

Psychosocial Development of Heterosexual, Bisexual, and Homosexual Behavior

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Relationships with overt adult Kinsey Scale scores (K) indicate that early sexual experiences are most closely related to K, followed in order by gender related and familial variables. A developmental model emphasizing social learning is presented. Interviewees were 7669 American white males and females.

Elevated K (more homosexual scores) was found for females who had few girl companions at age 10 and few male companions at 16, had learned to masturbate by being masturbated by a female, had intense prepubertal sexual contact with boys or men, found thought or sight of females, but not males, arousing by age 18, had homosexual contact by age 18, higher K at 17, and higher first-year homosexual behavior frequency.

Elevated K (more homosexual scores) was found for males who reported poorer teenage relationships with their fathers, had more girl companions at age 10, fewer male companions at 10 and 16, avoided sports participation, learned of homosexuality by experience, learned to masturbate by being masturbated by a male, had intense prepubertal sexual contact with boys or men, had neither heterosexual contact nor petting to orgasm by age 18, found thought or sight of males, but not females, arousing by age 18, had homosexual contact by age 18, higher K at ages 16 and 17, and had higher first-year homosexual behavior frequency.

Behavioral bisexuals, those scoring between 2.0 and 4.0 on the K scale on the basis of overt behavior (0.7% of females, 1.2% of males), reported more arousal to heterosexual stimuli than did exclusive heterosexuals.

KEY WORDS: heterosexual; bisexual; homosexual; development; gender; learning.

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INTRODUCTION

Broadly stated, the research problem is to understand which developmental variables are associated with different outcomes of sexual development. This study was confined to variations in outcome along the heterosexual-bisexual-homosexual continuum and to psychosocial variables as precursors. Specifically, it assessed the relative impact of demographic, gender-related, familial, and early sexual-experience factors on overtly expressed adult sexual preferences along the heterosexual-homosexual continuum.

Previous studies have identified several factors associated with the development of preferences for engaging in varying types of sexual behavior. Ethnographic investigations (Ford and Beach, 1951; D.S. Marshall and Suggs, 1971) have shown a high degree of cross-cultural diversity in patterns of sexual development, a factor that must be taken into account in any attempt at a comprehensive understanding of development of sexual behavior preferences.

Several investigations (e.g., Dörner *et al.*, 1975; Kallman, 1952) have attempted to define biological determinants of human sexual behavior preferences, but the consensus of recent reviews (Acosta, 1975; Hines, 1982; Kolářský *et al.*, 1967; Meyer-Bahlburg, 1977, 1979; Money and Ehrhardt, 1972; Rooth, 1973; Smith, 1976) is that biological factors exert at most a predisposing rather than a determining influence toward development of preferences for particular types of sexual behavior. Bell *et al.* (1981a), however, question this consensus.

There is considerable evidence from both clinical populations (Abel and Blanchard, 1974; Bieber *et al.*, 1962) and nonclinical populations (Clifford, 1978; Hedblom, 1973; Hunt, 1974; Kinsey *et al.*, 1948, 1953; Lehne, 1978; Manosevitz, 1970, 1972; Masters and Johnson, 1979; Mednick, 1977; Saghir and Robins, 1973; Whitham, 1977) of a high degree of association between sexual and romantic fantasies of various types and preferences for similar types of overt behavior.

Additional evidence (Beech *et al.*, 1971; Brady and Levitt, 1965; Evans, 1968; Griffitt, 1975; Herman *et al.*, 1974a; McConaghy, 1970; McGuire *et al.*, 1965; Mosher, 1970; Rachman, 1966; Rachman and Hodgson, 1968; Thorpe *et al.*, 1964) provides support for the learning theory notion that stimuli such as masturbation fantasies or particular types of sexual behavior preceding or accompanying sexual arousal or orgasm acquire strength as erotic stimuli.

Recent clinical approaches, utilizing techniques of exposure to strong sexual stimuli such as films (Davison, 1968; Herman *et al.*, 1974b; Reisinger, 1974) or an interested and cooperative partner (Masters and Johnson, 1979), or directed masturbation (Bentler, 1968; Freeman and Meyer, 1975; Mar-

quis, 1970; W. L. Marshall, 1977, 1979), have begun to demonstrate that sexual arousal patterns are perhaps more malleable than had previously been suspected. The fact that sexual arousal patterns may be altered by such methods suggests that similar mechanisms may be operative in their initial acquisition.

Previous studies suffer from many deficiencies, however, such as the almost universal dichotomization of subjects into heterosexual and homosexual categories, which severely limits or eliminates the possibility of detecting curvilinear relationships between variables. Of the very few studies acknowledging the existence of subjects falling into the bisexual range, at least four (Dörner *et al.*, 1975; Ellis, 1962; Goode and Haber, 1977; Kenyon, 1968) provide evidence suggestive of curvilinear relationships.

Except for the recent study of Bell *et al.* (1981a,b), an element that seems to be lacking is any attempt to estimate the magnitude of the effects observed. Investigations of fantasies, in particular, universally lack even such elementary statistics as χ^2 or a correlation coefficient. Other studies report statistical significance levels but omit mention of proportion of variance accounted for.

From a developmental point of view, a serious deficiency in almost all of the studies published is the lack of any attempt to define or interpret sequences in the order of appearance of various precursors of differing outcomes of sexual development. Even when the ages of first appearance of various behaviors have been recorded, little attempt has been made to provide meaningful interpretations of the sequential order of appearance of various behaviors.

Hypotheses

Although the main emphasis of this study was on answering questions about the ways in which variables were interrelated, and describing typical developmental sequences, some formal hypotheses were stated:

1. Kinsey scale ratings based on overt sociosexual behavior would have strong positive correlations with similar ratings based on subjective arousal measures. The correlations would be stronger for males than for females.
2. Content of masturbation fantasies would have strong positive correlations with overt behavior of the same type.
3. Demographic variables would be only weakly related to Kinsey scale ratings.
4. Incidence, age at first experience, and subsequent frequency of orgasmic sociosexual experiences would be more strongly related to adult preferences for similar types of behavior than would experiences not resulting in orgasm.

5. Similarly, arousing experiences would be more strongly related to subsequent preferences than would experiences which were not arousing.

6. Incidence, age at first experience, and immediately subsequent frequencies of homosexual behavior would be better predictors of subsequent sexual preferences than would similar measures of heterosexual behavior.

7. Given equal incidence in the population, absence of the mother from the home would be as strong a predictor of subsequent sexual preference as is absence of the father from the home.

8. For both males and females, a preponderance of opposite-sex playmates at age 10 would be positively associated with preference for same-sex sexual partners in adulthood.

METHODOLOGY

The subject pool consisted of 5550 females and 5919 males. These are all the Caucasian, nondelinquent subjects from the "basic sample" and the "homosexual sample" (Gebhard and Johnson, 1979) of the Institute for Sex Research at Indiana University, the subjects of the original Kinsey interviews obtained between 1938 and 1963. Raw data on these subjects were received from the Institute for Sex Research in the form of records encoded on computer tape. The characteristics of this sample have been extensively described elsewhere (Downey, 1980; Gebhard and Johnson, 1979; Kinsey *et al.*, 1948, 1953) and will not be further elaborated upon here. A substantial minority of those subjects having predominantly homosexual preferences was obtained from sources with known bias toward homosexuality, primarily gay bars in Chicago.

Procedure

For each subject, Kinsey scale ratings based on overt sociosexual experience in adulthood were computed by separately summing frequencies of homosexual behavior and heterosexual behavior from age 18 to age at interview or to age 40, whichever occurred first. Only those years in which both total heterosexual frequency and total homosexual frequency were known were included in the summation. Total homosexual behavior was divided by the sum of heterosexual and homosexual behavior, and the result multiplied by 6 to arrive at the Kinsey scale ratings. Since heterosexual petting frequency was recorded only if it resulted in orgasm, heterosexual frequencies are slightly underestimated, resulting in an unknown, but probably small, degree of bias in the results. In other words, Kinsey scale scores are slightly higher than they would have been if heterosexual petting without orgasm had been included in the heterosexual frequencies.

A similar procedure using frequencies of behavior resulting in orgasm was used to calculate Kinsey scale scores for orgasmic sexual behavior. Kinsey scale scores for degree of arousal to heterosexual vs. homosexual stimuli were similarly computed.

Since some people may engage only in overt heterosexual behavior, while being aroused only by homosexual stimuli, or vice versa, those subjects were excluded from further study whose arousal ratings differed from their overt behavior ratings by as much as 3 points or more on the Kinsey scale. It seemed likely that developmental histories of those whose subjective preference was incongruent with their overt behavior would differ substantially from developmental histories of those who were congruent for subjective preference and overt behavior.

Also excluded were subjects who had not spent at least some of their childhood and the majority of their adulthood in the United States, pedophiles, incest participants, transvestites, transsexuals, fetishists, sadomasochists, sex offenders, zoophiliacs, and those who had ever been convicted of a crime other than a minor traffic violation. Prostitutes were not excluded, but that portion of the sexual behavior of heterosexual female prostitutes consisting of prostitution was not included in calculating their Kinsey scale ratings, since it was assumed to be economically rather than sexually motivated. Also eliminated were those who were under age 21, had not left the parental home, were still in school, and had never been employed other than as a student, since it could be argued that they had not yet reached adulthood. Obviously, results do not apply to any group excluded from study.

Statistical Analysis

Correlations were obtained among the three outcome measures. Then, on the basis of Kinsey scale scores derived from overt behavior, the subjects were divided into four groups: exclusively heterosexual, predominantly heterosexual, bisexual, and predominantly or exclusively homosexual, with intergroup divisions at scores of 0, 2, and 4 on the scale.

Cross-tabulations, correlations, and one-way analyses of variance were run between the outcome variable (group or Kinsey scale rating, as appropriate) and the demographic variables (year of birth, education, religion, degree of devoutness, rural-urban residence, childhood economic status and current economic status), separately for males and for females, in order to select variables for inclusion in later regression analyses.

Family-related variables similarly screened were family intactness, age at parental separation or death of parent, ages of parents at time of subject's birth, numbers of older and younger brothers, sisters, and siblings, total brothers, sisters, and siblings, ratio of sisters to brothers, incidence and

length of parents' remarriage, quality of parents' relationship, and quality of subject's relationship to each parent.

The gender-related variables screened were numbers of male and female companions at ages 10 and 16 and participation in organized athletics. Similar statistical procedures were run for the sex education and information variables: main source of sex education, contributions of mother, father, grade school, and high school to sex education, and age and source of learning about intercourse, pregnancy, fertilization, menstruation, venereal disease, homosexuality, homosexual prostitution, condoms, penile erection, masturbation, and observation of prepubescent and adult opposite-sex genitals.

Prepubertal sexual experience variables screened were incidence and frequency of heterosexual and homosexual experience with children and adults, techniques involved, age at first experience, age of partner, relationship to partner, and response of subject.

Postpubertal sexual experience variables examined included incidence, frequencies, and ages at first heterosexual and homosexual experience, arousal, and orgasm. Heterosexual petting and coitus were examined separately. Further descriptive qualifications of experience were also examined, such as age of partner and relationship to partner.

Only if the relationship between a particular variable and adult Kinsey scale score was significant at the 0.001 level and the relationship accounted for at least 1% of the variance in the outcome measure for either males or females was that variable included in further regression analyses. Use of one-way analysis of variance permitted evaluation of the degree of curvilinearity in the relationships between each independent variable and the outcome variable. Whenever the quadratic term was statistically significant at the 0.001 level and accounted for at least 1% of the variance in the outcome measure for either males or females, the quadratic term was included in regression.

Regression Analysis

For those variables that accounted for more than 1% of the outcome variance but were measured on a nominal level, the categories were converted to dummy-coded variables. These were entered stepwise in order of decreasing amount of variance accounted for as independent variables regressed against overt Kinsey scale scores using the REGRESSION subprogram of the SPSS computer program package. The inclusion criterion was an increment in R^2 significant at the 0.001 level. Prediction scores were calculated utilizing the resulting regression equation. These scores were entered as a single interval scale variable in the next stage of regression analysis.

In the second stage, variables that had passed the preliminary screening and were related to each other were entered into regression equations utilizing the same criterion as for dummy variable regressions.

Separate regressions were run for variables relating to demographics, family, gender, sources of learning about sexual items, first sexual experiences, prepubertal heterosexual and homosexual experiences with peers and with adults, and postpubertal heterosexual and homosexual experiences. In each case prediction scores were output. These prediction scores were entered into a final regression equation, using the same inclusion criterion as for other regressions. The regression was hierarchical, with demographics entered first, followed by gender, prepubertal and first sexual experiences, family, and postpubertal sexual experiences, in that order.

Missing Data

Many of the variables entered had missing values for some cases. Often this was because the incidence of a phenomenon under study was less than 100%. For subjects with no experience, data such as age at first experience and subsequent frequency of experience are undefined and therefore missing. In other cases, data were missing due to errors or omissions in data collection or recording.

Whenever data were missing, dummy variables were created, identifying cases with missing data. These dummy variables were correlated with the outcome variable. When the missing data were due to faulty data collection or recording, and the missing data dichotomy accounted for more than 1% of the outcome variance, the variable with missing data was excluded from further analysis. This was the case with only two variables of the hundreds examined.

Whenever a variable with missing data was included in regression analysis, the cases with missing data were plugged with the mean for the cases with known values, as recommended by Cohen and Cohen (1975). The use of the mean in this manner is in no way an estimate of what the subject's score might have been had the data not been missing. It is merely mathematically convenient, making the scores for those with missing data uncorrelated with all other variables in the equation and permitting the inclusion of variables with missing data in a correlation matrix of full rank, rather than eliminating large numbers of cases from analysis, eliminating variables for which data are undefined for some cases, or using a missing-data matrix. The resulting regression also more accurately reflects the reality of the interrelationships of variables in the sample than does any of the above-mentioned alternatives.

RESULTS

The large sample size of this study resulted in finding many relationships that were statistically significant far beyond the 0.00005 level while accounting for much less than 1% of the outcome variance. In general, such relationships were not considered meaningful and are not commented on. The term *meaningful* is used to describe relationships that accounted for at least 1% of the outcome variance among those subjects with valid values for the variable in question and that also reached statistical significance.

In general, a greater number of meaningful relationships was found for males than for females. The size of the correlations with adult sexual behavior for males was also generally larger than the size of correlations for females.

Sample Composition

Table I presents the results of deleting unqualified subjects from the sample. Since some subjects met more than one criterion for deletion, the columns sum to more subjects than were actually deleted.

The greatest numbers of deleted subjects were omitted because they had not reached adulthood or because they had no overt sociosexual behavior in adulthood. The next most common reason for deletion was lack of sufficient residence in the United States, followed by various outcomes of sexual development other than heterosexual, bisexual, or homosexual.

Table I. Cases Deleted

Reason	Number of cases	
	Female	Male
Outcome variable undefined	372	297
Under age 18 at interview	235	422
Age 18-20 and unemancipated	990	382
Nonresident of USA	195	238
Overt behavior incongruent with subjective preference	192	177
Greater arousal to nonsocial than to human stimuli	180	147
Sadomasochistic behavior	84	169
Pedophilia	1	59
Fetishism	2	21
Zoophilia	0	18
Incestuous coitus	38	50
Transvestism	2	16
Sex offense	1	2
Total deleted	2024	1776

Table II. Distribution of Overt Kinsey Scale Scores

Score	Excluding biased sources		Including biased sources	
	Female	Male	Female	Male
Number (percentage) of subjects				
.000-.004	3192 (94.1)	3300 (85.7)	3281 (93.1)	3351 (80.9)
.005-1.99	117 (3.4)	323 (8.4)	124 (3.5)	350 (8.4)
2.00-4.00	23 (0.7)	46 (1.2)	29 (0.8)	64 (1.5)
4.01-6.00	60 (1.8)	180 (4.7)	92 (2.6)	378 (9.1)
Descriptive statistics				
Mean	.128	.331	.181	.603
Standard deviation	.775	1.26	.939	1.70
Skew	6.68	3.94	5.50	2.66
Kurtosis	44.5	14.1	29.4	5.32

The resulting cleaned sample contained 3392 females and 3849 males obtained from sources without known sexual bias, such as schools, churches, and other groups organized for purposes unrelated to sexuality, plus 134 females and 294 males obtained from sources with known homosexual bias. Such sources included gay bars and homophile organizations in Chicago and other large cities. Gebhard and Johnson (1979, Chapter 3) provide a fuller description of sample recruitment sources.

Table II defines the shape of the outcome variable both in a sample collected from sources without known homosexual bias and in the slightly larger sample used in this study. The distribution in each case is J-shaped, with the vast majority of individuals scoring at the exclusively heterosexual end of the distribution, fewer individuals scoring above 0.0 but less than 2.0, fewer still scoring above 4.0, and less than 1% of females and less than 1.5% of males scoring in the bisexual range between 2.0 and 4.0 on the 6-point scale.

Correlations among Outcome Variables

Table III presents correlations among three outcome measures. In computing these coefficients, subjects whose overt behavior conflicted with their subjective preference were included in the sample, so as not to artificially inflate correlations between measures of overt behavior and of subjective arousal. The correlations between sexual preference as measured by degree of sexual arousal to same-sex and opposite-sex stimuli and the two overt be-

Table III. Pearson Correlations (r) among Outcome Measures (N in Parentheses)^a

Variable	Female		Male	
	Orgasmic behavior	Subjective arousal	Orgasmic behavior	Subjective arousal
Overt behavior	.948 (2711)	.538 (3077)	.993 (3794)	.829 (4160)
Orgasmic behavior		.547 (2372)		.835 (3725)

^a $p < 0.00005$ in all cases.

havioral measures were considerably smaller than that between the two overt measures, particularly for females.

Demographic Variables

The only demographic variables to pass preliminary screening for inclusion in the regression analysis were years of education and religion, for males but not for females. The r for education was -0.182 , indicating that more heterosexual males in the sample had more education than did more homosexual males. The multiple R for religion dummy variables for males was 0.107 . However, religion made no significant additional contribution and thus was dropped from regression. Males in the sample averaged about one more year of formal education than did the females ($r = 0.189$, $p < 0.0005$). The means for females and for males were, respectively, 14.9 and 16.0 years.

Family Variables

None of the family-related variables accounted for as much as 1% of the variance in outcome for females. For males, those who related better to their fathers during high school years had lower Kinsey scale scores as adults ($r = -0.198$, $p < 0.00005$), accounting for 3.9% of the variance. Those who related better to their mothers than to their fathers during high school (provided there was a difference) had higher Kinsey scale scores ($r = 0.136$, $p < 0.00005$), accounting for 1.8% of the variance. Those males whose parents related better to each other (by subject report) during the same time period tended to have less homosexual experience as adults ($r = -0.105$, $p < 0.00005$), accounting for 1.1% of the variance.

When the three family variables which had passed the screening were entered into regression, neither quality of relationship with mother nor in-

terparental relationship accounted for a significant increase in Kinsey scale variance. Therefore, quality of relationship with father for males was the only surviving family variable.

Gender Variables

For females, the only gender-related variable accounting for as much as 1% of the outcome variance was the number of female companions at age 10. It accounted for 1.06% of the variance, with an r of -0.103 ($p < 0.00005$). For males, several gender-related variables passed preliminary screening: number of male companions at ages 10 and 16, number of female companions at age 10, and participation in organized athletics. Values of r are given in Table IV.

Regression

When Kinsey scale scores were regressed on the sports participation variables, nonparticipation in organized athletics entered first, followed by participation in independent sports (such as swimming or track), which raised the R to 0.217. Participation in independent sports did not account for a significant amount of variance by itself, but once sports nonparticipation was entered, it provided a larger increment in R^2 than did participation in body contact sports.

In the second-stage regression for females, the number of female companions at age 10 entered first, followed by the number of male companions at age 16. No other gender-related variable provided a significant increment in variance accounted for. The multiple R was equal to 0.114; $\beta = -0.0964$ and -0.0594 , indicating that those who had more female companions at age 10 but more male companions at age 16 were likely to have a greater proportion of heterosexual behavior in adulthood.

Table IV. Correlations between Gender-Related Variables and Kinsey Scale Scores among Males^a

Variable	r	n
Male companions, age 10	-.287	4110
Female companions, age 10	.240	4103
Male companions, age 16	-.168	4111
No sports participation	.211	3719
Body-contact sports participation	-.133	3719

^aIn each case, $p < 0.00005$.

For males, the variables that entered the equation were male companions and total companions at age 10, sports participation, and male companions at age 16, in that order, resulting in a multiple R of 0.407; $\beta = -0.322, 0.205, 0.168,$ and $-0.0682,$ respectively, indicating that males who had more male but fewer female companions at age 10, participated in sports other than independent sports, and had more male companions at age 16 were more likely to have predominantly heterosexual behavior as adults. The importance of the last factor, as indicated by the size of β , is considerably less than that of the others.

Females differed from males in reporting more opposite-sex ($r = 0.282, p < 0.0005$) but fewer same-sex ($r = 0.155, p < 0.0005$) companions at age 10. Accordingly, females reported at age 10 a significantly higher proportion of opposite-sex companions than did males ($r = 0.283, p < 0.0005$).

Sources of Learning about Sex-Related Items

Homosexuality and masturbation were the only items of information for which differences in ages or sources of learning showed meaningful differences in outcome.

Homosexuality

Females who learned about homosexuality at later ages were more likely to engage in predominantly heterosexual behavior as adults ($r = 0.208, p = 0.0008$). The mean age of learning about homosexuality for those females who were predominantly homosexual as adults was 13.9 years, while that for those who were exclusively heterosexual as adults was 19.4 years, a difference significant at the 0.05 level by the modified LSD procedure of the SPSS computer program package (Kim and Kohut, 1970, pp. 427-428). This test is more conservative than Tukey's but less so than Scheffe's.

For males, differences in sources of learning about homosexuality accounted for 34% of the outcome variance among those with valid data ($\eta = 0.583, F(7, 203) = 14.91, p < 0.00005$). Those who learned about homosexuality through experience differed from those who learned about homosexuality by other means at the 0.001 level by Scheffe's test. As with females, those who learned about homosexuality at later ages were more likely to engage in predominantly heterosexual behavior as adults ($r = 0.361, p < 0.00005$). Those who as adults were exclusively heterosexual learned of homosexuality at a mean age of 16.4 years, while those who were predominantly homosexual learned at a mean age of 12.0 years. The difference was significant at the 0.001 level by Scheffe's test.

When age and source of learning about homosexuality were jointly entered into regression, for males $R = 0.247$, while $\beta = 0.174$ and -0.144 for source and age, respectively. For females, although for those cases with known ages the relationship was significant, so many data were missing that when regression was performed on the total sample, including (mean-plugged) cases with data missing, the results were not statistically significant.

Males learned about homosexuality at a mean age of 15.3 years, compared to 18.9 years for females. Thus, sex accounted for 8.2% of the variance in age of learning about homosexuality ($r = 0.288, p < 0.0005$) among those cases with valid data.

Masturbation

For both males and females, those who learned about masturbation by being masturbated by a person of the same sex had a higher proportion of homosexual behavior as adults than did others, as shown in Table V. This difference accounted for 3% of the outcome variance for females and 7.2% for males. For males, those who learned about masturbation through observation of others also showed slightly higher proportions of homosexual behavior as adults, accounting for 1.3% of the outcome variance.

Prepubertal Heterosexual Play

For males, no variable associated with prepubertal sex play with girls passed the preliminary screening. For females, however, the number of years before puberty during which the most intense types of heterosexual activity (oral, anal, or coital) occurred was related to adult sexual preference. The linear component ($r = 0.10, p = 0.0005$) indicated that those girls who had more years of intense sexual activity with boys before puberty were likely to engage in more sexual activity with females as adults. The relationship was curvilinear, however, ($\eta = 0.152, p = 0.0009$). Those girls with either no in-

Table V. Correlations between Sources of Learning about Masturbation and Overt Kinsey Scale Scores^a

Source	<i>r</i>	
	Female	Male
Being masturbated by same sex	.174	.268
Observing masturbation	N.S.	.116

^aIn each case, $p < 0.00005$. For females, $n = 1831$. For males, $n = 3916$.

tense prepubertal heterosexual activity or 8 or more years of such activity had the lowest adult Kinsey scale scores, while those with 1 to 7 years of such activity had higher scores. Total number of years of prepubertal sexual activity (including showing and genital touching as well as the more intense types of activity) showed a similar, but less intense, pattern ($r = 0.066$, $p = 0.0001$; $\eta = 0.086$, $p = 0.002$).

When types of heterosexual activity during each year were examined, activities at ages 7 through 10 passed the screening criteria; η s ranged from 0.10 to 0.126, with significance levels from 0.007 to 0.0003. At each age, those females who engaged in heterosexual play limited to showing had the lowest adult Kinsey scale scores, those who engaged in the most intense types of activities had the highest, while those with either no heterosexual play or genital touching had intermediate scores.

In regression, the linear and quadratic terms for total number of years of activity entered first, followed by the linear term for number of years of more than touching; $R = 0.113$, $\beta = 0.200$, -0.187 , and 0.084 , respectively.

Prepubertal Sexual Activity with Adults

Incidences and frequencies of sexual contact between postpubertal males and prepubertal subjects were not high. However, such contact did account for meaningful outcome variance among both male and female subjects. Sexual contact between adult females and prepubertal subjects was rare, and did not account for meaningful outcome variance.

Females

Table VI presents the results of regressing Kinsey scale scores on variables related to sexual contact of prepubertal females with postpubertal males. Frequency of such occurrences accounted for less than 1% of the outcome variance, but it was necessary in defining the population to which further definition of the type of experience applies and so is included in the table and in subsequent regressions. Those females who had more prepubertal experiences with adult males had higher adult Kinsey scale scores than did others.

First sight of adult male genitals occurred for most females after puberty. However, in screening this variable for inclusion in regression analysis, it was noted that the only group of females whose Kinsey scale scores differed significantly from those of the others were those whose first sight of adult male genitals occurred during physical sexual contact with a postpubertal male while the subject was preadolescent. Therefore, this variable

Table VI. Relationship of Kinsey Scale Scores to Sexual Experiences of Prepubertal Females with Adult Males

Variable	η	<i>N</i>
Number of experiences	.073 ^c	2650
First sight of adult male genitals	.116 ^c	3096
With first adult male		
Techniques involved	.183 ^d	693
Response of subject	.182 ^d	517
With second adult male		
Technique involved	.323 ^a	121
Response of subject	.372 ^b	69
Relationship to partner	.631 ^e	82
Age of partner	.349 ^a	37

^a $p < 0.05$.^b $p < 0.02$.^c $p < 0.005$.^d $p < 0.001$.^e $p < 0.00005$.

was included here rather than with postpubertal experience variables. Kinsey scale scores of those females whose first observation of adult male genitals was merely seeing an exhibitionist (who did not proceed to have physical contact with the subject) were not significantly higher than those of other subjects.

About 26% of sample females had had at least one experience with an adult male before reaching puberty. However, for 68% of those with experience, nothing more was involved than approach, exhibitionism, or non-genital touching, none of which was related to adult sexual preference. For 8.4% of the sample, genital touching, oral-genital contact, or coitus with a postpubertal male occurred. For 0.60% of the females, assault was involved.

When Kinsey scale scores were regressed on techniques of contact, the multiple R was 0.082, $\beta = 0.060$ and 0.056, for genital touch, and for more touch (oral, coitus, and assault combined), respectively, indicating that those females who experienced genital touching or more intense contact had higher Kinsey scale scores. Other techniques did not significantly increase R .

The response of the subject was related to adult sexual preference. Negative, neutral, or positive responses without sexual arousal of the subject were unrelated to sexual preference, but if sexual arousal was experienced, higher Kinsey scale scores were obtained ($R = 0.104$, $p < 0.00005$).

Those subjects who had contact with a friend, rather than a stranger, acquaintance or relative had a higher proportion of adult sexual contact with other females ($R = 0.060$, $p < 0.001$). The older was the adult partner, the higher was the subject's Kinsey scale score; ages of so few adult partners were known,

Table VII. Relationship of Kinsey Scale Scores to Sexual Experiences of Prepubertal Males with Adult Males

Variable	<i>r</i>	<i>N</i>
Number of experiences	.166 ^d	643
Techniques involved	.211 ^c	224
Response of subject	.393 ^c	103
Relationship to partner	.193 ^b	238
Age at first experience	.181 ^a	231

^a*p* < 0.01.

^b*p* < 0.005.

^c*p* < 0.0005.

^d*p* < 0.00005.

however, that this variable did not enter subsequent regression equations. The mean age of adult male heterosexual partners of preadolescent females was 33.4 years, while the mean age of adult female heterosexual partners of prepubertal males was 20.3 years ($r = 0.335$, $p < 0.0005$, $n = 310$).

When the outcome variable was regressed on those variables that had passed the preliminary screening, number of experiences was entered first, since it defined the existence or nonexistence of further data. Subject's reaction (sexual arousal) entered next, followed by technique of contact (genital touching or more intense contact). Other variables did not significantly increase *R*. *R* was 0.119, $\beta = 0.085$, 0.047, and 0.027, respectively, for reaction of subject, technique of contact, and number of contacts.

Males

As shown in Table VII, higher frequencies of sexual experiences with adult males, positive, arousing, or orgasmic response to such experiences, masturbation, oral, or anal techniques (as opposed to approach, exhibition, nongenital touching, or assault), closer relationship (friend or relative vs. stranger or acquaintance) to the adult partner, and younger age at first experience were associated with higher adult Kinsey scale scores for prepubertal male subjects. When Kinsey scale scores were regressed on the above variables, frequency of experience was entered first, since it defined the existence or nonexistence of subsequent data. Response of subject, age of subject at first experience, and relationship to partner followed, in that order. *R* was 0.123, $\beta = 0.059$, 0.068, 0.051, and 0.040, respectively. Technique of contact shared considerable variance with response of subject, so it did not enter the regression equation, although it had a relatively large simple *r* with Kinsey scale scores.

Table VIII. Relationship of Kinsey Scale Scores to Homosexual Experiences of Prepubertal Males^a

Variable	<i>r</i>	<i>N</i>
Total number of years involved	.197	4140
Years of show only	-.087	2241
Years including genital touch	.145	2241
Years of more than genital touch	.146	2241
Years of more than show	.233	2241
Prepubertal homosexual orgasm	.122	1860

^aIn each case. $p < 0.00005$.

Homosexual Prepubertal Play

For females, no aspect of prepubertal sex play with other girls accounted for as much as 1% of the outcome variance. As illustrated in Table VIII, the situation for males was quite different, however. The strongest relationship is with number of years of more than mere showing of genitals, that is, number of years including masturbation, oral, or anal contact, followed by total number of years involved. The n for total years includes all but three subjects. The n s for years of particular types of activity exclude those who had no prepubertal homosexual activity at all. The n for prepubertal homosexual orgasm is lower, due to missing data.

When Kinsey scale scores were regressed on prepubertal homosexual experience variables, total number of years was entered first, after which number of years of only showing accounted for the greatest increment in R^2 . No further variables added significant increments. R was equal to 0.220, $\beta = 0.210$ and -0.099 for total years and years of show only, respectively. This is equivalent to entering years of more than show, followed by years of show only, since years of show plus years of more equals total years.

Females differed from males by being involved in prepubertal homosexual activities for fewer years ($r = -0.219$, $p < 0.0005$), having fewer years of more than show ($r = -0.155$, $p < 0.0005$), fewer years of more than touch ($r = -0.128$, $p < 0.0005$), and beginning prepubertal homosexual activities earlier, for those females who participated at all ($r = -0.140$, $p < 0.0005$).

Data on sources of prepubertal orgasm were not available for females. When sources of prepubertal orgasm for males (never, masturbation, heterosexual, homosexual, and other) were regressed, only homosexual orgasm entered the equation, $R = 0.106$ ($p < 0.00005$).

A summary regression was done for prepubertal sexual behavior, using as independent variables the prediction scores from regression of

Table IX. Regression of Adult Kinsey Scale Scores on Prepubertal Sexual Activity with Males^a

Source	<i>R</i>		β	
	Female	Male	Female	Male
Overall regression	.153	.243		
With prepubertal males			.097	.211
With adult males			.104	.105

^aIn each case, $p < 0.00005$. For females, $N = 3526$; for males, $N = 4143$.

prepubertal sexual activity with adult males, male children, and, for male subjects, prepubertal orgasm in homosexual contact. Results are presented in Table IX. For males, activity with other children appeared to play a larger role than did activity with adults, while for females the two factors were about equal in importance.

Postpubertal Heterosexual Activity

For females there were some substantial relationships between adult sexual preference and postpubertal heterosexual activities, as shown in Table X. Some females avoided heterosexual contact altogether. Lack of arousal in heterosexual contact showed a stronger relationship than did lack of contact. Participation in coitus without orgasmic response was also related. Since each of these variables included behavior (or lack of behavior) after the age of 18, none were entered into regression.

Degree of participation in postpubertal heterosexual activities was more strongly related to sexual preference for males than for females, as shown in Table XI. Degree of involvement in or avoidance of all heterosexual activity, petting, petting to orgasm, coitus, and various petting techniques were all related to adult sexual preference. Since the data on amounts of participation in petting techniques included some experience after age 18, they were

Table X. Relationship of Kinsey Scale Scores to Heterosexual Experiences of Postpubertal Females^a

Variable	<i>r</i>	<i>N</i>
Never aroused in heterosexual contact	.410	2957
Aroused in heterosexual contact by age 21	-.123	2957
Never aroused thinking of or seeing males	.111	3514
Aroused thinking of or seeing males by age 21	-.104	2913
Never postpubertal heterosexual contact	.209	2957
Had coitus but never orgasmic	.162	2562

^aIn each case, $p < 0.00005$.

Table XI. Relationship of Kinsey Scale Scores to Heterosexual Experiences of Postpubertal Males^a

Variable	<i>r</i>	<i>N</i>
Never postpubertal heterosexual contact	.348	4143
Heterosexual contact by age 21	-.206	4143
Heterosexual contact by age 18	-.120	4143
Ever arousal thinking of or seeing females	-.382	4128
Arousal thinking of or seeing females by age 21	-.463	2777
Arousal thinking of or seeing females by age 18	-.452	2777
Age first arousal thinking of or seeing females	.208	2442
Never postpubertal petting	.340	4143
Petting by age 21	-.205	4143
Petting by age 18	-.118	4143
Never postpubertal petting to orgasm	.264	4143
Petting to orgasm by age 21	-.224	3857
Petting to orgasm by age 18	-.148	3857
Never postpubertal coitus	.244	4143
Coitus by age 21	-.143	4143
Frequency of orgasm in petting	-.242	4143
Amount of postpubertal hugging	-.120	4040
Amount of nude female breast touching	-.179	4078
Amount of oral-breast contact	-.114	4077
Amount of touching of nude female genitals	-.166	4076
Amount of apposition of nude genitals	-.137	3814

^aIn each case, $p < 0.00005$.

excluded from regression analysis. Data on degree of arousal in heterosexual contact were unretrievable for males. In regression, petting to orgasm by age 18 entered first, followed by heterosexual contact by age 18, $\beta = -0.133$ and -0.082 , respectively, $R = 0.175$.

Postpubertal Homosexual Experience

For both females and males, postpubertal homosexual experiences were more strongly related to adult sexual preference than were heterosexual experiences, as shown in Tables XII and XIII, respectively. In each case, arousal to homosexual stimuli was at least as important as extent of overt experience.

Some relationships between age variables and Kinsey scale scores showed substantial curvature. The mean adult Kinsey scale scores for females who had their first postpubertal homosexual experience before age 15, between 15 and 24, between 25 and 34, and at age 35 or above, were 0.65, 2.01, 1.96, and 0.82, respectively. Patterns for first orgasmic experience among males and for age of first partner among females were similar.

When the linear and quadratic aspects of the above variables were entered into regression, $R = 0.250$, 0.104, and 0.255, respectively, for age at first experience, age at first orgasmic experience, and age of first partner.

Table XII. Relationship of Kinsey Scale Scores to Homosexual Experiences of Postpubertal Females

Variable	η	r	N
Ever homosexual contact		.462 ^c	3526
Homosexual contact by age 21		.337 ^a	3523
Homosexual contact by age 18		.264 ^a	3523
Ever aroused thinking of or seeing females		.429 ^a	3503
Aroused thinking of or seeing females by age 21		.378 ^a	3375
Aroused thinking of or seeing females by age 18		.382 ^a	3375
Age learned about homosexuality		-.200 ^b	259
Age first homosexual contact	.275 ^c	.136 ^b	412
First year frequency		.257 ^b	347
Age, first partner	.263 ^a	N.S.	164
Age, first orgasm	.256 ^b	.146 ^a	226
First orgasmic year frequency	.307 ^b	.216 ^b	226

^a $p < 0.025$.^b $p < 0.005$.^c $p < 0.00005$.

The variable frequency of orgasm in first year of orgasmic experience also showed significant, but less marked, curvature among females. For the linear and quadratic components, $\beta = 0.645$ and -0.486 , $R = 0.314$.

Sociosexual Experience Summaries

Preadult Kinsey Scale Scores

The results of correlating Kinsey scale scores for ages 10 through 17 with adult Kinsey scale scores are presented in Table XIV. Scores for both

Table XIII. Relationship of Kinsey Scale Scores to Homosexual Experiences of Postpubertal Males

Variable	η	r	N
Ever homosexual contact		.471 ^b	4143
Homosexual contact by age 21		.447 ^b	4138
Homosexual contact by age 18		.410 ^b	4138
Ever aroused thinking of or seeing males		.601 ^b	3625
Arousal thinking of or seeing males by age 21		.614 ^b	3625
Arousal thinking of or seeing males by age 18		.597 ^b	3625
Technique, first experience	.222 ^a		494
Relationship to first partner	.278 ^a		266
First year frequency		.280 ^b	1389
Age, first partner	.221 ^a		613
Source of first ejaculation	.285 ^b		4007
First orgasmic year frequency		.264 ^b	1251

^a $p < 0.0001$.^b $p < 0.00005$.

Table XIV. Correlations of Adult Kinsey Scale Scores with Preadult Kinsey Scale Scores

Age	Female		Male	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
11			.231 ^b	95
12	-.324 ^a	39	.253 ^c	314
13			.335 ^c	575
14	.208 ^a	95	.403 ^c	866
15	.415 ^c	149	.529 ^c	1067
16	.493 ^c	289	.684 ^c	1373
17	.607 ^c	464	.782 ^c	1718

^a*p* < 0.05.^b*p* < 0.025.^c*p* < 0.00005.

males and females at age 10, and for females at ages 11 and 13, were not significantly related to adult scores. For both males and females, scores at later ages were more closely related to adult scores than were scores at younger ages. For females, adolescent scores could account for 4-36% of the variance of adult scores among the active group, while for males, the corresponding figures were 5-61%.

When only the first year of experience for each subject before age 18, independent of the exact age at which the experience occurred, was correlated with adult Kinsey scale scores, the *rs* were 0.294 (*p* < 0.00005, *n* = 589) for females and 0.428 (*p* < 0.00005, *n* = 2215) for males, accounting for 9% and 18%, respectively, of the variance in adult scores among those who began activity before age 18.

The summary correlations for females (including experiences from ages 10 through 17) are reduced due to the fact that the signs of the *rs* at ages 10 through 12 are negative, that is, opposite to the signs for experience at ages 14 through 17. In this respect, experiences for postpubertal females below age 13 are similar to those of prepubertal females at the same ages but dissimilar to those of older postpubertal females.

Early Sexual Experiences

Since it had been hypothesized that early sexual experiences might be particularly influential in sexual development, a summary regression was run, combining such variables. Results are presented in Table XV. For females, learning about homosexuality through experience was not significantly related to adult sexual preference (probably due to the fact that data were not collected on all subjects with experience), and data on source of first postpubertal

Table XV. Regression of Adult Kinsey Scale Scores on Initial Sexual Experience Variables^a

Source	β	
	Female	Male
Learned of homosexuality through experience		.212
First ejaculation in homosexual contact		.196
Intense prepubertal sexual contact with males	.146	.143
Learned masturbation by being masturbated by person of same sex	.143	.132

^a $R = 0.208$ for females and 0.421 for males. $N = 3526$ for females and 4143 for males. $p < 0.00005$ in each case.

orgasm were not retrievable. Otherwise, the patterns for males were similar to those for females, but more pronounced.

Sociosexual Arousal

A similar summary, combining data on sexual arousal while thinking about or seeing either males or females, and the ages at which this occurred, is presented in Table XVI. Once again, males showed a pattern similar to females but more intense. The specific age at which arousal occurred was significant for females, but not for males. Postpubertal sociosexual arousal

Table XVI. Regression of Adult Kinsey Scale Scores on Sociosexual Arousal Variables^a

Source	β	
	Female	Male
Aroused thinking or or seeing same sex by age 18	.409	.388
Age first arousal thinking of or seeing females	.146	
Aroused thinking of or seeing opposite sex by age 18	-.119	-.356

^a $R = 0.373$ for females and 0.553 for males. $N = 3526$ for females and 4143 for males. $p < 0.00005$ in each case.

Table XVII. Regression of Adult Kinsey Scale Scores on Sociosexual Behavior Variables^a

Source	β	
	Female	Male
Homosexual experience by age 18	.299	.253
Kinsey scale score, age 17	.215	.409
Kinsey scale score, age 16		.144
Age first postpubertal homosexual experience	.285	
First year frequency, homosexual experience	.126	.133
Age first orgasmic postpubertal homosexual experience		.129
First year frequency, orgasmic homosexual experience	.134	
Age first postpubertal homosexual partner	.132	

^a $R = 0.537$ for females and 0.697 for males. $N = 3526$ for females and 4143 for males. $p < 0.00005$ in each case.

could account for 17% of the female, and 31% of the male, outcome variance.

Postpubertal Sociosexual Behavior

Table XVII summarizes the regression of adult Kinsey scale scores on adolescent overt sexual behaviors. Patterns for males are fairly similar to those for females, with incidence of adolescent homosexual behavior, adolescent Kinsey scale scores, ages at first experience, and frequency of homosexual experience in the first active year being important to both. However, ages at first experience seem to be more important for females than males. This is probably a statistical artifact due to the fact that most males in this sample had become sexually active before age 18, while most females had not. Postpubertal sociosexual behavior accounted for 29% of the female, and 49% of the male, outcome variance.

Adult Arousal and Masturbation Fantasy

The only data available on early arousal or fantasy were for incidence and age at first experience of arousal by thinking of or seeing males or females. Results for these variables have already been described.

However, data on arousal at time of interview in a wide variety of situations were available. Specifically, use of both heterosexual and homosexu-

al masturbation fantasy in adulthood was found to be related to adult overt Kinsey scale scores, for both males and females, but in a somewhat unexpected way. For homosexual masturbation fantasy, results were as expected: $\eta = 0.398$ and 0.659 for females and males, respectively ($p < 0.00005$ in each case). The relationships were linear, with those having high Kinsey scale scores employing more homosexual fantasy than those with low Kinsey scores.

For heterosexual masturbation fantasy at time of interview, however, the situation was rather different. For females, the linear component of the relationship with overt behavior was tiny and not statistically significant. When the quadratic component was included, however, $R = 0.110$ ($p < 0.00005$). Those in Group 1 (mostly heterosexual) used significantly more heterosexual masturbation fantasy than did those in either Group 0 (exclusively heterosexual) or Group 5 (predominantly or exclusively homosexual) by the modified LSD procedure ($p < 0.05$). For males, the results followed a similar pattern. The linear component was small, but significant, and in the expected direction; $R = 0.302$, and the predominantly or exclusively homosexual group used significantly less heterosexual masturbation fantasy than did any of the other groups ($p < 0.001$, modified LSD procedure).

The results with respect to masturbation fantasy were just one part of a larger pattern. Summary variables were constructed for adult heterosexual and homosexual arousal by combining information on thinking of, seeing, seeing pictures of, dancing with, having masturbation fantasies of, and erotic dreaming of same-sex or opposite-sex persons. Regarding homosexual arousal, the relationships of these summary variables with Kinsey scale scores for both males and females were linear and in the expected direction; $\eta = 0.639$ and 0.856 for females and males, respectively, and all groups differed from each other at the 0.001 level by the modified LSD procedure.

For heterosexual arousal, the relationships were curvilinear, with bisexual and predominantly heterosexual males and females showing more heterosexual arousal than either exclusively heterosexual or predominantly or exclusively homosexual subjects ($p < 0.001$). For males, but not for females, the exclusively or predominantly homosexual subjects had lower heterosexual arousal scores than did the exclusively heterosexual subjects, and the linear component of the relationship was significant ($p < 0.001$); $\eta = 0.174$ and 0.274 for females and males, respectively.

Final Summary Regression

Results of the final summary regression are shown in Table XVIII. Overt sexual experience after puberty is the strongest factor, followed by subjective postpubertal arousal for both males and females. Early sexual experiences

Table XVIII. Regression of Adult Kinsey Scale Scores on All Eligible Summary Variables^a

Source	β	
	Female	Male
Demographics	.00	.074 ^b
Postpubertal sociosexual behavior	.468 ^b	.514 ^b
Sociosexual arousal	.219 ^b	.252 ^b
Early sexual experience	.121 ^b	.130 ^b
Gender	.061 ^b	.170 ^b

^a $R = 0.601$ for females and 0.783 for males. $N = 3526$ for females and 4143 for males.

^b $p < 0.00005$.

are important, but less so, for both male and female. Gender variables seem to be a more powerful influence for males than for females. Demographics were forced into the regression, but the β for females essentially vanished, while that for males was rather small. Family variables did not enter the regression, since they did not account for significant increases in variance explained. The final regression accounted for 36% of the variance for females and 78% for males.

Developmental Sequence

Table XIX gives, in rough chronological order, the developmental sequence of sexual experiences and compares males with females. The sequences for the two sexes were generally similar, with males generally preceding females in postpubertal experiences. Prepubertally, females were less likely to be involved at all, but if involved they tended to start at slightly younger ages. Age differences after puberty were often substantial, but there was so much variation within each sex that even the maximum difference of 5.5 years in age at first homosexual orgasm accounts for less than 20% of the age difference on the basis of sex of subject. Sex accounted for only about 1.5% of the variance in age at first homosexual experience, although the mean difference in age between males and females was 4.3 years.

Similarly, although males, on the average, had more than twice as many orgasms in homosexual contact during the first year of orgasmic homosexual experience, sex of subject accounted for only 2.4% of the variation in frequency. Although at age 17 males on the average had 2.5 times as much of their sexual experience with other males as females did with other females, sex of subject accounted for only 2.1% of the variation in Kinsey scale scores at age 17.

Table XIX. Incidence of Sexual Activities and Correlations between Sex of Subject and Age at First Experience^a

Experience	Age (years)		Incidence (%)		<i>r</i>	<i>n</i>
	Female	Male	Female	Male		
	23.1	19.6	66	71		
21.9	19.6	73	71	.441	1467	
20.5	15.0	11	32	.125	1830	
19.2	14.9	15	36			
19.8	18.3	41	63			
18.9	15.3	100	100	.288	458	
18.1		99			2933	
16.6	15.8	99	99	.126	7555	
16.6	15.8	99+	99	.133	7598	
18.3	13.7	52	95	.432	5558	
20	13.1		99+			
16.9	13.2	12	24	.297	780	
16.7	12.8	80	92	.395	4650	
12.1	10.3	100	100	.272	7343	
Prepubertal experience						
Heterosexual orgasm	9.5	9.3	4	2		
Homosexual orgasm	9.2	9.3	.7	4		
Masturbatory orgasm	8.4	9.8	10	27		
Masturbation	8.1	9.5	18	33		
Homosexual experience	7.8	8.4	35	54	-.140	3452
Heterosexual experience	6.8	7.7	35	52	-.182	3341

^a*p* < 0.00005 in each case where *r* is given.

DISCUSSION

The shape of the outcome variable distribution was surprising. More bisexual than predominantly or exclusively homosexual individuals had been expected. But, whether measured for the entire span between age 18 and age 40, or measured for any single year between age 11 and age 18, the distribution was extremely bipolar, with very few individuals scoring between 2 and 4. It appears that the popular conception of heterosexuality and homosexuality as polar extremes is quite accurate.

The hypothesis of strong positive correlation between overt behavior and subjective arousal, with the correlation being higher for males than for females, was supported. It appears that considerable numbers of young adult females engage predominantly or exclusively in heterosexual behavior while experiencing more subjective arousal to homosexual stimuli than is expressed in their overt behavior.

The hypothesis of strong positive correlation between overt behavior and content of masturbation fantasies was only partially supported. Homosexual masturbation fantasies were strongly positively correlated with homosexual overt behavior, but the relationship between heterosexual fantasies and proportion of adult heterosexual behavior was curvilinear, with predominantly (but not exclusively) heterosexual subjects reporting more heterosexual masturbation fantasy than either exclusively heterosexual or predominantly or exclusively homosexual subjects. It appears that much homosexual behavior on the part of predominantly heterosexual or bisexual individuals may be exploratory, adventurous, or incidental experience by those who may have a basically heterosexual preference but who are more aware of higher levels of erotic interest and arousal than are those who are behaviorally exclusive in their heterosexuality. This finding agrees with the data and interpretation of Goode and Haber (1977) and is consistent with the luteinizing hormone data of Dörner *et al.* (1975), which showed a "hyper-masculine" hormonal response of bisexual males to estrogen injection. The interpretation of Dörner *et al.* is inconsistent both with their own data and with that presented here (Van Wyk, 1984).

The hypothesis that overt behavior resulting in orgasm would be more strongly related to adult sexual preference than would behavior not resulting in orgasm was only weakly supported. The correlations of orgasmic incidences, ages at first experience, and first year frequencies with adult Kinsey scale scores were of about the same magnitude as were correlations for behavior with or without orgasm. However, age at first orgasmic homosexual experience for males and first year frequency of orgasmic homosexual behavior for females did explain significant increments in adult Kinsey scale variance, over and above the effects of experience with or without orgasm.

The hypothesis that arousing experiences would be more strongly related to subsequent preferences than would experiences which are not arousing was supported. For males and for postpubertal females, the hypothesis was supported in the expected way, but for prepubertal females interacting with postpubertal males, it was supported in an interesting and counterintuitive way. Those prepubertal females who were sexually aroused in sexual experiences with postpubertal males were likely to have more adult sexual experiences with other females than were those who either had no prepubertal experience with adult males or who had such experience but were not aroused. This was true whether the girl's overall reaction to the experience was negative, neutral, or positive.

The hypothesis that early homosexual experience would be more strongly related to adult sexual preference than would early heterosexual experience was supported. However, for females, the r of 0.41 between adult sexual preference and never being aroused in heterosexual contact was one of the more substantial relationships found. Similarly, for males, the r of -0.46 for being aroused by thinking of or seeing females by age 21 was quite substantial.

The hypothesis that demographic variables would be only weakly related to adult sexual preference was supported. For females, no demographic variable accounted for as much as 1% of the outcome variance. For males, it is virtually certain that the relationships of education and religion to adult sexual preference are artifacts due to the fact that most of the male subjects obtained from sources with homosexual bias were recruited through gay bars in Chicago rather than from the academically related sources from which the majority of subjects obtained through sources without known sexual bias were recruited.

The hypothesis that absence of the mother from the home would be as strong a predictor of adult sexual preference as absence of the father was supported in an interesting way. Neither absence of the mother nor absence of the father accounted for as much as 1% of the variance in adult sexual preference, an unexpected result, since some previous studies had identified absent father as being related to adult sexual preference.

The hypothesis that a preponderance of opposite-sex playmates in childhood would predict a preference for same-sex sexual partners in adulthood was supported, more strongly for male subjects than for female subjects.

The degree of similarity between the results of this study and that of Bell *et al.* (1981a,b) is striking. In each case, sexual experience variables accounted for the most variance, followed by gender-related variables and family-related variables, in that order. However, there are some meaningful differences.

In general, the correlations reported here are lower than those reported by Bell *et al.*, particularly for females. One reason for this is that the study

of Bell *et al.*, was a more comprehensive one, including variables on which this study had no data.

Second, the ratio of subjects to variables in this study is higher, reducing the probability of obtaining artificially inflated *Rs*.

Third, the ratio of heterosexual to homosexual subjects in this study is far higher than in theirs, and closer to the population distribution of outcomes. The correlations between independent and dependent variables are highest when the proportions of heterosexual and homosexual outcomes are equal. Their study approaches this condition much more closely than does this one.

Fourth, the outcome variable in this study is an average of behavior from age 18 to age at interview, while for Bell *et al.* it is a measure of sexual preference at time of interview. Since many individuals, particularly females, engage in considerable heterosexual behavior before switching to same-sex partners, this might account to some extent for the higher *Rs* that they obtained.

Finally, and probably most important, the outcome variable in this study is based solely on overt behavior, while theirs is an average of subjective preference and overt behavior. Since it appears that the subjective preference of females is more at variance with their overt behavior than is that of males, this could account for lower correlations between predictor variables and outcome for females than for males in this study.

A Development Model

Although much still remains to be learned about how people develop preferences for certain types of sexual behavior or partners, and aversions for others, a model of human sexual development is proposed.

Gender

The vast majority of human infants are born concordant for genetic, chromosomal, and prepubertal hormonal sex, with a brain that will develop by the age of 18 months to 3 years to the point where it will accept a socially assigned imprint of core gender identity as male or female (Money and Ehrhardt, 1972). Studies of those who are discordant at birth for genetic, chromosomal, or hormonal sex and sex of assignment indicate that sex of preferred sexual partner in adulthood is generally heterosexual as defined by core gender identity, independent of genetic, chromosomal, or prepubertal or postpubertal hormonal sex.

For a small percentage of males, and a still smaller percentage of females, gender development is anomalous: the child behaves different from or feels

different from others of the same sex (Green, 1974). It seems likely that biological factors may play a role in predisposing certain children to anomalous gender development. The girl who is interested in "boys" activities and uninterested in "girls" activities may, in part, be so due to constitutional factors, perhaps including prenatal hormonal influences on brain organization. Also, the genetic diversity of human populations virtually guarantees a larger diversity within each sex than between sexes on most characteristics, including those conventionally considered masculine or feminine by a particular culture. Those who inherit, through genetic diversity, characteristics culturally ascribed to the opposite gender may be at risk for anomalous gender development.

Social learning, via ambivalence on the part of authority figures (Money and Ehrhardt, 1972) or subtle encouragement or reinforcement on the part of parents (Green, 1974; Stoller, 1968), probably plays a role in anomalous, as well as typical, gender development. Even in the case of constitutional predisposition, interaction with the social environment (i.e., others ascribing to the child opposite-sex characteristics), aided by cognitive factors (e.g., "I look or behave like an opposite-sex person. Therefore, am I really a true boy/girl?"), is probably the mechanism through which constitutional predisposition to anomalous gender development operates. To the extent that femininity is an ascribed status, and masculinity an earned status, boys would be expected to be at greater risk of anomalous gender development.

In any case, children who exhibit an extreme degree of cross-gender identification are at risk of anomalous sexual development, specifically including adult homosexuality (Green, 1985). The "familiarity breeds contempt" hypothesis (Werner, 1979; Westermarck, 1894) may help to explain this. If cross-gender identification, interest in the typical activities of opposite-sex children, ostracism by same-sex peers, or the mere absence from the child's environment of same-sex companions goes so far as to lead a boy to become "one of the girls," or a girl to become "one of the boys," then romantic and sexual attraction to opposite-sex persons after puberty may be inhibited, and same-sex persons may seem relatively more exotic and therefore more romantically and sexually attractive.

There is probably a biological substrate which, beginning at widely varying times in different individuals (any time from mid-childhood to early adulthood), begins to enhance the romantic and sexual attractiveness of some other persons. Arousal to familiar persons such as family members (Weinberg, 1963; Wolf, 1966, 1968, 1970) or childhood peers (Shepher, 1971; Spiro, 1958; Talmon, 1964; Werner, 1979) is inhibited, while arousal to exotic individuals is enhanced (love at first sight). Thus, part of the reason that most people are heterosexual is that they become highly familiar with the ways of their sex, and peers of their own sex, during childhood. This mechanism would have species survival value by promoting genetic diversity.

Early Sexual Experiences

Another factor that seems to be important in influencing adult sexual preferences is early sexual experiences. Most children are interested in and curious about other children's bodies. At preschool ages, this curiosity and interest is openly expressed, if given the opportunity. Most school age children maintain this interest and curiosity, but in relatively restrictive Western culture it becomes something to be hidden from adults.

At a mean age of about 7 or 8 years, children of both sexes become involved in prepubertal sex play. More than one-third of girls become involved with other girls, and more than a third with boys. More than half of boys become involved with other boys, and more than half with girls. Since some children become involved in sex play with both sexes, not many more than half of girls and only about two-thirds of boys become involved in any prepubertal sex play (Kinsey *et al.*, 1948, 1953). Children seem to be more curious about and interested in exploratory sex play with opposite-sex partners than with same-sex partners, since even though the majority of companions are same-sex, about equal amounts of sex play occur with same- and opposite-sex partners. A higher percentage of boys seem to be involved, perhaps because of prenatal brain androgenization leading to higher energy and activity levels.

Most prepubertal sex play is just that—mere child's play—consisting of sporadic and infrequent showing and incidental touching that has no effect on adult sexual preference. However, when the sex play becomes more intense, going on to specific masturbation, oral-genital contact, or coitus, or when the contact becomes sexually arousing, or leads to orgasm, what occurs does begin to show relationships with adult sexual preference. Whether the subject is male or female, and whether the partner is preadolescent or adult, it is prepubertal sexual experience with males that is related to adult sexual preference.

Whether it is due to biological precursors or to higher levels of social control (girls learn early to keep their skirts down, their legs together, and, by all means, not to hang upside down on the monkey bars), girls tend to limit their prepubertal sex play to showing and incidental touching. They tend to be uninterested in or uncomfortable ("I'll tell!") with more intense sexual activity before puberty. Less than 1% of girls, as opposed to about 4% of boys, become so intensely involved in prepubertal homosexual contact that they reach orgasm.

Boys, on the other hand, whether due to prenatal androgenization, pubertal hormone surge, or less social control, tend to be more active, assertive, and interested in more intense sexual activity. More than 25% of boys, as opposed to 10% of girls, masturbate to orgasm before puberty. Of those who do masturbate to orgasm before puberty, many, if not most, learn to

do so before knowing that such a thing as heterosexual intercourse, much less homosexuality, exists. Some may become enthusiastic and want to share their exciting discovery with other boys. In any case, if either of a pair, or any of a group, of boys becomes aroused in prepubertal sex play with another male, or knows through masturbation how to achieve arousal, it may become relatively easy for him to share this knowledge with the other male or males involved. After all, they have relatively similar interest and comfort levels, and similar anatomic equipment. If an adult male is involved, he would be expected to be even more interested in and skilled at producing arousal in his young partner.

Those males who learn of masturbation by being masturbated by another male, or to a lesser extent by observing masturbation, are more likely to prefer male sexual partners in adulthood than are those who learn about masturbation in other ways. The same is true of those whose first orgasm (before or after puberty) is in homosexual contact and of those who are aroused in prepubertal homosexual contact, who started such contact earlier, engaged in more (and more intense) activity, and, if the partner was adult, were a friend or relative of the partner.

For some males, even before puberty, interest in and arousal by the idea of sexual contact with other males may precede actual contact, although for that minority of males who were aroused by the thought or sight of another male, that experience first occurred at a mean age of more than 13 years. One possible route to arousal by thinking of sexual contact with other males is through generalization from the experience of self-masturbation, as mentioned above. Other routes are atypical gender development, isolation from other males, and overfamiliarity with females, which are linked to social learning.

In any case, once arousal to a particular type of stimulus occurs, it tends quite rapidly to form a pattern. Either the person repeats that type of experience, or fantasies of that type of experience may lead to or accompany masturbation. To the extent that the repeated experience (fantasy, masturbation, or with a partner) is arousing, stimulating, and pleasing, it tends to continue to be repeated and elaborated on and thus gains values as an erotic stimulus. More by neglect than anything else, other types of experiences and fantasies soon begin to pale by comparison, and unless a person becomes involved in another type of sexual experience that for whatever reason is particularly exciting, he or she tends to continue to fantasize about and participate in the first type of satisfying or arousing activity to the exclusion of others. This type of arousal-pattern formation may help to explain the observed bipolarity of heterosexual-homosexual preference.

Although the data base for our study had too little information on heterosexual arousal in childhood sex play to permit unbiased analysis, Bell

et al. (1981a) report that their factor, Heterosexual Arousal in Childhood, is a significant predictor of adult heterosexuality for both males and females, even after partialing the effects of all other variables in their model. Their measure includes arousal from all sources, however, not just sex play. In this respect, heterosexual arousal appears to function in the same way that homosexual arousal does, as a predictor of similar adult feelings and behavior.

When prepubertal females engage in sexual activity with males, however, a different pattern appears. By no means is all sex play arousing, as we have seen by examining the data for males. In fact, most prepubertal females seem to be most comfortable with just showing, without the more intense type of activity that seems to interest and arouse some prepubertal males. It seems likely that when (primarily at boys' demands) prepubertal heterosexual activity goes beyond showing and genital touching to oral-genital contact, anal contact, or coitus, most girls are likely to start to feel concerned, uncomfortable, pressured, or anxious, rather than pleased or aroused, and perhaps to resent the young males for coercing or pressuring them into such intense activity. The relationship here is not at all strong, and is also curvilinear, with those girls having the most years of intense heterosexual activity having lower adult Kinsey scale scores than those with less than 7 years' activity. It seems as if most of those with the greatest number of years of intense activity either began early, learned quickly to enjoy it and continued it, or became accustomed to it with time.

The pattern seems clearer when adult males, rather than prepubertal males, are involved with preadolescent females. Merely being approached, seeing an exhibitionist, or having an experience involving nongenital touching had no significant effect. But when the experience included masturbation, oral-genital activity, or coitus, when the girl's first sight of a man's penis occurred in an experience that also involved physical contact with an adult male, when the male was much older than the subject, when he was a friend, and thus more capable of violating the girl's trust and less capable of being written off as an aberrant exception, and when the contact was intense enough to be sexually arousing to the girl, she was more likely to choose to engage in sexual activity with other females as an adult. She may have learned to respond sexually in a heterosexual situation but also seemed to learn to dislike engaging in sexual activity with those who pressured or coerced her into activities with which she was not comfortable, or for which she was not ready.

The same pattern appears in Kinsey scale scores of postpubertal girls at age 12. The heterosexual frequencies composing Kinsey scale scores include coitus but exclude petting unless it leads to orgasm for the subject. The homosexual frequencies include all physical contact. It seems likely that some of the homosexual contact reported for females at age 12 may have been dancing

with other girls and “practice kissing,” both of which can be rehearsals for later heterosexual behavior, while much of the (intense) heterosexual activity may have been relatively unsatisfying for the girls involved.

The findings of Bell *et al.* (1981a, pp. 173-174) showed a similar pattern, with white prehomosexual females having their first heterosexual encounter at a mean age of 9.7 years, vs. 11.4 years for white preheterosexual females. For prehomosexual females, the first encounter was also more likely to include genital contact or coitus, and their preadult heterosexual experiences (not necessarily the first contact) were likely to have been less enjoyable than those of white preheterosexual females.

In summary, although preadolescent males and females may show sexual interest in and curiosity about each other, they seem to show less understanding of each other's likes and dislikes than boys do for other boys or girls do for other girls. With different anatomies and interests, they have not yet learned very well how to please each other, to the point that males seem to want to go “too far” with girls and also seem to be much more effective than girls at stimulating and arousing other boys.

Postpubertal Sexual Experience

Males at puberty, under the influence of androgen, tend to develop a high level of erotic responsiveness, accompanied by a high energy and activity level. Females' androgen levels and erotic interest levels rise much less dramatically, although their romantic interests seem to develop earlier than those of males. Boys reported their first erotic arousal to either males or females at about age 13, while the mean age for girls was about 4 years later. Gender and childhood association factors probably play a considerable role in inhibiting arousal to “familiar” persons while enhancing the sexual and romantic attractiveness of “unfamiliar” persons. For the preheterosexual majority, romantic and sexual interests in those of the same sex are inhibited, in accord with their gender identity and the majority of their childhood companions. For others, this inhibition process may be incomplete, or reversed.

For the majority, romantic interests in and social contacts with the opposite sex lead to relationships and physical contacts that become erotically arousing. Masturbation fantasies, if present, are in accord with the other factors.

However, this process is not necessarily smooth and easy. Whether due to hormonal or social influences, young males tend to be more openly sexual and genitally oriented, while adolescent girls tend to be more romantically and less erotically oriented. Some young males, lacking interested and

cooperative female partners for intense genital sexual activity, might permit or seek contact with other males, who also may tend to be more genitally oriented, and might know through self-stimulation far more than the average teenage girl about what type of genital stimulation might be pleasing to a male. If this type of experience happens to a male who has never had gender concerns or romantic or sexual thoughts about other males, it probably will constitute simple experimentation. If otherwise, or if the experience stimulates homosexual masturbation fantasies, or if sexual activity with females is unstimulating, unsuccessful, or anxiety provoking, a pattern of preferential homosexual activity might develop.

Adolescent females, on the other hand, might find themselves relating to males who seem boorish, unromantic, sexually intimidating, and either ignorant of how to please or uninterested in pleasing a female partner. If such a female has never had any concerns about her femininity or any romantic or sexual thoughts or fantasies about other women she can learn to work out satisfying romantic and sexual relationships with males. Otherwise she might find, after trying intense heterosexual activity a few (or many) times and finding it less satisfying than she had hoped, that some females know more about what other females enjoy (and are more interested in providing it) than many males do. In any case, once a satisfying pattern is experienced, whether heterosexual or homosexual, it tends to be self-perpetuating, and other patterns tend to be neglected or to suffer from invidious comparison.

Another factor that can contribute to bipolarity of sexual partner preference is social pressure. Given partners' tendencies toward jealousy and constraints on time and energy, it is difficult enough to maintain one satisfying relationship, much less two or more. With practice, social skills in seeking out one type of partner or another are developed. Heterosexual or homosexual friends are developed. Moreover, persons with bisexual preferences are to some extent outcasts in both camps.

It seems likely that fewer females than males come to prefer same-sex partners in part because they are less sexually adventurous, masturbate less, are less likely to fantasize if they masturbate, are less likely to fantasize what they have not experienced if they do fantasize, and are therefore more likely than males to experience arousal in heterosexual contact before establishing a pattern of strong sexual response to some other type of activity, specifically, homosexual activity.

The model presented here is consistent with the data of Bell *et al* (1981a, pp. 99-104, 106-111, 167-169, 173-178; 1981b, pp. 191-192, 209-210), showing that incidence of arousal by same-sex and opposite-sex persons and incidence and enjoyment of intense heterosexual and homosexual activities are among the variables most strongly related to adult sexual preference. This model is also consistent with their findings, particularly for females but also

for males, that preadult sexual orientation was not fixed but tended to vary with time among their prehomosexual subjects. The model is also consistent with the findings presented here that adolescent Kinsey scale scores account for steadily increasing amounts of variance in adult scores as age increases from 11 to 17, but that when only the first year of experience for each subject is included the correlations are far lower.

Bell *et al.*, make much of the fact that feelings of sexual arousal or attraction usually precede intense sexual activity and, in their model, that these feelings show stronger relationships to adult sexual preference than do sexual experience variables. However, gender identity, influenced by social learning, and masturbation, with or without sexual fantasy, might be two pathways by which such feelings can arise before intense sexual activity occurs.

Another reason that sexual feelings may be more strongly related to adult sexual preferences than are the sexual experience variables included in their model is that the human mind is an excellent organizer, interpreter, and summarizer of experiences. It can integrate the effects of such disparate occurrences as atypical play interests, ostracism by peers, uncommon types of sexual experiences, being coerced into sexual activities, and other variables that no researcher has ever thought to include in a research design and come up with the summary, "felt sexually different" or "felt different for gender reasons."

Another, related, reason is that Bell *et al.*, excluded from their model variables that did not apply to everyone in their sample, a situation that exists for all variables defining specific elements of any type of behavior when the incidence of that behavior is less than 100%. However, everyone can judge his or her own idiosyncratic and unique sexual and nonsexual experiences and tell us, looking back on his or her own history, whether or not he or she felt different as a result of those nonuniversal experiences.

Summary

It seems quite clear that intense sexual experiences, and feelings of arousal, pleasure, or discomfort associated with those experiences, are the strongest precursors of adult sexual orientation. Second in strength of association are gender-related factors, and third are those associated with family influences, although family influences might have effects on gender identity that have not yet been captured in any large-scale sexuality study.

Subjective arousal is strongly related to overt behavior, and for heterosexual arousal the relationship is curvilinear, with those having overt sexual contacts with both sexes reporting stronger arousal to a wide variety of heterosexual stimuli than do those who are exclusively heterosexual in overt behavior.

Overtly expressed heterosexuality and homosexuality seem to be polar opposites, with very few people falling into the bisexual range behaviorally.

Intimate childhood association probably influences adult sexual preference by inhibiting later romantic and sexual attraction to close childhood associates.

Learning through experience seems to be an important pathway to later sexual preference. Those who learn to masturbate by being masturbated by a person of the same sex, those whose first orgasm is in homosexual contact, and those who have arousing or uncomfortable early sexual experiences seem to develop differently than those who do not have such experiences. The order in which these experiences occur for any particular individual seems to be more important than the age at which they occur, since there is so much variation among individuals in the ages at which they begin various sexual activities.

The relative sexual adventurousness of males, compared with females, seems to account in part for the fact that more males than females develop overtly expressed same-sex partner preference in adulthood.

Early sexual activity with adult males seems to play a small, but definite, role in the development of sexual preferences for both males and females.

Once a particular sexual preference becomes established (which seems to occur within a short period of time, although often more than a year after beginning intense sexual activity), it does tend to become fixed and quite resistant to change. In males this process seems typically to be well on its way to completion by age 18, and in females by age 21.

Suggestions for Future Research

This study has examined the relationships of many possible precursors with adult overt sexual behavior. It has not examined relationships of those precursors with adult subjective preferences, from which a different pattern of relationships might have emerged.

Subjects with overt behavior differing from subjective preference were excluded, as were those with no overt adult sexual experience and those with preferences other than heterosexual, bisexual, or homosexual. Future studies focusing on those groups who were excluded would probably prove extremely informative.

The heterosexual-homosexual continuum has hidden within it three separate variables: heterosexual behavior, homosexual behavior, and their sum. It would probably be extremely informative to examine them separately.

Neither this study nor other large-scale studies have data on early masturbation fantasies, which may be intimately involved in the development of sexual arousal patterns. Nor are there data on the development of early romantic—as distinct from sexual—fantasies, which may also be relat-

ed. Studies of such variables would probably add to our knowledge of human sexual development.

ACKNOWLEDGMENTS

Thanks are expressed to the Institute for Sex Research at Indiana University for making available the data on which this research is based. Dr. Van Wyk thanks the Department of Psychology, Illinois Institute of Technology, for its financial support of this research in the form of a teaching assistantship.

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