

## Cognitive Characteristics and Homosexuality

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*There have been many studies of psychological characteristics of homosexuals, but cognitive characteristics have been relatively neglected. This study investigated the verbal intelligence of 20 homosexual males, 20 heterosexual males, and 20 females, taking into account variables likely to affect verbal ability such as social class and handedness. There were no differences in overall IQ, but group differences in verbal and nonverbal ability were marked. No other differences between the groups were found. The implications are briefly discussed.*

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KEY WORDS: male homosexuality; verbal ability; individual differences; cognition.

### INTRODUCTION

Homosexual groups have been studied extensively in relation to the development, description, and modification of sexual orientation, and an important aspect of this literature is the documentation of psychological characteristics. In terms of personality measurement, there are many psychometric and projective studies of groups of homosexual males (Cattell, 1965; Hooker, 1957; Orford, 1971; Siegelman, 1972a) and females (Armon, 1960; Hopkins, 1969; Kaye *et al.*, 1967; Kenyon, 1968; Riess *et al.*, 1974; Siegelman, 1972b).

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On the other hand, cognitive characteristics have received scant attention, although some lines of inquiry suggest that cognitive variables might be worthy of study in relation to homosexuality. There is evidence, for example, that occupation, patterns of cognitive ability, and sexuality are strongly associated. A pattern of superior verbal ability relative to nonverbal ability is associated with excellence in the humanities and arts, whereas relative superiority in nonverbal ability is associated with excellence in the sciences, mathematics, and practical skills (Hudson, 1967). Individual modes of sexual expression are clearly tied in with such patterns of cognitive structure and choice of occupation in the stereotypes of artists and scientists (Beardslea and O'Dowd 1962), and, indeed, these stereotypes have been shown to reflect accurately observed individual differences both in cognitive ability and in sexual identity (Hudson, 1967, 1970). Similarly, nonconventional sexual behavior and mores are reported significantly more frequently in the biographies of famous artists and men of literary stature than in those of famous scientists (Willmott, 1975). Sexual preferences and behaviors, therefore, appear to co-vary with individual differences in patterns of cognitive ability.

Sex-typed interests, as measured for example by M-F tests, discriminate between male homosexual and heterosexual groups (Krippner, 1964) and between female homosexual and heterosexual groups (Grygier, 1957), which is to be expected since gender nonconformity is associated with male and female homosexuality even at prepubertal stages of development (Green, 1979; Bell *et al.*, 1981). Brierley has also shown that a male gender-dysphoric group (transvestites) was characterized by exaggerated sex-typed interests (Brierley, 1975) and by overcompensated masculinity in employment (Brierley, 1979). Since cognitive styles and patterns of cognitive ability are inextricably bound up with such nonintellective factors as personality and interests (Wechsler, 1950; Witkin *et al.*, 1962), it is further suggested, therefore, that homosexual groups might be characterized by distinctive patterns of cognitive ability.

Few studies have investigated the relationship between cognitive characteristics and sexual orientation directly, those to date being sparse and conflicting. Andress *et al.*, (1974) administered the Menninger Word Association Test to heterosexual and homosexual groups of male students in an effort to investigate emotional dynamics via word usage, finding no difference between the groups. LoPiccolo and Blatt (1972), on the other hand, found weak support for their hypothesis that students whose cognitive style was atypical for their sex, manifested some sex role conflict in objective and projective test scores.

This study addresses itself directly to the question of whether there is evidence of differences in patterns of cognitive ability between groups identifying themselves as homosexual or heterosexual.

## METHOD

An investigation was made of the cognitive characteristics of relatively well-adjusted homosexual and heterosexual groups to avoid the complications of interpretation arising from sampling clinical and other poorly adjusted groups (Siegelman, 1974). Subjects from several nonclinical sources were approached, including local branches of the Gay Liberation Front (GLF), the Campaign for Homosexual Equality (CHE), a university gay society, and, where possible, nonaffiliated individuals from the general population. As most of the homosexual participants were group affiliated, they were compared with group-affiliated heterosexual participants from a local branch of Round Table, a university student representative council and students union, and with individuals from the general population. No selection was considered on ethnic grounds, but it transpired that all subjects were white. Other demographic variables are included in the analysis below.

It proved difficult to recruit female homosexuals, and for this reason a group of female volunteers was included without specifying sexual orientation. All but two of the female group identified as heterosexual.

A standard intelligence test was used to measure verbal bias. The Wechsler Adult Intelligence Scale was administered to each participant, using those subtests loading highest on pure factors (Maxwell, 1960), viz., comprehension, similarities, and vocabulary for the verbal scale, and block design and object assembly for the performance scale. Verbal, performance and "full scale" scores were generated by prorating.

Eight other variables were recorded and analyzed. The occupation of each participant and parental occupation were recorded to control for verbal bias resulting from class differences (Bernstein, 1960; Kniveton and Pike, 1972). Where both parents were in full-time occupation, the classification was based on the occupation of the father.

The Eysenck Personality Inventory, form B, was employed to estimate the level of adjustment by the neuroticism scale. The measure of extraversion has also been suggested to correlate negatively with verbal bias (Eysenck, 1949; Gray, unpublished) and was therefore included in the analysis. The lie scale of the EPI was also recorded and analyzed.

Handedness was an important variable to assess, as it has been shown that sinistrals have a marked tendency to show verbal biases of intelligence (Levy, 1969). Handedness was coded, therefore, on a 5-point scale with 1 representing total sinistrality, 3 ambidexterity, and 5 total dextrality, using the criteria of Annett (1970).

The Sexual Orientation Method (SOM) of Feldman and MacCulloch (1971) was used in its modified form (Sambrooks and MacCulloch, 1973) to assess and quantify relative degrees of homosexuality, bisexuality, and heterosexuality.

The age of participants was recorded as part of test procedure and was also included in the analysis.

## RESULTS

### The Sexual Orientation Method

The scores of each individual on the SOM corresponded highly to participants' expressed degree of attraction to either sex at interview. The male homosexual group participants were clearly more attracted to men than to women, the male heterosexual group showing the reverse pattern and to a more marked degree. The female group participants were clearly more attracted to members of the opposite sex, although their scores were somewhat less polarized.

### Occupation and Parental Social Class

The sample was biased toward middle- and upper-middle-class status, both in terms of current occupation and parental occupation: 48.3% of the 60 subjects were university students, 21.7% teachers, and 30% other occupations mostly professional in nature. In practice, the groups were very similar, indeed, in specific occupations, and statistically there is no significant difference between the groups ( $\chi^2 = 2.54$ ).

Parental occupations were extremely varied and were coded for statistical purposes by assignment to social class categories. When tested for significance, there are no differences in frequency of parental social class category ( $\chi^2 = 0.62$ ).

### Age

Analysis of variance revealed no significant differences between the groups in terms of age ( $F = 0.59$ ).

### Handedness

There were no significant differences between the groups in handedness scores ( $\chi^2 = 0.62$ ).

Table I. Extraversion, Neuroticism, and Lie Scores

	Homosexual males		Heterosexual males		Females		<i>F</i> ratio
	Mean	$\delta$	Mean	$\delta$	Mean	$\delta$	
Extraversion	13.65	3.62	15.55	5.38	12.45	4.44	2.25 <sup>a</sup>
Neuroticism	12.40	5.54	9.95	4.95	13.15	5.37	1.90 <sup>a</sup>
Lie scale	1.50	1.02	1.05	1.12	2.10	1.36	4.41 <sup>b</sup>

<sup>a</sup>Not significant.

<sup>b</sup> $p < 0.05$ .

### The Eysenck Personality Inventory

Group differences on the three scales of the EPI were analyzed by one-way analysis of variance. Table I gives means and standard deviations for the three groups, together with values of *F*. The scores were well within normal range (Eysenck and Eysenck, 1963), and the means for the L-scale were well below the score the authors recommended for questioning the validity of the scale. There were no significant differences between the groups on extraversion or neuroticism. However, the L-scale scores were significantly different at the 5% level, although the psychological significance of such small mean score differences is likely to be trivial.

### Main Variables

As there were no significant differences between the groups on the intervening variables of social class, handedness, and extraversion, group differences on prorated verbal, performance, and "full-scale" IQ were analyzed by one-way analysis of variance. Table II shows means and standard deviations of the three groups on prorated "full-scale" IQ. A majority of the participants scored within the superior range, and all were above average intelligence. Scores ranged from 107 to 142. There was a trend for the two male groups to score higher than the females, but the difference is not statistically significant ( $F = 2.80$ ).

Table II. "Full-Scale" IQ

	Mean	$\delta$	<i>F</i> ratio
Male homosexual group	128.15	8.22	2.80 <sup>a</sup>
Male heterosexual group	127.60	7.05	
Female group	122.40	9.37	

<sup>a</sup>Not significant.

Table III. Prorated Verbal IQ

	Mean	$\delta$	<i>F</i> ratio
Male homosexual group	133.50	8.30	5.86 <sup>a</sup>
Male heterosexual group	124.20	6.65	
Female group	130.25	10.18	

<sup>a</sup>*p* < 0.005.

Table III shows means and standard deviations for prorated verbal IQ's of the three groups. The male homosexual group mean is clearly higher than that of the male heterosexual group, with the female group mean falling between the two. The difference is significant beyond the 1% level ( $F = 5.86$ ), and yardstick calculations show the significance of the difference to arise from one source, the mean difference in the male homosexual and heterosexual groups.

Table IV shows means and standard deviations for the three groups on prorated performance IQ. The mean group differences are very pronounced, indeed, and are highly statistically significant ( $F = 10.68$ ,  $p < 0.001$ ). Yardstick calculation shows the significance of the difference to arise from two sources: the male heterosexual group mean is significantly different from the male homosexual group mean at the 5% level, and from the female group mean at 1%.

## DISCUSSION

A number of observations can be made about the study data. Broadly, there were very few differences among the three groups in terms of the measures used, level of adjustment as measured by the neuroticism scale included. It is therefore all the more striking that the results support the hypothesis that patterns of cognitive ability are associated with sexual orientation, and in particular that a verbal bias of intelligence is associated with homosexuality in males. Clearly, no conclusions can be drawn about the female group, as there was no comparable homosexual reference group.

Overall, group differences in verbal IQ are statistically significant, and in performance IQ the scores differ at a very high level of significance.

Table IV. Prorated Performance IQ

	Mean	$\delta$	<i>F</i> ratio
Male homosexual group	117.40	11.22	10.68 <sup>a</sup>
Male heterosexual group	128.50	12.63	
Female group	110.30	12.79	

<sup>a</sup>*p* < 0.001.

These mean differences are very large, and their magnitude deserves comment. The most plausible explanation is that the choice of subtests which load heavily on pure factors has accentuated group differences that would not have been so readily apparent had the entire scale been used. Experimenter bias in test administration may have operated but is unlikely to have produced such a marked effect given that there were no significant differences in "full-scale" IQ. The standardized administration was rigidly adhered to, and, furthermore, all test protocols were independently scored. Sampling error is not likely to account for the group differences as all groups appear to be similar in other respects, i.e., in age, social class, handedness, extraversion, neuroticism, occupation, and "full-scale" IQ. Individual discrepancies between verbal and performance scores are also large and may similarly have been accentuated by choice of subtests. In addition, the standard deviation of the differences between verbal and performance WAIS IQ scores increases in younger samples and in more intelligent samples (Wechsler, 1958), and the groups reported here are indeed both young and highly intelligent.

It is noteworthy that there was no participant in the male homosexual group whose nonverbal score was equal to or higher than his verbal score. In this respect, the male homosexual group is unique. In the male heterosexual group, the scores of five individuals showed verbal biases, fourteen nonverbal, and one an equal score on both scales. In the female group, eighteen scores were verbally biased and two nonverbally. In the male groups, therefore, verbal ability appears to be strongly characteristic of a homosexual identity.

The SOM scores suggest that the female sample has a lesser tendency to exclusive attraction to one or the other sex than their male counterparts, with or without the inclusion of the two females who did not identify exclusively as heterosexual. This replicates the findings of Sambrooks and MacCulloch (1973), who suggested that sampling bias might account for their findings among a somewhat similar sample of undergraduate females. An alternative explanation is also plausible, that verbal bias of intelligence is associated with "divergence" and tolerance of sexual ambiguity. Hudson (1967) has shown that the diverger, typically a verbally biased individual, has a more differentiated sexual identity than the converger, typically a nonverbally biased individual, and is more tolerant of sexual ambiguity and contradiction. This is supported in this study in that the female group and the male homosexual group, both verbally biased, showed greater diversity on the SOM scores than the male heterosexual group, which showed the most pronounced tendency to polarize, or "simplify."

Our data give us no grounds for making causal assumptions about the genesis of male homosexuality, as they are entirely associational. The data

support both a biosocial and a psychosocial model of the development of sexual preference.

The development of superiority in verbal ability is conceivably linked with the development of nonconforming, gender-related interests (Witkin *et al.*, 1962), which are characteristic of the homosexual and prehomosexual male (Bell *et al.*, 1981). The results do contribute substantially, however, to the proposition that psychological characteristics are associated with homosexuality, particularly to well-developed verbal ability among homosexual males.

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