Male-Female Differences in Sexual Arousal and Behavior During and After Exposure to Sexually Explicit Stimuli¹

Gunter Schmidt, Ph.D.²

INTRODUCTION: THE CONVERGENCE OF MALE-FEMALE SEXUAL BEHAVIOR PATTERNS

The latest survey data on male-female differences in sexual behavior in West Germany show two trends (Schmidt and Sigusch, 1971; Sigusch and Schmidt, 1973). Today's adolescents and young adults have a sex-specific view of sexuality which is clearly related to the traditional sexual gender roles: girls behave sexually as if they had less sexual drive than boys; girls show fewer signs of sexual frustration when they abstain sexually; girls behave as if they should show less sexual initiative than their male partner or at least not more than he; girls behave as if their sexuality is more dependent on love, personal relations, and fidelity than do boys. The stereotype of the less libidinous, less initiative-taking woman whose sexuality can be realized only within emotional and personal relations is still of central importance.

During recent decades, however, and especially during the last 10 or 15 years, these differences have decreased considerably. There is a convergent trend resulting in a steady decline of the sex differences described above. To mention only a few findings: the overwhelming majority (about 90% of both young women and men) now have permissive and egalitarian sexual standards; the incidence of premarital sociosexual activities (necking, petting) and of premarital coitus for women and men is equally high; girls have the first coital experience at nearly the same age as boys (about half a year later). The gender differences

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² Institute for Sex Research, University Psychiatric Clinic, University of Hamburg, Hamburg, West Germany.

regarding partner multiplicity have converged; on the one hand, the high degree of partner mobility among men, which resulted from the extreme double standard, has decreased; on the other, women now show a greater tendency not to limit their sexuality to one partner. The differences regarding the age of first masturbation and the accumulative incidence of masturbation have decreased considerably; however, masturbation remains the type of sexual behavior with the most distinctive sex differences. This convergence process can be observed in all Western societies for which we have data (Zetterberg, 1969; Israel et al., 1970; Christensen and Gregg, 1970; Christensen, 1971; Bell and Chaskes, 1970; Sorensen, 1973; Hunt, 1974). It seems to be most advanced in the Northwest European countries (Denmark, Sweden, West Germany) and in the metropolitan areas along the East and West Coasts of the United States.

This paper will deal in detail with one symptom of the convergence process: the decreased differences between the sexes in the reactions to pictorial and narrative stimuli. Kinsey et al. (1953) gave evidence of considerable differences in the responsivity of the average male and female to pictorial and narrative sexual stimuli. They found that arousal from explicitly sexual stimuli was much rarer among women. Newer research data demonstrate that this no longer holds true universally.

METHODS

Five different studies were conducted involving a total of 562 female and 562 male students enrolled at the University of Hamburg. The volunteers selected as subjects in the experiments were predominantly in their early 20s, single, and with coital experience.

In the *first* study, black-and-white slides were used, portraying semi-nudes and nudes of the opposite sex, along with necking, petting, and coitus scenes (Sigusch *et al.*, 1970). In the *second* study, we utilized both black-and-white and color films as well as series of slides portraying necking, petting, and coitus (Schmidt and Sigusch, 1970). In the *third* study, we used two stories describing a sexual experience of a young couple; necking, petting, and coitus were described in detail (Schmidt *et al.*, 1973). In the *fourth* study, we used (as in the second study) black-and-white and color films and slide series, but the stimuli portrayed masturbation of a woman and masturbation of a man, respectively (unpublished). In the *fifth* study, we used four films of aggressive sexual content: one portrayed a sadomasochistic ritual, the second showed flagellant activity between two women, the third showed four men raping a woman in a bar, the fourth was a control stimulus showing nonaggressive sexuality (Ernst *et al.*, 1975).

In all five studies, each subject was left completely alone when he or she viewed the slides or films or read the stories. The experimenter was a member of

the same sex as the subject. All data were accumulated by means of questionnaires which the subjects were required to fill out immediately subsequent to the experiment and 24 hr later.

GENERAL RESULTS

The general results of studies 1, 2, and 3 are published elsewhere in detail (Schmidt and Sigusch, 1973), and are only briefly summarized in this paper.

- 1. Women describe themselves as somewhat less sexually aroused after the pictorial and narrative stimulation than do men. However, these differences are only slight.
- 2. The great majority of women as well as men observe some sort of physiological-sexual reaction during the pictorial and narrative stimulation. These "objective" signs of sexual arousal are found in women about as often as in men.
- 3. Both women and men show a general and slight increase in sexual behavior (coitus, masturbation, orgasm) during the 24-hr period following exposure to pictorial and narrative stimuli as compared to the 24 hr before the exposure; there is also an increase in sexual fantasies and sexual desire. The extent of this activation varies only slightly between the sexes. Where significant differences between the sexes are noted, there is a general trend toward a greater activation among the women.
- 4. During the 24 hr after the pictorial and narrative stimulation, there is, in both men and women, a moderate tendency to incorporate the stimuli into their masturbation fantasies and a slight tendency to incorporate them into their fantasies during coitus. The influence of the stimuli on coital techniques (in the 24 hr after exposure) is in both women and men negligible.
- 5. Pictorial and narrative stimulation leads immediately to an emotional activation and agitation in both women and men; furthermore, it leads to an increase in emotional instability and to an increase in emotional tension; and, finally, it leads to emotional avoidance reactions. These avoidance reactions are stronger in women than in men.
- 6. Emotional activation and increase in emotional instability are still evident among both men and women 24 hr after their exposure to pictorial and narrative stimulation.

In sum, the pattern and intensity of reactions to explicit sexual stimuli are in general the same for men and women. When significant differences between the sexes are found, they represent merely minor shifts in the total pattern. These variations should not divert attention from the fact that women can react to the same extent and in the same direction as men.

This holds true at least for young, highly educated, sexually permissive subjects (university students). We do not rule out the possibility that in other social groups (older age levels, lower social strata) differences in arousability between the sexes still exist. However, we are concerned here with the fact that the effect of pictorial and narrative stimulation, at least under certain social conditions, is equally strong and quite similarly structured for both women and men.

To what extent does this generalization continue to hold true when the stimuli are varied? We have data on three stimulus variables: (1) affectionate vs. nonaffectionate stimuli, (2) aggressive vs. nonaggressive stimuli, (3) stimuli that allow projection vs. objectification (Money and Ehrhardt, 1972).

Affectionate vs. Nonaffectionate Stimuli

In study 3, we used two stories which differed in the degree to which affection was expressed. One story made it completely clear that the partners were solely interested in a sexual experience; the second story described the same sexual activities accompanied by affectionate desires.

It is generally assumed, and surveys of sexual behavior unanimously corroborate this (Ehrmann, 1959; Christensen, 1971; Sigusch and Schmidt, 1973), that the sexuality of women in Western societies is more dependent on affection than is that of men. This could lead to gender differences in sexual arousal in study 3. According to our findings, this not the case; the stories with and without affection do not have different effects on men and women (for details, see Schmidt et al., 1973).

It is possible to argue that the stories which we used did not differ sufficiently with respect to "affection." Neither of the two stories was a "love story" or "romantic story." The two stories differed only in that in one of them more tenderness was expressed during sexual activity. Thus we cannot exclude the possibility of achieving greater differentiation in sex-specific responses using stories in which the emotional and social relationships of a couple are described in the same detail as sexual activities. However, our data do permit one important conclusion: affection is not a necessary precondition for women to react sexually to sexual stimuli. Even for stories which exclude and avoid any expressions of tenderness and affection (story 1), sexual arousal and sexual activation among females are as great as among males. This finding tends to refute the claim that women's sexual arousal is basically more dependent on affection than men's.

Aggressive Sexual Stimuli

In study 5, we investigated the reactions to films of aggressive-sexual content. Four films were used: (1) a sadomasochistic ritual, (2) flagellant activity

Table I. Aggressive Sexual Stimuli (Study 5): Ratings of Sexual Arousal, Favorable-Unfavorable Response, and Aggressiveness Immediately After the Experiment (Means, Standard Deviations)⁴

		Males			Females	
	Control (nonaggressive) $(N = 50)$	Sadomasochistic ritual $(N = 50)$	Rape $(N = 50)$	Control (nonaggressive) $(N = 50)$	Sadomasochistic ritual $(N = 50)$	Rape $(N = 50)$
Sexual arousal ^b M	5.8	3.7	5.4	5.2	3.2	2.5
Favorable-unfavorable response $^{\mathcal{C}}$	1:,		1	T: 7) (
N S	3.4 1.7	1.7	7.1 2.0	3.9 1.5	1.6	1.2
Aggressiveness d M	2.1	2.6	7.4	1.9	3.4	4.9
8	1.6	1.9	2.7	1.7	2.3	2.7

^aSignificance of the sex differences according to Mann-Whitney U test: arousal: p = 0.05 for "rape," all others not significant; favorable-unfavorable: "control" not significant, "sadomasochistic" p = 0.05, "rape" p = 0.05; aggressiveness; all not significant. Significance of the differences between the films according to Kruskal-Wallis test: for all ratings and both sexes p = 0.001. $^{\circ}$ Low value, low sexual arousal; high value, high sexual arousal. $^{\circ}$ Low value, favorable; high value, unfavorable.

dLow value, low aggressiveness; high value, high aggressiveness.

 Table II. Aggressive Sexual Stimuli (Study 5): Ratings of "Present Feelings" on a Semantic Differential

 Before and Immediately After the Experiment: Selected Items (Means)

	(non)	Control (nonaggressive) $(N = 50)$	ive)	Sado	Sadomasochistic ritual (N = 50)	stic	9	Rape $(N = 50)$	_
	Before After	After	p_a	Before	After	p_{q}	Before After	After	p_a
Males									
Composed-excited	5.6	4.5	0.001	2.5	3.9	0.001	3.0	4.7	0.001
Innerly agitated-innerly calm	4.7	3.4	0.01	5.1	4.0	0.001	4.	3.3	0.01
Angered-amused	4.9	5.0	ns	5.1	4.3	0.001	4.9	3.9	0.01
High spirited-dejected	5.6	2.5	us	2.4	3.3	0.001	5.6	3.9	0.001
Cheered up-depressed	3.3	3.0	ns	3.5	3.7	ns	3.4	3.2	us
Unconcerned-shocked	3.4	3.3	su	3.4	3.7	su	3.2	4.1	0.001
Irritated—lazy	4.9	4.7	su	5.4	4.7	0.01	5.2	4.3	0.01
Attracted-repelled	3.1	5.6	su	5.6	4.8	0.001	2.9	4.8	0.001
Disgusted-pleased	4.6	5.4	0.001	4.9	3.4	0.001	4.6	3.3	0.001
Females									
Composed-excited	3.3	8.4	0.01	3.0	4.3	0.001	3.2	5.2	0.001
Innerly agitated-innerly calm	4.6	3.8	0.01	4.5	3.0	0.001	4.0	5.6	0.001
Angered-amused	5.2	8.8	ns	5.2	3.7	0.001	4.7	3.3	0.01
High spirited-dejected	2.4	2.5	su	2.5	3.6	0.001	2.5	4.2	0.001
Cheered up-depressed	3.2	3.1	us	3.3	3.6	su	3.4	3.9	0.05
Unconcerned-shocked	3.5	3.8	su	3.6	4.6	0.01	3.5	5.3	0.001
Irritated—lazy	5.1	4.7	0.01	5.0	3.9	0.001	5.2	3.4	0.001
Attracted-repelled	2.9	3.1	su	5.9	9.6	0.001	3.0	5.8	0.001
Disgusted-pleased	8.4	5.1	su	4.9	2.7	0.001	4.6	2.1	0.001

 $^d\mathrm{Significance}$ of the difference "before" and "after" according to sign test.

between two women, (3) group rape, (4) nonaggressive sex as control stimulus. (Film 2 is not further discussed here because it presented opposite-sex stimuli for the male subjects and same-sex stimuli for the female subjects.) Once again the male-female behavior patterns to the different stimuli were found to be quite similar (see Tables I and II).

- 1. Males and females respond to the control film with the strongest arousal (as compared to the other films) and with emotional activation, however with little emotional avoidance and with little aggressiveness.
- 2. Males and females respond to the sadomasochistic film with low arousal but with strong emotional avoidance, strong emotional labilization, dysphoric mood, and moderate aggressiveness.
- 3. Males and females respond to the rape film with relatively high arousal and strong emotional avoidance reactions, emotional labilization, dysphoric mood, and much aggressiveness. Thus this film evokes a strong conflict reaction sexual arousal combined with strong aversion.

Significant sex-specific differences represent once again only minor shifts in this general pattern; women show even stronger emotional avoidance reactions than men to the aggressive films. Furthermore, the type of conflict experienced during the rape film seems to be somewhat different for men and women. (This finding did not emerge from our experiment but from group discussions with students about the rape film.) In women the rape film produces sexual arousal and, by identification with the female victim, fears of being helplessly overpowered. In men this conflict is more characterized by guilt feelings and dismay that they are stimulated by aggressive sexual activities incompatible with their conscious ideas of sexuality.

However, in our context the most important finding is that films which do not describe sexual aggression as a deviant or strange ritual (as in the sadomasochistic film) can induce strong sexual arousal in both men and women. Strong aggression in films of sexual content does not inhibit either men's or women's ability to react with sexual arousal. The aggression may even have an added sexually stimulating effect — once again for both men and women.

Projection vs. Objectification

Although women as well as men are able to respond to visual and narrative stimuli, Money and Ehrhardt (1972) describe differences in the imagery or experience of arousal. According to them, women's sexual arousal is programmed by projection, men's sexual arousal is programmed by objectification:

When he reacts to a sexy pin-up picture of a female, a man sees the figure as a sexual object. In imagery, he takes her out of the picture and has a sexual relationship The very same picture may be sexually appealing to a woman, but that would not mean that

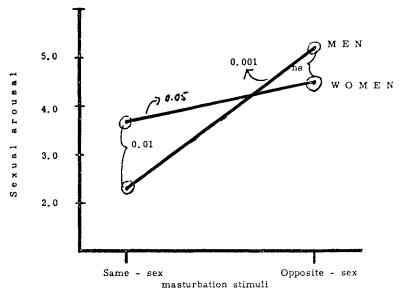


Fig. 1. Projection vs. objectification (study 4): Ratings of sexual arousal immediately after the showing of same-sex vs. opposite-sex masturbation stimuli (means). Significance of mean differences according to t test. N = 32 in each cell.

she is a lesbian. Far from it. She is not in imagery bringing the figure toward herself as a sexual object, as does the man. She is projecting herself into the picture and identifying herself with the female to whom men respond. She herself becomes the sexual object. What if the picture portrays a sexy male? The basic sex-specific difference still manifests itself. Men are typically inattentive . . . they do not project themselves into the picture and identify with the man there represented. Women, unable to identify with the female figure, also do not respond to it as a sexual object. (Money and Ehrhardt, 1972, p. 252)

In study 4, we gathered data that can be related to this projection vs. objectification hypothesis. Films and slide series showing female masturbation or male masturbation were used. The Money-Ehrhardt view leads to the following hypotheses:

- 1. Women should report significantly *more* sexual arousal to same-sex masturbation stimuli than to opposite-sex masturbation.
- 2. Men should report significantly *more* sexual arousal to opposite-sex masturbation stimuli than to same-sex masturbation.
- 3. Women should report significantly *more* sexual arousal to female masturbation stimuli than men to male masturbation.
- 4. Men should report significantly *more* sexual arousal to female masturbation stimuli than women to male masturbation.

The average sexual arousal ratings (see Fig. 1) clearly confirm hypotheses 2 and 3. They are also in line with hypothesis 4, but the differences are not statis-

tically significant. However, hypothesis 1 — most important to the projection vs. objectification assumption — has to be rejected. The opposite is true: women (like men!) report significantly *less* sexual arousal to same-sex than to opposite-sex stimuli.

These data (especially with respect to hypothesis 3) are not to be explained by differences in projection-objectification tendencies; they probably result from greater inhibitions in adult men against same-sex stimulation and/or a greater "bisexual" capacity in women. Our data on favorable-unfavorable responses (see Fig. 2) are consistent with this inhibition hypothesis; the data show strong emotional rejection of same-sex masturbation stimuli by men, but not by women. It seems reasonable to assume that homosexual anxieties are stimulated

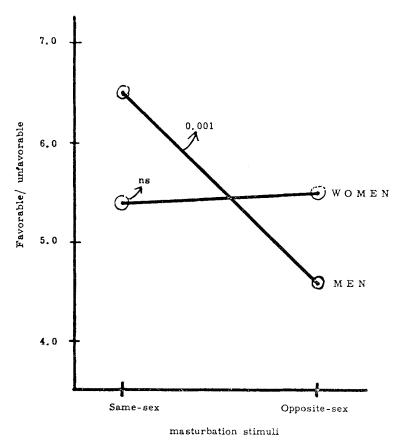


Fig. 2. Projection vs. objectification (study 4): Ratings of favorable-unfavorable response immediately after the showing of same-sex vs. opposite-sex masturbation stimuli (means). Significance of mean differences according to t test. N=32 in each cell.

Table III. Projection vs. Objectification (Study 4): Sexual Reactions During the Showing of Same-Sex vs. Opposite-Sex Masturbation Stimuli and in the 24 hr

Thereafter⁴

	Males (%)		Females (%)	
	Same sex $(N = 32)$	Opposite sex $(N = 32)$	Same sex $(N = 32)$	Opposite sex $(N = 32)$
Any sexual-physio- logical reaction	41	.001	56	66 ns
Masturbatory activity during the expe-	3	22	19	19
riment	100 1	ew cases		ns
Total orgasms in the 24 hr before and after the experiment After > before After < before Equal	16 25 59	38 19 44	22 9 69	25 9 66 ns ^b
Wish for sexual acti- vity in the 24 hr before and after the experiment After > before	13	44	38	50
After < before	34	19	9	16
Equal	53 0	.01 ^b . 38	53	ns^b 34

^aSignificance of the differences between same-sex and opposite-sex stimuli according to the χ^2 test.

bCategories "after < before" and "equal" were combined for calculating χ^2 values.

more quickly in men than in women; both sexes probably respond sexually to same-sex stimuli, but this reaction is more anxiety laden and therefore more easily suppressed in the male.

The greater inhibition induced by same-sex stimuli is also to be seen with regard to sexual reactions during our experiment and sexual activation in the 24 hr after the experiment (see Table III). Women showed about equally strong reactions to same-sex and opposite-sex stimuli, whereas men responded with definite lower arousal to same-sex than to opposite-sex stimuli.

Thus reactions to same-sex stimuli, unlike reactions to most other stimuli studied to date, are gender dimorphic. The explanation for this is still unknown.

SOME CONCLUSIONS

Our data show more similarities than differences in male-female sexual arousal by pictorial and narrative stimuli. These similarities have become more

visible during the decades since the Kinsey studies. They are thus one symptom of the abovementioned convergence of male and female sexual behavior patterns. I want to comment on the sociological factors responsible for this convergence.

Christensen (1966, 1971) has demonstrated the parallelism between sexual liberalization and the convergence of male and female sexuality. In a heterosexual-oriented society there is no far-reaching liberalization of sex possible without giving up the double standard and culturally conditioned sexual inequality because male and female sexual behavior are reciprocally dependent. Thus, sociologically speaking, the sexual liberalization process we have witnessed during the last years (Schmidt and Sigusch, 1972; Hunt, 1974) is one powerful factor in the convergence, and we have to explore the reasons for liberalization to explain the changes in male and female sexuality.

The liberalization of sexuality can be observed in many, perhaps all, affluent late industrial societies. It is *possible* in these societies because the traditional sexual repression is no longer functional, and it may even become *necessary* as the traditional repression becomes more and more dysfunctional.

Sexual liberalization is *possible* because an industrial society needs to follow an ethic of renunciation only during the phase of capital accumulation, during which all produced profits have to be reinvested and the consumption of the produced goods has to be postponed (Israel *et al.*, 1970). But an ethic of renunciation will no longer be functional and will therefore become renounceable in an industrial society with a high standard of living where an increase of output is achieved by better-developed technology, where work becomes much easier physically, and where working hours are reduced. Such a society may lessen the control over sexuality, for it has less interest in control.

Sexual liberalization may even be necessary in late industrial societies as the traditional limits on sexuality become dysfunctional in various ways. Sexuality and the social activities linked up with it become more and more necessary to fill the steadily increasing spare time; sexuality is used to open new markets and thereby becomes useful for increasing consumption and profits. So, for example, the liberalization of adolescent sexuality is accompanied by the development of a special juvenile market with an extremely sexualized advertising. The liberalization of the antihomosexual laws in West Germany opened the market to the homosexual subculture. The reduction of prejudices against homosexuals has probably prepared men for the higher consumption of a more female fashion. A liberalization of the traditional ways of living together sexually becomes necessary as the traditional patriarchal family with its traditional division of labor no longer suits the importance of women in the labor force. Furthermore, societies that are dependent on fast and steady consumption (like late industrial societies) and that therefore teach behavior patterns directed at immediate and frequent satisfaction of real or artificially produced needs cannot prevent a transfer of these behavior patterns to the field of sexuality. Sexual norms

become more and more influenced by consumption values as opposed to production values (Gagnon and Simon, 1973). Thus sexual liberalization does not endanger the social structure of late industrial societies; sexual liberalization is instead an integral part of these societies — it is affirmative and thus really conservative.

The traditional gender roles are generally changing. More women get a higher education, more participate in the labor force, more want to have (and do have) a professional career, more reject the goal of being merely a housewife and mother. Women start to emancipate themselves from economic and socioemotional dependency on husband and family. The erosion of gender roles has just begun and is especially marked in the middle class. The importance of these changes for sex differences has not been investigated empirically until now. However, one can assume that the increase in role flexibility has clearly influenced sexual gender roles.

Social equality and thus sexual equality for women are functions of their participation in public life and public production. This participation is slowly growing and this, too, is surely a powerful factor in the convergence of malefemale sexuality.

Group Discussion

Dr. Rose noted that the Schmidt studies must rely on self-reports by subjects and asked whether the desire of respondents to give appropriate responses might not contaminate the data. Dr. Schmidt replied that it might be better actually to measure physiological responses in some kinds of studies, but that when comparing male with female responses some ambiguity may arise in direct-measurement studies. Those measures which can be used in both males and females do not measure specifically sexual response but only general physiological arousal. Those which measure specific sexual response — for example, penile plethysmography - can be applied only to one sex. Dr. Rose noted that even if used in only one sex direct measurement could confirm or impugn the accuracy of self-reports. Dr. Lewis pointed out that directly measured responses could also be contaminated by a subject's desire to respond appropriately. Dr. Schmidt called attention to the concrete nature of the self-reports in his study - for example, answers to the question "Have you had an orgasm in the last 24 hours?" The responses to such questions may be more reliable than the responses to general questions about sexual arousal.

Dr. Cole noted that the Schmidt findings were consonant with what appeared to be happening among the 6000 men and women exposed to explicit sexual materials during University of Minnesota Medical School programs.

A detailed discussion of methodology followed. It was pointed out, for example, that sexual response can be measured directly—in the male through penile plethysmography and more recently also in the female through vaginal plethysmography. Less intrusive indirect indices of sexual arousal can also be used. Dr. Schmidt concluded the methodological discussion by noting that a highly sophisticated set of research techniques might indeed modify his findings in certain respects—but that this is *not* the most pressing task of sex research in its present state. Vast areas remain wholly unexplored. There is need to fit various portions of the puzzle together. It is such tasks as these rather than the repetition of the same work in more and more sophisticated ways that should be the focus of attention.

Dr. Schmidt's finding that women in his sample were more readily aroused than men by same-sex stimuli was contrasted by one participant with data indicating that homosexual activity is engaged in by more men than women. Dr. Lipman-Blumen pointed out in this connection that the antihomosexual taboo is much more stressed in the upbringing of boys than in the upbringing of girls; hence boys have a greater stake in avoiding same-sex arousal. Dr. Green agreed; a same-sex encounter strikes more at the "core sexual identity" of the male than of the female in our culture. A female can remain quite feminine despite a samesex experience; the experience is therefore less devastating to her. The word "tomboy" has a much less negative connotation than the word "sissy." It was also pointed out, however, that some evidence conflicts with this model - such as the common experience of group masturbation among young boys. Mr. Brecher suggested that this may be related to different ways of defining homosexual activity. Thus in some American subcultures only the male who plays the passive or "insertee" role in male-male contacts is labeled homosexual; the male who plays the active or "inserter" role can and does continue to consider himself heterosexual.

Dr. James questioned the relevance of much of this discussion to the human condition. Suppose that by means of highly sophisticated and unchallengeable methodology it was possible to establish certain specific differences between male and female sexuality. What then? Of what use would the information be? In the vast field of sex research, those projects most merit support which give promise of leading to human betterment.

A generation earlier, it was pointed out, the social utility of these studies would be abundantly clear; their findings could be used to prevent homosexuality, transsexuality, and a long list of other modes of behavior which people wanted to prevent. This motivation is now beginning to fade; and the exciting news presented in the Schmidt study is that differences between male and female sexuality are simultaneously beginning to fade — at least in sexually experienced West German college students.