----|-------|------|
| | Heterosexual | | Bisexual | | Homosexual | | | |
| | M | n | M | n | M | n | | |
| Androerotic | | | | | | | | |
| Men | 2.78 _a | 40 | 7.89 _a | 9 | 7.89 _a | 35 | 95.80 | .001 |
| Women | 7.41 _a | 64 | 7.33 _a | 15 | 5.26 | 19 | 18.30 | .001 |
| Gynoerotic | | | | | | | | |
| Men | 7.78 _a | 41 | 7.44 _a | 9 | 5.66 | 35 | 20.94 | .001 |
| Women | 3.12 | 65 | 7.50 _a | 14 | 7.74 _a | 19 | 47.09 | .001 |

Note. Across rows, means *not* sharing the same subscript are significantly different at $p < .001$ by weighted contrasts. Subjects with missing data on one scale were excluded only from the analysis of that scale. EROS = Erotic Response and Orientation Scale.

androerotic and gynoerotic fantasies, all $ps < .001$.

The more specific hypotheses about the relationship between sexual orientation and erotic fantasy were tested with weighted a priori contrasts among the sexual orientation groups. The hypothesis derived from both Kinsey (1948, 1953) and Storms (1978), that homosexuals have more fantasies about their own sex and fewer fantasies about the opposite sex than heterosexuals, was strongly supported by these comparisons. Homosexual men reported significantly more androerotic fantasy and less gynoerotic fantasy than heterosexual men: $t(81) = 13.06$, $p < .001$, and $t(82) = 6.35$, $p < .001$, respectively. Homosexual women reported significantly more gynoerotic fantasy and less androerotic fantasy than heterosexual women did: $t(95) = 8.13$, $p < .001$, and $t(95) = 5.95$, $p < .001$, respectively. Finally, although this is unrelated to any of the hypotheses, it is interesting to note that homosexual men and women reported higher levels of fantasy about the opposite sex than heterosexuals reported about the same sex, $p < .01$ for both sexes.

The competing hypotheses derived from Kinsey's unidimensional model of sexual orientation versus Storms' two-dimensional model concerned the relationship between bisexuals and the other two orientation groups. Kinsey's model predicts that bisexuals have erotic fantasies somewhere between those of homosexuals and heterosexuals. More specifi-

cally, bisexuals should have more same-sex fantasies than heterosexuals but fewer same-sex fantasies than homosexuals, and fewer opposite-sex fantasies than heterosexuals but more opposite-sex fantasies than homosexuals. In contrast, Storms' two-dimensional model predicts that bisexuals are high on both types of fantasies. Bisexuals should report as many same-sex fantasies as homosexuals (both exceeding heterosexuals) and as many opposite-sex fantasies as heterosexuals (both exceeding homosexuals).

The pattern of means presented in Table 2 and weighted a priori contrasts among them clearly supported the two-dimensional model. For same-sex fantasies, that is, androerotic fantasies for men and gynoerotic fantasies for women, bisexuals were indistinguishable from homosexuals (both $ts < 1$) and higher than heterosexuals: $t(81) = 8.20$, $p < .001$, for men, and $t(95) = 6.82$, $p < .001$, for women. Similarly, on opposite-sex fantasies, that is, gynoerotic fantasy for men and androerotic fantasy for women, bisexuals were identical to heterosexuals (both $ts < 1$) and higher than homosexuals: $t(82) = 3.29$, $p < .001$, for men, and $t(95) = 4.35$, $p < .001$, for women. In short, bisexuals scored high on both types of erotic fantasy, as predicted by a two-dimensional model of sexual orientation.

Discussion

Two assumptions underlying theories of sexual orientation were tested in this study:

(a) that sexual orientation relates to a person's more general sex role orientation and (b) that sexual orientation relates to a person's erotic fantasies. Very weak support was found for the first supposition; very strong support was found for the second.

Sex Role Orientation

Regarding the notion that a person's sexual orientation is part of his or her more general sex role makeup, no overall differences were found among heterosexual, bisexual, and homosexual men and women on any one of the three sex role attribute subscales in Spence and Helmreich's (1978) PAQ. Specific comparisons between heterosexuals and homosexuals did yield one significant difference for men (on the feminine scale) and one for women (on the bipolar masculine-feminine scale) in the direction predicted by classical inversion theories. It is doubtful, however, that these differences are reliable. It was a questionable statistical procedure to make such comparisons in light of no overall significant differences. At that, only two of six possible comparisons were significant and then only at the level of $p < .05$, one-tailed, using a priori contrasts. Finally, absolutely no differences were found between the variances of each sexual orientation group on each PAQ subscale.

The failure to find consistent mean differences combined with the failure to find variance differences between sexual orientation groups argues strongly against a possible alternative explanation for the PAQ results. It could be argued that the weak or nonexistent mean differences between heterosexuals and homosexuals were produced by self-presentation. Homosexuals may have deliberately reported higher levels of sex role appropriate attributes to counteract the stereotype that they are sex role inverted. This alternative becomes highly implausible, however, when one considers the variances. Not only would homosexuals have had to duplicate the heterosexuals' means on all three PAQ subscales, they would also have had to fake nearly identical variances.

The failure to find clear support for the sex role-sexual orientation assumption helps to explain why other lines of research based

on that assumption have produced negative results. One such research area concerns the development of psychodiagnostic scales to detect homosexuality in males. As Constantino (1973) pointed out, the two major homosexuality scales, the Homosexuality scale from the Minnesota Multiphasic Personality Inventory (Panton, 1960) and Terman's Inversion Scale (Terman & Miles, 1936), were based on the assumption that homosexual men are more feminine than heterosexual men. Following this assumption, both scales were composed primarily of items borrowed from earlier masculinity-femininity scales. Not surprisingly, given the present results, both scales have proved disastrously poor at detecting homosexuals (Cubitt & Gendreau, 1972; Dean & Richardson, 1964; Singer, 1970).

Another line of research based on the sex role assumption concerns the past childhood experiences of homosexual men. Assuming that homosexual men are more feminine, some investigators have suggested that homosexuals as boys were too close to their mothers and overidentified with a feminine sex role and/or were too distant from their fathers and underidentified with a masculine sex role (Bieber et al., 1962; Evans, 1969). Most investigators, however, have concluded that no reliable association exists between sexual orientation and familial relationship patterns (Freedman, 1971; Hooker, 1969; McCord, McCord, & Thurber, 1962; Townes, Ferguson, & Gillam, 1976).

Erotic Orientation

The second part of the present study strongly supported the notion that a person's sexual orientation relates to the type and extent of his or her erotic fantasies. Heterosexual, bisexual, and homosexual men and women differed sharply in the extent to which they reported sexual fantasies involving men and women. First, homosexuals reported significantly greater fantasy involving the same sex and significantly less fantasy involving the opposite sex than did heterosexuals. Second, comparing across scales, homosexuals reported significantly more heteroerotic fantasy than heterosexuals reported homoerotic fantasy. Third, bisexuals reported high levels of both homoeroticism and heteroeroticism.

The first result listed above, the simple difference between heterosexuals and homosexuals on each scale, is open to an obvious alternative explanation—response consistency. It could be argued that subjects deliberately answered EROS to be consistent with their self-assigned sexual orientation labels. Deliberate response consistency seems less plausible with the second two results listed above, the cross-scale differences between heterosexuals and homosexuals and the high scores of bisexuals on both scales. Although we cannot be certain what subjects thought would be consistent responses, both of these results are inconsistent with common beliefs and current theory about sexual orientation.

The finding that homosexuals reported higher levels of heteroerotic fantasy than heterosexuals reported homoerotic fantasy is inconsistent with the belief that homosexuals fear and reject sexual feelings toward members of the opposite sex (Bieber, et al., 1962). The present results are consistent, however, with other research. Just recently, Masters and Johnson (1979) reported that their homosexual subjects fantasized the opposite sex much more frequently than their heterosexual subjects fantasized the same sex. McConaghy (1967) used a penis plethysmometer to measure homosexual and heterosexual men's responses to pictures of nude males and females. Homosexual men showed greater erectile response to pictures of males, but they also showed some response to pictures of females. In contrast, upon seeing pictures of nude males, the penises of heterosexual men actually shrunk. Those findings, along with the present findings, suggest that heterosexuals are more likely to fear and reject cross-preference sexual feelings than are homosexuals.

The last major finding in the EROS data, that bisexuals reported high levels of both heteroerotic and homoerotic fantasy, strongly contradicts Kinsey's notion that sexual orientation is a single, bipolar continuum (Kinsey et al., 1948, 1953). According to a unidimensional view of sexual orientation, bisexuals should have reported moderate levels of each type of erotic fantasy. Instead, bisexuals actually reported just as much same-sex fantasy as homosexuals and just as much opposite-sex fantasy as heterosexuals. These data are bet-

ter described by a two-dimensional model in which homoeroticism and heteroeroticism are viewed as separate variables and in which bisexuality is defined as scoring high on both dimensions.

One important advantage of a two-dimensional model over Kinsey's model is that the former distinguishes between individuals who are bisexual (those who score high on both heteroeroticism and homoeroticism) and individuals who are asexual (those who score low on both dimensions), whereas the latter combines these two categories. Failing to differentiate bisexuals from asexuals can obscure the results of research on sexual orientation. For example, Masters and Johnson (1979) recently studied the sexual responses and erotic fantasies of heterosexual, homosexual, and "ambisexual" (their term) men and women. Following Kinsey's model, these researchers defined ambisexuals as those individuals who show no preference for the gender of their sexual partners—a definition that could fit both bisexuals and asexuals. Because Masters and Johnson used the unidimensional Kinsey definition of sexual orientation, we cannot be certain whether their results describe bisexuals or asexuals.

In fact, it appears that Masters and Johnson's ambisexual subjects may have been more asexual than bisexual. Although their ambisexual subjects were able to respond adequately when stimulated by a sexual partner in the laboratory, they reported many fewer erotic fantasies and daydreams than the heterosexual and homosexual subjects did. Furthermore, Masters and Johnson noted that their ambisexuals had difficulty establishing long-term sexual relationships with partners of either gender—a finding that is consistent with research on the social and interpersonal problems of asexuality (Gochros & Gochros, 1977).

Finally, it should be noted that a two-dimensional model of erotic orientation is consistent with classical Freudian theories. Although the present results strongly contradict past assumptions about the relationship between sex role and sexual orientation, they actually concur with a Freudian view of bisexuality. For example, Stekel (1922/1945), a student of Freud's, proposed that people are inherently bisexual and are equally capable of

responding sexually to either gender. Anyone who is exclusively homosexual or exclusively heterosexual, according to Stekel, is repressing half of his or her native sexual potential. Stekel further believed that both heterosexuals and homosexuals are consequently neurotic. Although we cannot speak to Stekel's notion of what is normal and what is neurotic, we do note that his theory would predict that bisexuals have high levels of both homosexual and heterosexual eroticism, as found in the present study.

More generally, the present results demonstrate a strong connection between a person's erotic fantasy content and his or her sexual orientation. This study does not, however, provide an explanation for that relationship. Sexual orientation may develop out of processes and experiences totally unrelated to anything mentioned in this article (although it clearly does not develop out of the same experiences that determine masculinity and femininity) and may in turn lead to the development of corresponding erotic fantasies. Or erotic fantasies may develop first and in turn lead to a corresponding sexual orientation. This latter explanation is favored slightly by the research of Money and Tucker (1975). They have observed that erotic fantasies are clearly established early in puberty, before most individuals have had any sexual experiences with others. This suggests that people may initiate sexual behaviors, and thereby develop sexual orientations, in response to the contents of their fantasies.

Even if erotic fantasy is an important determinant of sexual orientation, at least in puberty, we still have no idea what produces erotic fantasy. At best we can suggest a set of working assumptions for the development of theory and research on the eroticization process. First, it seems reasonable and parsimonious to presume that the mechanics of eroticization are general—that eroticization works in much the same way, regardless of the sex of the individual and regardless of the stimulus being eroticized. Second, it follows from a two-dimensional model of erotic orientation that separate sets of experience promote the eroticization of male stimuli and the eroticization of female stimuli. Third, it is evident that men and women may be exposed

to either androeroticizing or gynoeroticizing experiences or both, independent of their exposure to sex role socializing experiences.

References

- Aaronson, B. S., & Gumpelt, H. R. Homosexuality and some MMPI measures of masculinity-femininity. *Journal of Clinical Psychology*, 1961, 17, 245-247.
- Bieber, I., et al. *Homosexuality: A psychoanalytic study*. New York: Basic Books, 1962.
- Brown, D. G. Inversion and homosexuality. *American Journal of Orthopsychiatry*, 1958, 28, 424-429.
- Byrne, D. Social psychology and the study of sexual behavior. *Personality and Social Psychology Bulletin*, 1977, 3, 3-30.
- Constantinople, A. Masculinity-femininity: An exception to a famous dictum? *Psychological Bulletin*, 1973, 5, 389-407.
- Cubitt, G. H., & Gendreau, P. Assessing the diagnostic utility of MMPI and 16PF indexes of homosexuality in a prison sample. *Journal of Consulting and Clinical Psychology*, 1972, 39, 342.
- Dean, R. B., & Richardson, H. Analysis of MMPI profiles of forty college-educated overt male homosexuals. *Journal of Consulting Psychology*, 1964, 28, 483-486.
- Ellis, H. *Studies in the psychology of sex*. New York: Random House, 1936.
- Evans, R. B. Childhood parental relationships of homosexual men. *Journal of Consulting and Clinical Psychology*, 1969, 33, 129-135.
- Freedman, M. *Homosexuality and psychological functioning*. Belmont, Calif.: Brooks/Cole, 1971.
- Freud, S. *Group psychology and the analysis of the ego*. (J. Strachey, Ed. and trans.) London: Hogarth Press, 1959. (Originally published, 1922.)
- Gagnon, J. H., & Simon, W. *Sexual conduct*. Chicago: Aldine, 1973.
- Gochros, H. L., & Gochros, J. S. *The sexually oppressed*. New York: Associated Press, 1977.
- Hooker, E. An empirical study of some relationships between sexual patterns and gender identity in male homosexuals. In J. Money (Ed.), *Sex research: New developments, 1965*. New York: Holt, Rinehart & Winston, 1965.
- Hooker, E. Parental relations and male homosexuality in patient and nonpatient populations. *Journal of Consulting and Clinical Psychology*, 1969, 33, 140-142.
- Krafft-Ebing, R. von. *Psychopathia sexualis*. (H. E. Wedeck, Trans.) New York: Putnam, 1965. (Originally published, 1887.)
- Kinsey, A., et al. *Sexual behavior in the human male*. Philadelphia: Saunders, 1948.
- Kinsey, A., et al. *Sexual behavior in the human female*. Philadelphia: Saunders, 1953.
- Manosevitz, M. Education and MMPI M-F scores in homosexual and heterosexual males. *Journal of Consulting and Clinical Psychology*, 1971, 36, 395-399.

- Masters, W. H., & Johnson, V. E. *Homosexuality in perspective*. Boston: Little, Brown, 1979.
- McConaghy, N. Penile volume changes to moving pictures of male and female nudes in heterosexual and homosexual males. *Behavior Research and Therapy*, 1967, 5, 43-48.
- McCord, W., McCord, J., & Thurber, E. Some effects of parental absence on male children. *Journal of Abnormal and Social Psychology*, 1962, 64, 361-369.
- Money, J., & Tucker, P. *Sexual signatures*. Boston: Little, Brown, 1975.
- Panton, J. H. A new MMPI scale for the identification of homosexuality. *Journal of Clinical Psychology*, 1960, 16, 17-20.
- Singer, M. I. Comparison of indicators of homosexuality on the MMPI. *Journal of Consulting and Clinical Psychology*, 1970, 34, 15-18.
- Spence, J. T., & Helmreich, R. *Masculinity and femininity: Their psychological dimensions, correlates, and antecedents*. Austin: University of Texas Press, 1978.
- Stekel, W. *Bi-sexual love*. (J. S. Van Teslaar, Trans.) New York: Emerson Books, 1945. (Originally published, 1922).
- Storms, M. D. Sexual orientation and self-perception. In P. Pliner, K. R. Blainstein, I. M. Spigel, T. Alloway, & L. Krames (Eds.), *Advances in the study of communication and affect: Vol. 5. Perception of emotion in self and others*. New York: Plenum, 1978.
- Terman, L. M., & Miles, C. C. *Sex and personality: Studies in masculinity and femininity*. New York: McGraw-Hill, 1936.
- Thompson, N. L., Schwartz, D. M., McCandless, B. R., & Edwards, D. A. Parent-child relationships and sexual identity in male and female homosexuals and heterosexuals. *Journal of Consulting and Clinical Psychology*, 1973, 41, 120-127.
- Townes, B. D., Ferguson, M. D., & Gillam, S. Differences in psychological sex, adjustment, and familial influences among homosexual and non-homosexual populations. *Journal of Homosexuality*, 1976, 1, 261-272.
- Tripp, C. A. *Homosexual matrix*. New York: McGraw-Hill, 1975.
- Weinberg, M. S., & Williams, C. J. *Male homosexuals*. New York: Oxford University Press, 1974.

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