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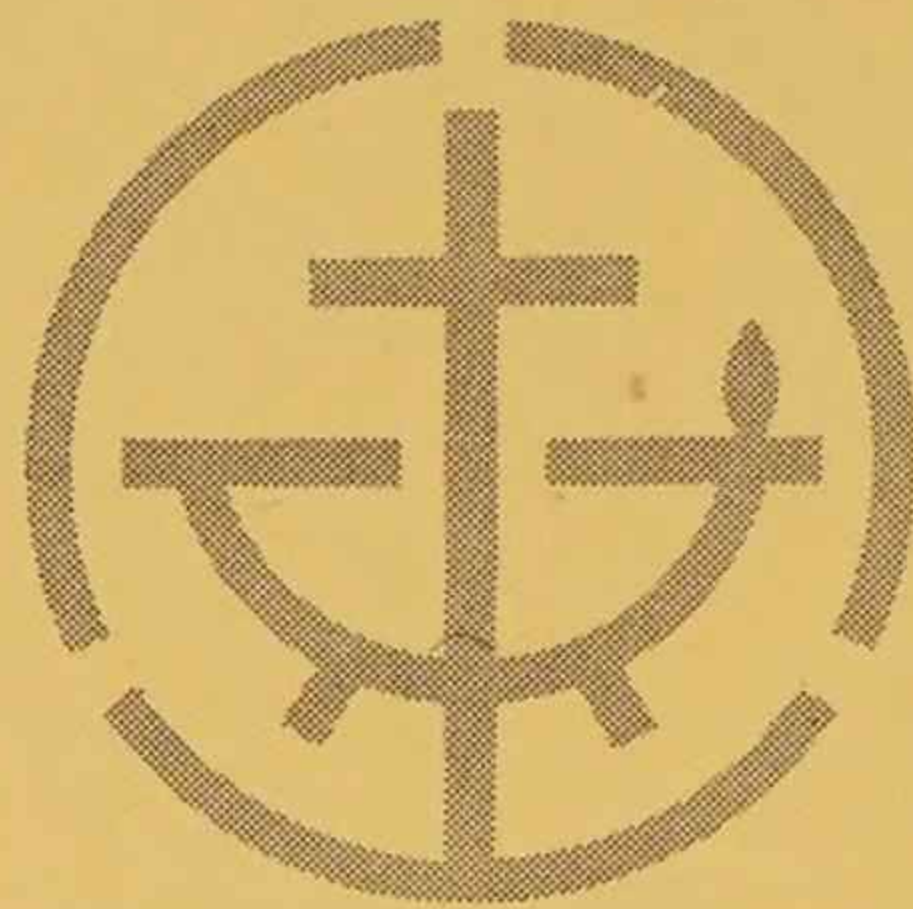


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Technical Report of The Commission on Obscenity and Pornography


Volume I

PRELIMINARY STUDIES



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U.S. Commission on Obscenity and Pornography.

Technical Report of The Commission on Obscenity and Pornography, v. 1

Volume I

PRELIMINARY STUDIES

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Foreword

The members of the Commission on Obscenity and Pornography take special satisfaction in making available these Technical Reports of research undertaken at the Commission's request and under the direction of its staff.

These reports are an important part of the Commission's response to the directive from Congress to study and report on (a) constitutional and definitional problems relating to obscenity controls, (b) traffic in and distribution of obscene and pornographic materials, and (c) effects of such materials, particularly on youth, and their relationship to crime and other antisocial conduct.

Most of the Technical Reports are original work because, outside of the legal field, very little research on the questions assigned to the Commission had been undertaken by anyone prior to the funding of the Commission in the summer of 1968. At appropriate points in these volumes, reference is made to reports of earlier research, as well as to research projects undertaken independently of the Commission during the two years of its effective life. Primarily, however, the Commission found it necessary to rely on the original research reported here.

Although attention will initially focus on the findings and recommendations of the Commission and its four panels, the research reflected in these Technical Reports will have greater long-range importance. The findings by the Commission and its panels are necessarily limited and hurried distillations, and its recommendations are inevitably tempered by the give and take of seeking to reach a group judgment on a highly controversial subject. The research reported here, however, was subject to no such limitations and is being made available primarily for two purposes:

(1) We expect and invite critical examination and appraisal of these reports, for we have only begun the task of interpreting the wealth of information they contain.

(2) We hope that the Commission-sponsored research will stimulate and point the way to further scientific inquiry in this difficult and baffling field. There are still many unanswered questions, and these will require further research with more refined techniques and instruments.

For the Commission, I wish to express deep appreciation to all the individuals and teams whose research is reported here. We are most grateful both for their willingness to pioneer in this unexplored and controversial field and for their shouldering of the burden on such short notice and with such restrictive time schedules.

I also wish to express for the Commission our admiration and thanks to Dr. W. Cody Wilson, our executive director, and his excellent staff. Only through their valiant and effective efforts in planning and implementing this vast array of highly diverse research projects, all focusing on specific tasks assigned to the Commission, was it possible for us to bring our work to a timely completion.

WILLIAM B. LOCKHART
Chairman

General Preface

Many of the papers in these volumes share two characteristics: a focus on empirical description and a lack of refinement in presentation. Each of these characteristics is a product of both circumstance and deliberate policy.

The emphasis on empirical description reflects in part the nature of existing knowledge at the beginning of the Commission's work. Few empirical observations had been reported in the literature, and these were not sufficient to provide even a tentative description of the phenomena of concern to the Commission, nor to form the basis for research at a higher level of conceptualization.

The emphasis on empirical description also reflects the nature of the task assigned to the Commission. The policy questions posed by the Congress required primarily empirical description for guidance.

The overall research strategy and the specific research projects were guided, however, by ideas and concepts from more theoretically developed areas of the behavioral sciences such as socialization, personality, and social structure. Hopefully, the data compiled for purposes of empirical description of the phenomena of obscenity and pornography will be relevant to theoretical issues in these other areas.

Some of the empirical descriptions may appear to many social scientists as demonstrations of the obvious. This is often the case *after* an empirical description has been provided. Yet, it is never certain that "obvious" concepts and relations are valid until they have been tested empirically. As it turned out, there were a few surprises to a few people.

The policy implications of the findings of this research program may very well stir controversy and debate. Because of their crucial importance for policy discussion and decision, the Commission has presented the basic empirical observations with a minimum of complex statistical manipulation and conceptual analysis. The lack of refinement in presentation of several of the research reports is due in part to the Commission's desire to keep very close to the raw data.

Most of the researchers had less than nine months in which to establish a research team, arrange a research setting, develop measuring instruments, secure subjects, collect the data, reduce the data, and write a report. In several instances we are presenting, literally, the first draft of a report.

The Commission staff has refrained from all but very minor editing of these reports. The observations and interpretations are entirely the authors'. To insure that ideological standards were not imposed on the results of the reports, the Commission and its staff have also foregone the prerogative of imposing generally accepted standards of scientific reporting. To the same end we have also published all of the research that has been undertaken for us.

Nevertheless, most of the reports in these volumes quite satisfactorily reflect current standards, not only for conducting research but also for reporting on its results.

We trust that many of the authors will soon present to the behavioral science community reports based on these data but directed to more theoretical and conceptual issues and reflecting a higher degree of refinement of both data and presentation than has been possible here.

This series of volumes of Technical Reports is a joint effort of the Congress, the Commission, the Commission staff, the research teams headed by the authors of the several papers, and the many people who participated in the studies: Congress posed the general problems, authorized the Commission to contract with competent agencies to conduct research, and provided the necessary funds. The Commission specified the kinds of information that it required and worked closely with the staff in designing an appropriate research program. The Commission staff specified the details of the research program and, under the direction and guidance of the Commission, implemented it—partly by undertaking research directly, but more often by contracting with outside agencies to conduct research. The authors of the papers accepted responsibility for developing concrete research arrangements, collecting and analyzing data, and writing reports, all under tremendous time pressure. Several thousand people cooperated in collecting the data and devoted uncounted hours of time providing the information in these volumes.

On behalf of the Commission, its staff, the authors of the papers, and the people who read these volumes and make use of the contents, I express deep appreciation to the Members of Congress who initiated and made possible the gathering of this information, and to the people who participated in the various studies and contributed the basic information.

W. CODY WILSON
*Executive Director
and Director of Research*

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Introduction to Volume I

This volume presents papers that describe the state of knowledge when the Commission began its work, and theoretical analyses and initial empirical observations that were made early in the Commission's existence preparatory to developing its more comprehensive research program.

Cairns, along with two colleagues, had published in 1962 a review of the empirical evidence relevant to the issue of sex censorship. He was invited to bring this review up to date and present his findings to the Commission at its first meeting in July 1968. His paper is based on that presentation and represents the Commission's starting point.

The papers by Mann and Zuckerman explore more intensively the technical problems of experimental research and physiological measurement. They served to guide both the Commission, in developing and implementing its research program, and the several contractors, in developing their specific research strategies.

Specific concern about the antisocial behavior of minors was manifest in the assignment that Congress gave to the Commission and in the many hearings held by congressional committees over the past decade. Kupperstein's paper was an outgrowth of the Commission staff's effort to document the origin of this concern in professional and scientific sources.

The papers by Holland and Brock explore the applicability of theoretical systems developed in other contexts to understanding issues related to pornography, and the results are quite promising. The fact that the Commission opted for emphasis on empirical descriptions does not reflect its evaluation of the results of these initial exploratory attempts, but rather a judgment that at the present stage of discussion of policy issues empirical observations would be more compelling than theoretical analyses.

In the paper by Gilligan, Kohlberg, Lerner, and Belenky, the concepts and methods used by Kohlberg to describe the general development of moral reasoning are applied to the specific case of moral reasoning by adolescents about sexual issues. The results were promising but unfortunately were not available soon enough to be incorporated into later studies undertaken for the Commission.

Thornberry and Silverman present an attempt to document widely cited qualitative clinical reports with empirical evidence. The results demonstrated the

feasibility problems involved in certain research strategies and thus helped to focus later research efforts.

White and Barnett and Roach and Kreisberg provided initial empirical observations regarding individual experience with erotic materials. Their results demonstrated the feasibility of collecting apparently meaningful data on certain issues and provided initial estimates of parameters of experience that guided the design of later more elaborate and more controlled studies.

Schiller's paper presents observations which had previously been made informally in a unique educational context closely related to the Commission's interests.

W. CODY WILSON

*Executive Director and Director of Research
Commission on Obscenity and Pornography*

Literature Reviews

Psychological Assumptions in Sex Censorship

An Evaluative Review of Recent Research (1961-1968)

ROBERT B. CAIRNS

J.C.N. PAUL

J. WISHNER

Indiana University

CAIRNS, PAUL, AND WISHNER (1962) reviewed the empirical literature relevant to the psychological assumptions underlying sex censorship laws. They found only a meager amount of relevant research, much of which was open to serious reservation on methodological grounds.

The results of this literature survey can be summarized rather briefly. The evidence indicated:

1. Pictures and words that depict various aspects of human sexuality serve to produce sexual arousal in a large proportion of the adult population.
2. The kinds of materials that elicit arousal differ according to the sex of the viewer. Females tend to be aroused by less direct, more subtle depictions of sexuality: such material would include romantic stories and expressions of affection that could hardly be labeled obscene. Males, on the other hand, are much less likely to be sexually aroused by such "romantic" stimuli, but are highly responsive to stimuli which depict female nudity or sexual relations. In the case of males, the data suggest that the more "obscene" the heterosexual material, the more its arousal potential.
3. There are sharp individual differences in personal preferences for and responses to sexual stimuli. Homosexuals, for instance, show the greatest sexual arousal during the presentation of stimuli concerned with the performance of homosexual acts, while heterosexually oriented males respond most strongly to material depicting heterosexual behavior. Some important interactions between personality type and the arousal potential of sex-related materials have been reported. For some persons, exposure to sexual stimuli apparently can be a

distinctly aversive experience and will lead to cognitive disruption and heightened anxiety.

4. The context in which the viewing occurs is a significant determinant of the extent to which the subject will be aroused by the materials. The same stimulus will have a different impact upon the individual according to the setting in which it appears. The presentation of nudes under conditions of sexual inhibition will elicit anxiety instead of arousal; under noninhibiting conditions, the same stimulus elicits a state of heightened sexual arousal. Alcohol can reduce inhibitions and possibly augment the expression of arousal.

The authors had hoped to find studies which were relevant to the long-term behavioral effects of exposure to "obscene" materials, and to learn whether these were correlated with changes in attitudes and behavioral standards. One of the more frequently cited justifications for anti-obscenity laws has been the expectation that the free distribution of such materials would lead to irreversible changes in the moral code and behavioral standards of the society. Unfortunately, there were no empirical studies of even the *immediate* or short-term behavioral effects of obscene or pornographic stimuli on the individual, much less the effects upon the standards of society. Investigations of long-term effects were nonexistent. In the conclusion of that paper (Cairns et al., 1962) it was necessary to conclude, somewhat apologetically, that:

We need to know how long the conditions of arousal last and how this stimulation might affect overt behavior, attitudes governing behavior, and mental health. We cannot offer empirical evidence to answer such questions because no such evidence exists. The data simply stop short at the critical point.

THE PRESENT PAPER reviews the literature that has been published on this topic during the 7 years since the previous review. The same procedure was followed as in the preparation of the original article: A general listing was made of all potentially relevant papers cited in *Psychological Abstracts* (1961-1968) and in current issues of journals likely to report relevant work. The listing includes approximately 80 papers that have appeared since mid-1961. The research reported in these papers summarizes what current psychology has to offer with respect to the questions of how psychosexual stimuli influence behavior and attitudes.

SELF-REPORTS OF SEXUAL AROUSAL

The bulk of the studies published in this period have continued to use the self-report technique to determine the extent of arousal elicited by a particular stimulus. Though the basic approach has not changed, the control procedures adopted and the statistical analyses of the data have shown some significant gains. From the standpoint of methodological sophistication and analytic clarity, the work of Levitt, Brady, and their colleagues is outstanding (Brady & Levitt, 1965a, 1965b; Levitt & Brady, 1965; Levitt & Hensely, 1967). The problems with which these investigators were concerned included (a) identification of the classes of pornographic visual material which sexually aroused young adult males, and (b)

assessment of the role of various personality factors in determining responsiveness to psychosexual stimuli. In one of the studies (Levitt & Brady, 1965), various sets of stimuli, depicting scenes ranging from nudity to homosexual and heterosexual intercourse and sadomasochism, were presented to subjects under standardized, counterbalanced conditions. The subjects, male graduate students, were asked to report the extent to which each picture was "sexually stimulating." The group judged the explicit depictions of heterosexual activity to be the most sexually arousing. One of the more interesting findings was that the photographs of nude females, or even partially clad ones, were rated to be as sexually arousing as frankly pornographic scenes (a male simultaneously stimulating two females, for example).

Of course, not all subjects were equally responsive to the sexual stimuli. For instance, subjects who reported prior homosexual experiences indicated that they were more sexually stimulated by photos of partially clad men than were subjects who reported no homosexual experiences. Interestingly, reported homosexuality was not correlated with the subjects' responses to blatantly homosexual stimuli (Brady & Levitt, 1965). Also somewhat surprising was the finding that a subject's responsivity (reported sexual stimulation) was poorly correlated with measures of personality dispositions. The one stable relationship that was obtained was a negative correlation between self-reports of sexual arousal and the trait labeled endurance, as measured by Edward's Personal Preference Inventory (Edward's verbal definition of "endurance" emphasizes the tendency to keep at a job until it is finished, to stick to a problem even though it may seem as if no progress is being made). Levitt and Brady (1965) suggested that the correlation can be interpreted to mean that the hard-working, persistent individual is less distracted by fantasy stimulation (or at least is less willing to report that he is). The remaining correlations between sexual arousal and personality factors as measured by a standard inventory were low or nonsignificant. Whether similar relationships would obtain for a group of subjects less select than this one (adult male graduate students), cannot, of course, be answered by this research.

ANOTHER RECENT INVESTIGATION has used frankly pornographic materials as stimuli, and self-reports of sexual arousal as the dependent variable (Jakobovitz, 1965). Jakobovitz obtained the evaluative reactions of college-age men and women to erotic literature. Following the distinction suggested by Kronhausen and Kronhausen (1959), the investigator proposed that there were at least two classes of literature designated as obscene: "erotic realism" and "hard-core obscenity." The two classes are distinguished by three main criteria: "context (in works of erotic realism or *ER*, the proportion of nonsexual detail is larger than in hard-core obscenity or *O*); exaggeration (*ER* strives for realism whereas *O* contains unrealistic and so-called wish-fulfilling distortions); and third, the presence of anti-erotic elements in *ER* which are absent or very rare in *O*" (Jakobovitz, 1965, p. 985).

Using the above criteria, 20 short stories were written in such a way that half had the characteristics of erotic realism and the other half, the characteristics of hard-core obscenity. The stories averaged approximately 700 words in length. A sample of 20 adult judges, 10 male and 10 female, read each story and indicated whether they felt it to be an instance of erotic realism or obscenity. Agreement between judges was very high.

The primary study in the series was an attempt to determine whether males and females differed in their response to the two types of literature. The research design also permitted an evaluation of the cumulative effects of exposure to the sexual stimuli. Kronhausen and Kronhausen (1959) argued that the sexual arousal properties of obscenity diminish after repeated exposure to the materials. In a balanced factorial design, 40 college-age adults (20 male and 20 female) indicated to what extent a set of 10 erotic realism or hard-core obscenity stories were "sexually stimulating." The ratings are shown in Table 1. Statistical analyses of the data indicate that:

Table 1

MEAN RATINGS ON DEGREE OF SEXUAL STIMULATION EVOKED BY THE STORIES*

Type	Sex	Successive Stories										Mean
ER	M	2.0	1.8	2.2	2.2	2.0	3.1	3.9	3.4	4.1	4.2	2.9
	F	1.5	1.8	1.6	2.2	2.8	2.9	2.7	3.6	4.1	3.9	2.7
O	M	1.8	1.8	1.7	2.2	2.6	2.3	2.9	3.4	3.0	3.7	2.5
	F	3.0	3.6	3.7	3.7	3.0	4.6	4.5	4.9	4.5	5.3	4.1

* "1" represents "I find it only mildly sexually stimulating," and "7" represents "I find it very sexually stimulating" (from Jakobovitz, 1965, p. 991).

1. The men and women in this sample did not differ in their responses to the "erotic realism" stories.

2. The women reported that "hard-core obscenity" was more sexually arousing than did the men.

3. Both men and women report a cumulative effect in the reading of erotic materials. With only 10 stories, the materials apparently became increasingly more stimulating (the term "warm-up effect" seems descriptive); this is quite the opposite of a satiation phenomenon.

The last two findings contradict two of the more widely held beliefs regarding the effects of pornography. Indeed, the rest of the literature is near unanimous in the conclusion that women are less stimulated by direct accounts of sexuality than are males. Since the subjects were selected by a rather unique procedure ("Typically, a volunteer from among the author's acquaintances would receive a few booklets . . . and would return them a few days later filled out by 'friends.'"), it is unclear how these results might be generalized. Subject sampling remains a critical problem in the analysis of sexual responsiveness (e.g., Kinsey, Pomeroy, & Martin, 1948).

TWO LARGE-SCALE INTERVIEW-SURVEY STUDIES have appeared since 1962. Both provide information on one of the primary questions that has been put to the law, "Does pornography cause criminal behavior?" In the volume, *Sex-offenders, an analysis of types* (Gebhard, Gagnon, Pomeroy, & Christenson, 1965), we have the most extensive analysis that has yet appeared on the relationships between pornography and criminality. The basic procedure involved comparisons between the interview responses of 1,356 white males convicted of sex offenses, and those of two control groups. One of the control groups consisted of 488 white males selected through the procedures described in the

previous volumes of the Institute for Sex Research (e.g., Kinsey et al., 1948). The other control group consisted of 888 white men who were imprisoned but had never been convicted of a sex offence. Among other questions, the subjects were asked, "Does it arouse you sexually to see photographs or drawings of people engaged in sexual activity?" They were also questioned about whether they had ever personally owned pornography.

One of the major findings of this work was that the three groups of subjects did not differ substantially among themselves in terms of reported arousal from depictions of sexual activity. In the case of the normal control group, 32.8% reported little or no arousal, while 30.7% indicated that they were strongly aroused by depictions of sexuality. The corresponding percentages for the prison group (never convicted of sex crimes) were 37.7% no arousal and 36.3% strong arousal. Surprisingly, the sex-offender groups were relatively unresponsive to pornography with 42.8% reporting little or no arousal, and only 27.7% admitting that they were strongly aroused by pictures of overt sexual activity.

Furthermore, the various classification groups did not differ markedly in terms of their possession of pornographic materials. Gebhard et al. (1965) indicate that,

About one third of the control group and one half of the prison group reported having personally owned pornography Between these two proportions lie those of the majority of the sex offenders. Summing up the evidence, it would appear that the possession of pornography does not differentiate sex offenders from nonsex offenders (p. 678).

The data are impressive in their consistency, and in their failure to demonstrate that sex offenders as a group are overly responsive to sexual stimuli.

A RECENT SERIES OF STUDIES by Thorne and his colleagues (Allen & Haupt, 1966; Thorne & Haupt, 1966) provide direct support for the findings of the Institute for Sex Research investigators. Thorne and Haupt (1966) compared the responses of 259 men convicted of sex crimes against females with those of 301 men convicted of property crimes. Each group was administered Thorne's *Sex Inventory*, a questionnaire consisting of such items as, "I like to look at pictures of nudes," "Buttocks excite me," and "The thought of a sex orgy is disgusting to me." The reports of this research are marred by incompleteness, both in the reporting of the procedures followed and in the presentation of appropriate descriptive and inferential statistics. Nonetheless, on the basis of the data gathered, the investigators conclude that "In general, the property crime felons were very similar to the sex offenders and homicidal offenders in being conservative in sex attitudes but not as extreme (in conservatism) as the last two groups" (p. 397). That is, the sex offenders tended to report less stimulation from pornography and to hold more rigid attitudes concerning sex than did normal control subjects.

ATTEMPTS TO CORRELATE PORNOGRAPHY with criminal sex behavior have thus far yielded negative results. It would be premature, however, to conclude from these studies that obscene or pornographic stimuli play no role whatsoever in the elicitation and maintenance of antisocial sexual or aggressive acts. One of the obvious problems is that these data are based upon the self-disclosures of individuals after they have been incarcerated for criminal sexual

behavior. Whether the self-reports faithfully represent the individual's response to pornographic stimuli outside the institutional setting remains to be determined. Even if the subjects were highly motivated to represent accurately their subjective responses, it seems doubtful that self-reports in such an area of personal conflict would be free of distortions. Indeed, perhaps one of the reasons that a proportionately high number of sex offenders fail to report the stimulating effect of pornographic materials is that these materials exacerbate many disturbing conflicts. Such conflicts could be avoided or minimized either by avoiding the material altogether or by suppressing one's response to stimuli of sexual relevance, (see, for example, Minard, 1965, and Loïselle, 1966, on perceptual defense). Another complication in these studies is that they were relatively insensitive to the possible eliciting or "triggering" functions that the pornographic materials might have served for the sex offenders. The general body of information that is available on antisocial or criminal behavior indicates that the phenomenon has multiple determinants. At this juncture, the data do not permit a complete rejection of the possibility that pornography may facilitate the expression of socially disapproved sexual behaviors.

EXPERIMENTALLY INDUCED CHANGES IN VIEWING BEHAVIOR

One of the primary limitations of the works cited earlier was the paucity of studies dealing with the effects of erotic stimuli upon sex-related behavior (as opposed to verbal reports of "stimulation" or "arousal"). In the past 6 years, a few studies on the subject of overt behavior have appeared. Two of them (Walters, Bowen, & Parke, 1964; Martin, 1964) have used promising experimental techniques. Walters and his collaborators (1964) found that sexually significant responses can be disinhibited by observing the behavior of another individual. In this study, undergraduate men were shown a series of pictures of nude or almost nude men and women. The nudes were in poses that the investigators thought were "evidently designed to elicit erotic responses." In all experimental conditions, the subjects were told that a moving spot of light on the pictures indicated where the previous subject had focused. The experimenter, of course, controlled the light. For approximately half of the subjects, the spot of light roved over the bodies of the nudes, and most of the time appeared in the vicinity of the breast and genital areas. For the rest of the subjects, the light appeared in the background of the picture, giving the subject the impression that the preceding observer had avoided looking at the nudes. Following exposure to one of the two conditions, each subject was permitted to view a set of pictures similar to those used in the first part of the experiment. The subject's eye movements were traced by means of an eye-marker camera.

The results indicate that subjects who followed an "uninhibited" observer spent a significantly greater amount of time looking at the nudes than did those who had followed an "inhibited" observer. Apparently a primary outcome of following an "uninhibited" viewer was to relax the subject's own inhibitions about viewing the erotic pictures. Furthermore, in an argument that is quite important for the issues confronting this Commission, Walters et al. concluded that "observers who are emotionally aroused and uncertain how to respond in a social situation are readily influenced by the behavior of a model." The basis for

this conclusion is that subjects tended to imitate the behavior of the preceding subject *only* in the case of emotionally arousing stimuli (i.e., pictures of nudes). The subjects failed to imitate the behavior of the preceding subject when the pictures were nonthreatening or unrelated to sex. Should this conclusion be correct, it would follow that those who are likely to be influenced by the sexual behavior of models are the least stable in their own sexual patterns. Children are a primary example.

MARTIN (1964) reported two experiments on the expression and inhibition of sex motive in college men. He used as his primary dependent variable the time spent by subjects in sorting pictures of nude females typical of those found in *Playboy*. Subjects in one group (inhibitory) were given instructions designed to inhibit their viewing, and subjects in the "permissive" groups were treated in an informal, friendly fashion. Those given the "permissive" instructions performed as expected; they spent significantly more time looking at nudes than subjects given the inhibitory instructions.

A second study assessed the effects of pre-arousal. Prior to performing on the criterion task (sorting pictures of attractive nudes, with no time limit), the subjects were shown pictures which were either neutral (such as classical paintings) or erotic. Half of the subjects were given permissive instructions prior to the pre-arousal series, and the rest were given inhibitory instructions. The results indicate that the effects of pre-arousal are conditional. In a permissive situation, the expression of sexual motive increased with the level of pre-arousal (erotic pictures vs. classical paintings). However, if the instructions were inhibitory, the level of pre-arousal had no effect upon the subject's "sex motive" expression. These "cumulative effects" are consistent with those of Jakobovitz (1965), who presented erotic materials in a permissive context. Such studies underscore the importance of situational factors in determining the influence of a particular stimulus upon behavior. Erotic materials do not occur in a contextual vacuum. The settings and circumstances in which they are experienced appear to play a crucial role in the extent to which the viewer or reader is aroused.

CONDITIONING OF SEXUAL RESPONSIVENESS

Within the past 5 years, several important reports on the conditioning of sexual responsiveness in humans have appeared. Most of the work has been carried out with clinical groups, and hence has been directed at the extinction of anomalous sexual behavior patterns. For instance, Bancroft and his colleagues (Bancroft, Jones, & Pullan, 1966) report a case in which they successfully inhibited aberrant sexual responses in a pedophile by aversive conditioning (i.e., presenting electric shock whenever erections occurred in response to inappropriate stimuli). Solyom and Miller (1965) report similar results in the therapy of several cases of male homosexuality. Sexual arousal by masculine stimuli was inhibited by aversive conditioning and, during the course of treatment, the patients showed an enhanced response to adult females. Though the work is limited, and still just a step removed from the level of clinical demonstrations, such research strongly indicates that responsiveness to "inappropriate" sexual objects can be extinguished.

CONDITIONING PROCEDURES are not limited to inhibiting sexual responsiveness. A recent report by Rachman (1966) indicates that sexual arousal can be conditioned to previously neutral objects. In an analog to the classical (Pavlovian) conditioning of appetitive responses, chromatic pictures of various "neutral" objects, such as boots, were paired with photographs of attractive nude females. After a short training period, the three adult male subjects in Rachman's study demonstrated a strong sexual response to the neutral objects even when they were presented alone. However, because Rachman did not include the necessary controls to demonstrate that the phenomenon was indeed associative (as opposed to one of general arousal), the results cannot be unambiguously interpreted as an instance of conditioning. Nonetheless, the work represents a very important area of research which deserves to be vigorously pursued. It should be noted that parallel studies on the conditioning of sexual arousal in infrahumans strongly support the assumption that sexual arousal can be conditioned to previously neutral cues (e.g., Hafez, Cairns, Hullet, & Scott, 1968).

SEXUAL CONFLICTS AND SEXUAL FANTASIES

Recent studies have used thematic measures to identify some of the consequences of sexual conflict. In a doctoral dissertation completed at the University of Massachusetts, Leiman (1961) found that subjects could be reliably categorized in terms of sexual guilt by their responses to a self-report inventory. Those subjects who indicated that they experienced considerable sexual guilt failed to produce sexual fantasies even when they were exposed to materials that had high sexual relevance. That is, subjects who experienced sexual conflict apparently distorted materials which were blatantly sexual (cf. the results obtained with sex offenders, Gebhard et al., 1965). These findings are also consistent with an earlier report which indicated that persons who experienced sexual conflict showed considerable disorganization in problem-solving following the presentation of nude pictures (Miller & Swanson, 1960).

IN A RELATED INVESTIGATION, Byrne and Sheffield (1965) found that college students who differed in their status on the personality dimension "repression-sensitization" also differed in their responses to erotic materials. Those subjects who characteristically "repress" threats reported significantly less anxiety after reading pornographic passages than did subjects who showed a "sensitization" to threat. It is interesting to note that both groups of subjects reported subjective feelings of anxiety after reading the erotic passages. Differences between the two groups were obtained only because the "sensitizers" showed the greatest increase in anxiety. It seems that exposure to hard-core obscenity is a stressful experience, even for "sophisticated" normal young adults.

THE INFLUENCE OF CONTEXTUAL STIMULI and intrapersonal conflict in the control of sexual fantasy was also discussed by Cairns et al. (1962) and by Epstein (1962).

ADVANCES IN THE PHYSIOLOGICAL ASSESSMENT OF SEXUAL AROUSAL

In concluding this selective overview of the recent research, some significant advances in the psychophysiological assessment of sexual arousal should be noted.

Much of the work in this area has been instigated by the simple fact that sex is a fairly reliable stimulus to use when studying physiological arousal patterns. Most physiological psychologists who have used sexual stimuli have not been concerned with the manipulation of the stimulus class, or even with understanding the situational and contextual factors which control the effectiveness of these events. Rather, they have usually been interested in validating a psychophysiological procedure and determining patterns of central nervous system response. Some of the more noteworthy procedures that have been developed include:

1. *Pupillary response*. This procedure capitalizes upon the fact that pupil dilation occurs during periods of heightened autonomic arousal. Hess and Polt (1960) concluded that the pupil changes in size in response to "emotionally-toned or interesting visual stimuli." Several studies support this contention. It has been shown, for instance, that the pupils of male subjects dilate in response to pictures of nude women, but show little change in response to pictures of nude men. Similarly, female subjects respond with dilation to pictures of males (Hess & Polt, 1960; Nunnally, Knott, Duchnowski, & Parker, 1967; Bernick, Borowitz, & Kling, 1968). Hess (1965) has also asserted that unpleasant or negatively toned stimuli lead to pupil constriction. The evidence with respect to this claim is less than conclusive (e.g., Peavler & McLaughlin, 1967).

2. *Penile plethysmography*. This technique involves the monitoring of penile volume through a pressure transducer. The technique was developed in 1957 by a Czechoslovakian physiologist, Karl Freund, and has since been used in various laboratories. In a recent application of the method, Freund (1967) diagnosed homosexuals and pedophiliacs by penis volumetry. Marked differences were obtained between the normal (heterosexual) controls and the several diagnostic groups when the subjects viewed pictures of males, females, and children. McConaghy (1967) has obtained similar results in a partial replication of Freund's study.

3. *Hormonal secretions*. The technique used by Clark and Triechler (1950) to assess sexual arousal by analysis for acid phosphatase in the urine has recently been extended (Gustafson, Winokur, & Reichlin, 1963).

4. *Galvanic skin response*. GSR responsivity has also been used as a measure of sexual arousal. Ordinarily, the GSR technique is used in conjunction with other indices of sexual arousal (see, for example, Loisselle & Mollenauer, 1965, and Martin, 1964).

Because these psychophysiological procedures do not necessarily involve verbal reports from subjects, they have been widely adopted in laboratory investigations of sexual arousal. Considered separately, however, each of the techniques has its share of difficulties. One general problem is the nonspecificity of measures of central nervous system activation: they record not only sexual arousal, but other forms of arousal such as anxiety, embarrassment, guilt, or fear (Hain & Linton, in press). Even the penile plethysmograph is subject to distortions, including effects of movement, voluntary control, and adaptation.

The problems of construct validation are not uncommon ones in psychology and are certainly not unique to the analysis of sexual responsiveness. The present data suggest that no single measure should be considered *the* index of sexual

arousal. If a subject reports that he is sexually aroused, but fails to show any of the physiological indices of arousal, one would scarcely be justified in concluding that he is in a state of heightened sexual responsiveness. What seems called for at this juncture is the use, when feasible, of multiple criteria in determining sexual arousal. To rely solely upon verbal reports or a single psychophysiological or endocrinological measure is likely to lead to deductions that are, at best, incomplete. It is discouraging to observe that systematic comparisons of these various measures have yet to be seriously pursued (but see Bernick et al., 1968, and Hain & Linton, in press).

RELATED AREAS OF RESEARCH

Studies of aggression development and instigation

In the past few years, several investigations of the exogenous control of aggression have been reported. In 1962, Cairns and his colleagues noted a prepublication report of Albert Bandura's studies of aggressive imitation. The work has since been extended in a series of ingenious experiments by Bandura and his colleagues at Stanford which underscore the role of observation learning in the acquisition of social behavior patterns (Bandura & Walters, 1963, summarize several of the studies). In addition, many investigations have attempted to analyze the process whereby social cues acquire the capacity to elicit hostility and aggression (see Berkowitz, 1964). The results of these two lines of research have been summarized adequately elsewhere and need not be covered here (see Brown, 1965; Hartley, 1964; and Zajonc, 1966 for a critical discussion of the issues). It should be observed, however, that the research has provided compelling evidence on the role of imitation in the learning and performance of aggressive behaviors. Children apparently learn a great deal by imitation, including techniques of aggression toward other persons and objects.

However, it would be hazardous to extrapolate uncritically the findings of studies on aggression to the problems of sexual instigation and control. Because of the physiological augmentation of sexual arousal and its rhythmic expression, it could be the case that sexual responsiveness is more easily instigated, maintained, and conditioned than are aggressive behaviors. In any event, while studies of aggression may provide hypotheses to be evaluated and suggest guidelines for research in the area of sexual arousal, it seems critical to recognize that significant differences exist between the two response systems in terms of behavioral expression and physiology.

The ontogeny of sexual behaviors

The other area of related psychological research requiring comment concerns the development of sexual behaviors in children and animals. An excellent survey of the current state of research appeared in 1965, in the volume *Sex and Behavior*, edited by Frank Beach of the University of California. It is ironic that our best information on the development of sexual behavior comes from studies of the response system in infrahumans. Studies of the development of sexual behavior and orientation in humans have been limited, for the most part, to the analysis of sexual identification (adoption of masculine or feminine roles). As the studies of Hampson and his coworkers (1965) indicate, the psychosexual

orientation of children with endocrine and/or hermaphrodite disorders is controlled by the conditions under which the children are reared. The pioneering work of Sears and his colleagues (Sears, Maccoby, & Levin, 1957; Sears, Rau, & Alpert, 1965) provides additional support for the assumption that the child's environmental experiences are a primary determinant of his orientation towards his sexual role.

Much less is known about other aspects of the development of sexuality in the child. There have been, for instance, no investigations of the longitudinal evolution of sexual behaviors in children. From studies of infrahumans, it is obvious that sexual development is not an abrupt event that occurs at puberty in the absence of precursors. On the contrary, analyses of the play behavior of young, sexually immature animals indicate that their activities involve elements of the behavior sequences that are later involved in adult reproductive behaviors. Harlow and Harlow (1965), for instance, plotted certain of these behavioral precursors for monkeys. Further experimental analyses of infrahumans indicates that the sexual arousal patterns of young sheep and rodents can be markedly influenced by the conditions of rearing and early exposure (Cairns, 1966). The development of sexual behaviors in the child has yet to be subjected to a systematic longitudinal analysis.

There is one further comment to be made on the plasticity of sexual behaviors and patterns of arousal. Studies of various infrahuman species (dogs, monkeys, sheep, rodents) indicate that mammals are *not* innately responsive to the sexual cues provided by other members of their species. For instance, if an adult monkey has been reared in isolation since shortly after birth, his response to a receptive female at maturity is highly disorganized. And, as noted above, "neutral" cues can acquire the capacity to elicit sexual arousal for normal animals if they have been repeatedly paired with primary sexual experiences. Learning apparently plays an exceedingly important role in (a) the kinds of behaviors exhibited in states of sexual arousal, and (b) the sorts of cues that have the capacity to elicit sex arousal in infrahumans.

SOME RESIDUAL QUESTIONS FOR RESEARCH

It seems obvious that there is still little information from studies of humans on the questions of primary import to the law. Part of the problem lies in the nature of the questions that have been asked. Analyses of complex social behavior patterns in humans (or infrahumans) indicate that a response is rarely elicited by a single event. On the contrary, social behaviors and attitudes are typically multi-determined, and reflect an interaction between organismic, personality, societal, cultural, and early experience factors. Consider the question: "Does pornography cause delinquency?" Contemporary research has clearly demonstrated that the "delinquent" orientation is an outcome of a complex interaction of biophysical predispositions and experiential factors. Exogenous influences on behavior can be mediated through the child's family relationships, through his association with his peers, through his subculture and its unique standards for behavior, and so on. What is the role of pornography in this complex equation? By itself, the exposure to erotica seems to play, at most, a minor role in delinquency and criminal behavior (e.g., Gebhard et al., 1965; Glueck & Glueck, 1950). But whether the availability of pornographic materials serves to augment

pre-existing tendencies, provides directions for antisocial behaviors, or even acts to sublimate the direct expression of aberrant sexual behaviors, has yet to be determined.

Can more specific questions on the effects of viewing or reading pornographic materials be answered? At this point, it appears that the techniques *are* available to permit a programmatic attack on some of the critical issues. For purposes of organization, these "critical" questions will be classified into two general categories: (a) those referring to the conditions under which stimuli acquire the capacity to elicit and maintain sexual arousal, and (b) those referring to the effects of pornography upon the behavior and attitudes of the viewer.

On the elicitation of sexual arousal

First, let us consider the research questions implicit in the general query, "What makes an event pornographic?" It has been commonly assumed—or feared—that children are more susceptible to the conditioning of responses to sexual stimuli than are adults. Is this true? Is there a correlation between age and the classical conditioning of sexual arousal to various "aberrant" stimuli? A related problem, "Are females less susceptible to the classical conditioning of sexual responses than men?" was proposed by Kinsey, et al., in 1953. We do have preliminary evidence that sexual responses can be conditioned to "neutral" stimuli in adult males (Rachman, 1966), and we have conclusive evidence that animals must become conditioned to the "secondary" cues of sexuality in species of the opposite sex. What, then, is the developmental process by which sex-related events acquire cue properties for humans? Such problems can be directly investigated in laboratory or in seminaturalistic longitudinal analyses.

Another set of problems that are of immediate relevance to the law involve the maintenance and extinction of the arousal properties of sexual cues. It has been widely assumed that persons will become "adapted" or "habituated" to particular expressions of sexuality and that repeatedly presented stimuli will gradually become less arousing. Thus, more and more extreme expressions of sexuality are required for arousal. If this assertion is true, then what is the time-course of adaptation? And if there is a change in the arousal threshold, will it be only temporary, with a spontaneous recovery to the original level, or will a change because of adaptation be relatively enduring? Such questions are particularly relevant in determining the probable effects of the widespread distribution of obscene materials. Should a permanent change in adaptation level occur, one might expect that the long-term effects upon behavior would be very slight.

However, at least two of the studies that have appeared in the past 6 years (Jakobovitz, 1965; Martin, 1964) indicate that pre-exposure to sexual stimuli has a potentiating effect for later sexual arousal. Instead of resulting in satiation, exposure to sexual stimulation has a cumulative effect and enhances the influence of subsequent erotic material. These two effects (adaptation vs. facilitation) are not necessarily contradictory. Their time-course, and how they interact in the control of arousal, can be directly studied in both the laboratory and seminaturalistic settings. The available data relating to these issues are at this time only fragmentary.

A related matter concerns the extinction of the cue properties of sexual stimuli. Under what conditions, if any, can the arousal potential of a given event

be permanently reversed? Kuo (1967) demonstrated that the cue function of heterosexual stimuli can be manipulated in infrahuman mammals; Solyom and Miller (1965) demonstrated that the cue function of homosexual events can be diminished. The issues of extinction and acquisition can be studied under controlled conditions.

Effects of pornography on attitudes and behavior

The second general question is, simply, "What effects do 'pornographic' materials have upon the behaviors and attitudes of the viewer?" Consider the problem of attitude formation and change. This is doubtless one of the primary concerns of those who press for anti-obscenity laws. It was argued, for instance, in *Roth v. US*, that the free distribution of obscene materials "can hardly help but induce many to believe that their moral code was out of date." This proposition is open to test: The relations between age, strength of the previously established belief system, and the subject's susceptibility to attitude change by exposure to erotica can be observed under controlled conditions. Such studies might employ either the standard attitude questionnaire procedures or, alternatively, attitudinal shifts in artificial microcultures formed in the laboratory (see Zajonc, 1966, or Brown, 1965). Indeed, some of the studies, as a by-product of their experimental procedures, may have influenced the attitudes of the subjects with respect to the behaviors they observed. The attitude shift is not restricted solely to "the behaviors depicted looks like fun" type of assertion. It could also include changes in the subject's attitude about whether it is permissible for him to use pornography as an aphrodisiac. Since the necessary pre- and post-test attitudinal assessments have rarely been included in laboratory investigations of sexual arousal, there is very little information on the attitudinal consequences of participation in such experiments. To obtain answers to questions that are put by the law, such studies should assess both the short- and long-term attitudinal shifts. As the early work of Peterson and Thurstone (1933) suggests, the attitudinal changes need not be in the direction of greater permissiveness.

A related issue concerns behavior changes which are induced by the viewing or reading of obscene materials. To what extent will a modeling effect occur in that the viewer or reader imitates the behaviors that are depicted? Only two studies of the modeling of sexual behaviors of another person have appeared and both have yielded positive results (Kobasigawa, 1966; Walters, Bowen, & Parke, 1964). Children and adults did imitate "sexual" behaviors if they watched another person perform such activities. That is, first-grade boys will play with girls' toys if, and only if, they view another boy perform such "feminine" behaviors. While one has to stretch his imagination to interpret such actions as "sexual," the findings are nonetheless suggestive. We might ask, on a more general level, whether the subjects in the modeling experiments learned a "new" behavior or whether they were simply complying with the instructions communicated to them implicitly through the model's behavior. That is, it is unclear whether the model serves to "teach" a new behavior or to "elicit" an old one. It might be the case that in an otherwise ambiguous situation (apparently an essential ingredient to the "imitation" experiment), the model serves primarily to communicate to the subject what behaviors are acceptable in that setting.

The empirical phenomena of observation learning (or elicitation) cannot be disputed. Nevertheless, it has yet to be shown that the effects produced in the laboratory tell us much about the control of behavior of children in extra-laboratory circumstances (but see Bandura, 1967). A programmatic analysis is called for on the following issues: (a) what is the nature of the "behavior modeling" effects in the learning or eliciting of "sexual behaviors" in children and adolescents?; (b) what is the influence of context in determining whether a given behavior will be imitated?; (c) what are the inhibiting effects of previously established attitudes on imitation?; (d) is there a differential susceptibility to modeling influences as a function of the age and personal stability of the viewer?; and (e) what are the long-term and transsituational effects of imitation learning? The answers to these questions are fundamental to the general query, "What effects does pornography have upon behavior?"

Some concluding remarks on research strategy

Most of the specific questions that have been posed can be approached by either laboratory-experimental or interview-survey procedures. Each has its merits and limitations. For basic research, the experimental method is usually the procedure of choice. What the experimental design lacks in generality, it can gain in precision of analysis. Questions concerned with the immediate impact of sexual stimuli upon behavior and attitudes, and questions concerned with the acquisition and satiation of sexual cue properties can probably be most efficiently and accurately explored in the laboratory. Experimental studies obviously need not be restricted to "normal" samples of college students or children. The groups studied might include neurotic, sexually deviate, or pathologically aggressive subjects, and to determine the generality of a given effect, the research could include comparative analyses. Parallel investigations could thus be conducted, using samples of subjects that differ with respect to such characteristics as socioeconomic class, ethnic grouping, parental training practices, or cultural identification. The problem of the limited availability of "normal" populations of children in the U.S. could be solved, in part, by comparative research.

On the other hand, applied research cannot ignore the "natural" experiment. This term would include instances in which exposure to obscene materials is not controlled by the experimenter, but in which marked differences in exposure nonetheless occur. Although the problems of testing cause-effect relations are formidable in such "naturally occurring" differences, the procedure can yield significant information. As an initial step, persons differing with respect to the use of pornography as a means of sexual stimulation can be compared in terms of personality, emotional, and behavioral factors. Such groups could be matched with respect to characteristics which the investigator wishes to control (e.g., intelligence, socioeconomic status, marital status). Remarkably, no studies of this type have been reported.

Alternatively, the investigator might sample diagnostic groups which are generally assumed to differ in terms of attraction to pornography and determine whether the assumption is a valid one. This is essentially the method of Gebhard et al. (1965) and Thorne (1966). The dimension upon which comparisons are made need not be "criminal behavior," but might involve personality (e.g., anxiety, sexual conflict), age, or ethnic-subcultural characteristics. It should also

be observed that the "natural" experiment is necessary to determine the long-term effects of pornography distribution upon the behaviors and attitudes of a subculture or a society. Such "natural" experiments are now underway in Scandinavia, and perhaps will be initiated soon in areas of this country which are contemplating abrupt changes in the regulation of pornographic materials.

In conclusion, we must be aware that in 1968—as in 1962—the data "stop short of the critical point." Definitive answers on the determinants and effects of pornography are not yet available. But the research that has been completed over the past 7 years confirms that some of the unanswered questions are not unanswerable.

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Experimental Induction of Human Sexual Arousal

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INTRODUCTION

In recent years, American sexual attitudes have undergone profound and obvious changes (Corry, 1966). As a consequence, individuals and groups at various levels of society are seeking reevaluation of laws and customs governing sexual behavior. Unfortunately, social change has outdistanced empirical sex research. For a variety of reasons (summarized by Pomeroy, 1963), only a few investigators have studied human sexual behavior from an experimental standpoint. Apparently, ethical and moral taboos traditionally associated with sexual topics have effectively impeded serious empirical research in the area of human sexual behavior. However, these taboos appear to be weakening. Studies such as that of Masters and Johnson (1966) presage a growing acceptance of sexuality as a legitimate area of study. Until the present, the majority of sex researchers have confined themselves to interview studies; only a few have reported experimental findings. Since the "new permissiveness" will probably facilitate experimental sex research, it appears appropriate to evaluate existing studies as groundwork for future investigations. These studies contain useful results, suggest methodological approaches, and raise provocative questions for future research.

The present paper reviews the literature dealing with one phase of empirical sex research—the experimental induction of human sexual arousal—and discusses clinical implications of results and possible directions of future research.

Scope of the review

Since the present review is limited to experimental studies of sexual arousal, the literature dealing with theoretical opinions or data derived from uncontrolled observational or field studies will be considered only in passing.

Some experiments investigating physiological or psychological problems other than sexual arousal have employed sexual stimuli. For example, beginning with the pioneer study of Bruner and Postman (1947), numerous researchers have investigated the concept of perceptual defense by comparing recognition latencies for taboo and non-taboo perceptual stimuli such as words. The taboo stimuli have often been sexual in content. Conceivably the perceptual defense literature might provide useful data concerning human sexual arousal. However, it appears that the taboo, rather than the sexual, quality of the stimulus is the relevant parameter in perceptual defense studies, and thus these studies appear to bear only a tenuous relationship to broad aspects of human sexual behavior. For example, Tempone (1962) found that subjects demonstrated elevated perceptual thresholds to such nonsexual stimuli as words associated with failure. Furthermore, the convoluted findings of perceptual defense research have been exhaustively reviewed elsewhere (for example, see Brown, 1961; Bruner, 1957; Goldiamond, 1958; Inglis, 1961; and Minard, 1963, 1965). Therefore, the perceptual defense literature will be excluded from the present analysis. However, other categories of research not focusing primarily on sexual arousal but upon areas such as attitudes toward authority figures will be considered, provided that they involve *experimental* induction of sexual arousal. The studies to be reviewed employ a variety of response measures—physiological, fantasy production, subjective rating, and behavioral—as well as a variety of visual and symbolic stimuli.

Definition of sexual arousal

Since human sexual arousal may be manifested by a broad range of somatic, psychological, and behavioral responses to an equally broad range of stimulus configurations, it resists simplistic definition.

As Whalen (1966) emphasizes, students of human sexual behavior encounter problems of definition and specification that are obviated for the animal researcher. First, human sexual motivation has usually been inferred from subjective reports rather than from reliable observation and measurement of discrete components of behavior, as in animal research. Secondly, investigators of human behavior discuss sexuality in vague motivational terms such as “libido” rather than in response terms which can be operationalized, such as “intromission,” “latency,” and “frequency.” Thus, animal researchers can define infrahuman sexual arousal in terms of specific overt responses and concomitant eliciting stimuli. Although covert responses may occur, they are excluded from consideration because of their inaccessibility to study.

In contrast, human sexual arousal cannot be defined only in terms of observable behavior or physiological changes, nor can eliciting stimuli be narrowly specified. Even in the absence of overt responses, the individual may experience subtle changes in affect which he subjectively identifies as sexual arousal. Moreover, overt and covert sexual responses in a given individual may be associated with highly idiosyncratic stimuli, as is the case in fetishism.

Cairns, Paul, and Wishner (1962), who reviewed several studies of sexual behavior, used the term “sexual arousal” in a technical sense. They stated:

“Arousal” refers to a perceptible increase in emotional tone, however slight, and “sexual” refers to the content of the emotion. The content may be

inferred from direct introspection, various kinds of verbal reports, appropriate physiological measures, or overt behavior.

The failure of this definition to provide criteria for identifying "sexual" responses reflects the widespread theoretical disagreement concerning the boundaries of sexual behavior. While social behaviorists might contend that only those elements accepted as erotic by the individual or group under study constitute sexual stimuli and responses, the psychoanalytic researcher would probably include many additional categories involving aggressive and other elements which he construes as sexual. Despite these theoretical cavils, one may assume that certain stimuli and certain affective responses are discriminated and labeled as sexual by a significant proportion of individuals in a given sociocultural milieu. One may also assume that observation of certain psychosexual cues, such as heterosexual nudity or sexual activity, usually elicits some measure of sexual arousal, at least in males within the general culture.

To resolve the dilemma of definition, this review will consider only those studies in which the investigator was to induce change in the emotional tone of his subjects by exposing them to stimuli commonly regarded as sexually stimulating.

Specification of sexually arousing stimuli

Many experimental studies of sexual arousal have concentrated on evaluating the effectiveness of various erotic stimuli. Researchers have usually selected stimuli on the basis of consensual assumptions about their erotic value. In addition, several interview studies provide data concerning preferences for various erotic stimuli. As Cairns and his associates (1962) emphasize, some of the early investigators failed to take into account the sources of distortions inherent in interview studies, such as dissimulation or inaccurate self-evaluation, although others, such as the Kinsey group, did attempt to compensate for them. Thus, although interview data may provide an initial basis for selection of erotic stimuli, such data become more conclusive if validated by controlled experimentation.

Many of the interview studies deal with special populations, such as penitentiary inmates (Blumer & Hauser, 1933; Haines, 1955), adolescents (Ramsey, 1943), and categories of sexual offenders (Gebhard, Gagnon, Pomeroy, & Christenson, 1965).

Kinsey and his associates (Kinsey, Pomeroy, Martin, & Gebhard, 1953) provide the most comprehensive data on erotic stimulus preferences in the general white population. Table 1 (see p. 55), which was compiled from these data by Cairns et al. (1962), summarizes the reported effects of the following stimuli: portrayals of nude figures, genitalia of the opposite sex, commercial motion pictures, burlesque and floor shows, portrayals of sexual action, romantic literary materials, and erotic stories. Several of the cues evaluated in Table 1 are employed in the studies reported in the present paper, and in some instances experimental results can be compared with interview data.

SURVEY OF THE EXPERIMENTAL LITERATURE

Studies will be grouped according to the major classes of response measures employed (e.g., physiological). Obviously, those studies employing more than one

type of response will not fit neatly into this pattern; however, in most instances, investigators considered one response class of major interest and the others as secondary.

Physiological measures of arousal

The most numerous group of studies has employed physiological assessment as a means of establishing magnitude or direction of erotic interest. Investigators frequently use these measures as indices of relative preferences for different classes of stimuli or different components within a given stimulus class.

Measures used include phallogplethysmographic assessments of changes in penile volume, galvanic skin response (GSR), pupillary dilation, prostate gland activity, blood volume, and respiratory rate. Although all these measures presumably respond to sexual stimulation, most appear to respond to other forms of emotional activation as well. Duffy (1962) indicates that measurable physiological changes in human subjects are related to emotional arousal of any type, as well as to changes in motivating conditions, activity or readiness for activity, problem solving, and other transitory factors. Thus, physiological assessment may yield equivocal results, since observed changes can result from effects other than those associated with sexual excitation. For example, effects of guilt or shame associated with sexual arousal would be difficult to evaluate separately from the arousal component. If one conceptualizes arousal only in terms of the magnitude of observed change, one may be able, within fair limits, to establish a functional relationship between a given stimulus and a quantitative physiological change. However, if one wishes to ascertain whether the subject experienced changes as positive (approach), negative (avoidance), or ambivalent (approach-avoidance), subjective measures must be employed in addition.

Respiration rate and blood volume. An early study (Diserens & Wood, 1936) deals with the effects of various types of emotionally arousing literature upon respiration rate and blood volume. The 10 male college students who served as subjects were instructed to read several literary passages designed to elicit various emotions. The authors reported that the greatest response was aroused by a story, "First Night," taken from a commercial magazine, *Honeymoon Tales*. The story, which the authors reproduce verbatim, briefly describes the wedding night of an amorous bride and her embarrassed bridegroom. Although the account may have aroused college students in 1933, by current standards it appears quite ludicrous. After their responses were recorded, the 10 subjects were separated into three groups on the basis of constitutional type. The authors advanced several "tentatively made" conclusions concerning responses characterizing each type: (a) physiologically active individuals respond most to sexual literature; (b) tall, slender, less active individuals respond somewhat less; and (c) abstract-thinking types respond least. Since no statistical tests were included, little support for these conclusions can be cited from the reported data.

Galvanic skin response measurement. Several researchers have used changes in the galvanic skin response (GSR), alone or in conjunction with other response measures, as indices of sexual arousal. As is the case with many other

physiological indices, this measure is sensitive not only to sexual arousal but also to other emotional activation.

Dysinger and Ruckmick (1933) used GSR as a measure of sexual arousal in an early study of the responses of children and adults to three types of films (comedy, adventure, and "love/erotic"). The latter category comprized portrayals of mildly erotic "love scenes and . . . scenes suggestive of sex." Results indicate that the group near 16 years of age exhibited the greatest response, adults exhibited an average response that was less intense, and children under 12 years of age exhibited an even lower response than adults. Female subjects displayed a slight tendency toward greater response than males during the love/erotic scenes; however, the absence of statistical tests prevents meaningful evaluation of the reported differences.

Cairns and his colleagues (1962) criticize several aspects of the above study. They note that, from the authors' description, it is obvious that the stimuli were only mildly erotic and were otherwise ambiguous. In fact, several of the younger subjects reported misinterpreting the filmed sequences. Furthermore, the investigators' failure to ascertain that the subjects were attending to the stimuli and were correctly interpreting them weakens their conclusion that the GSR changes that accompanied viewing of the romantic sequences represented *sexual* arousal specifically rather than other diffuse emotional responses. Finally, the relatively innocuous content may have failed to arouse many subjects, particularly adults, who might have responded vigorously to more explicitly sexual material.

In an effort to differentiate autonomic response patterns accompanying discrete emotional states, Davis and Buchwald (1957) studied 12 somatic response variables, including measures of GSR, respiratory rate, and several vascular indices. A variety of pictorial stimuli, including a photograph of a female nude and a detail of Goya's *Maja Undressed*, were presented to subjects. Pictures of different emotional content evoked different response patterns, especially in GSR and base-level resistance. Compared to the nonerotic pictures, the two nude pictures evoked the largest responses from the male group.

Koegler and Kline (1965) also utilized the GSR in conjunction with other somatic response measures and subjective reports to assess sexual interest in normal males and females, paranoid schizophrenics, and homosexuals by means of pattern analysis. Additional variables included galvanic skin resistance-lability (defined as the number of drops and recoveries of 10 ohms or more in the GSR level for a given sequence), cardiometric heart rate, peripheral (finger pulse) blood volume, and respiratory rate. Initially 20 male medical students, 10 male college students, and 20 female college students and medical secretaries viewed strip-tease "girlie" films, male homosexual films, and a "stressor" film depicting aboriginal subincision rites, while responses were being recorded. Results indicated that, physiologically, both males and females responded similarly to the "girlie" film, although 28 of 30 male subjects reported positive subjective responses to these pictures, while 16 of 20 female subjects reported negative responses. These results supported the contention of Lacey, Kagan, Lacey, and Moss (1963) that all affective states are characterized by high arousal. Thus arousal level alone does not indicate whether the subject experienced sexual arousal or negative affect. Koegler and Kline subsequently developed a modified technique which, they report, successfully differentiated various subjective

emotional states. This technique concentrated on the number of channels changed and the direction of change rather than on response magnitude. They then used the technique in a preliminary study of the relationship between homosexuality and paranoid schizophrenia. Three paranoid schizophrenics who exhibited strong physiological responses to the "girlie" films verbally expressed violent dislike for them. This phenomenon led the authors to postulate that paranoid schizophrenics may experience "heterosexual panic" rather than "homosexual panic," as has been commonly believed. In contrast, admitted homosexuals exhibited clearly marked preferences for the male, as compared to the female, films.

Koegler and Kline's data on female response to sexual stimuli may be compared to the results of a study by Loisselle and Mollenauer (1965), in which 20 female college senior volunteers were given the Mf [masculine-feminine] Scale of the Minnesota Multiphasic Personality Inventory (MMPI) and had their GSRs recorded while they viewed 18 projected color pictures portraying one male and one female model in three states of dress: clothed, seminude, and nude (three poses in each state). The authors reported statistically significant differences among GSRs to nude, seminude, and clothed figures. Subjects ranked above the Mf median (toward the masculine end) exhibited significantly higher GSRs toward clothed and nude figures than did subjects rated below the median. A similar (nonsignificant) tendency was exhibited toward seminude figures. Both high- and low-Mf groups almost invariably responded more vigorously to male than to female figures. Statistically significant preferences for both clothed and nude male figures were exhibited by high-Mf subjects and for nude male figures by low-Mf subjects. A slight tendency by high-Mf subjects to prefer female seminude figures over male was the only instance of same-sex preference. In discussing their results, the authors stated that their data failed to support the contention of Kinsey and his associates (Kinsey, Pomeroy, & Martin, 1948; Kinsey et al., 1953) that females are not aroused by visual erotic stimuli. However, they subsequently observed that the measured responses could not be assumed to be necessarily or exclusively related to sexual stimulation. As Koegler and Kline found, female subjects may register strong GSR responses to stimuli which they describe as aversive. Thus, Loisselle and Mollenauer's finding of vigorous GSR responses to sexual stimuli by their female subjects does not describe the subjective emotional state accompanying the GSR changes. Since these investigators collected no self-report data on subjective affect, and since Koegler and Kline reported strong GSRs by females in the absence of reported subjective arousal, the physiological data do not appear to refute the findings of the Kinsey group.

A study by Jordan and Butler (1967) provides additional evidence for the ambivalent effects of sexual stimuli upon GSRs of female subjects. These researchers found that female subjects who scored high on the MMPI Hysteria Scale produced greater GSRs while reading and later recalling erotic literary passages than did those subjects whose profiles were within normal limits. Furthermore, normal subjects evidenced no differential GSR to erotic and neutral themes. The authors interpreted these results as indicating that "hysterical" subjects may have responded to sexual stimuli with anxiety or "repressions." The finding that the hysteria groups recalled consistently fewer sexual details than did low-hysteria subjects supports this interpretation. The presence among other

female samples of subjects demonstrating similar response dispositions may account, in part, for the high GSRs reported in previous studies of female GSR response.

Solyom and Beck (1967) used GSR to test sexual interest in three fetishists and a homosexual. Subjects viewed neutral, heterosexual, homosexual, and fetishistic pictures that incorporated stimuli reported by the subjects to have erotic valence for them. Although the results were marginal because of the small sample and the low probability levels at which changes occurred, the data suggest that the homosexual patient preferred male pictures to all others and that the fetishists preferred fetishistic pictures to all others. By questioning subjects concerning emotions experienced, the authors attempted to reduce the likelihood that anxiety rather than sexual arousal accounted for changes. When questioned, all subjects denied feeling anxious. The authors also reported that previous research had indicated that anxiety usually results in substantially lowered GSR baselines upon termination of the experiment.

Few studies of sexual arousal have systematically investigated in normal subjects the relationships between magnitude of physiological response and connotation of emotional response elicited by various types of stimuli. Hain and Linton (1966) reported a two-phase investigation of this problem. In the first phase, they measured GSR, respiration rate, and verbal reaction time (VRT) to pictorial stimuli which were divided into seven groups of 10 pictures each. The following groups were represented: male adult nude, front view; male adult nude, rear view; male adult partially clothed, front view; male adult in strap, front view; female nude, front view; female child nude, front view; and male child nude, front view. Fifteen medical students were asked to identify the sex of each picture as it was projected on the screen. GSR, respiration rate, and VRT were recorded following each presentation. A new stimulus was not projected until GSR and respiration rate returned to baseline. *T*-tests of significance between GSR means reflected significant differences between the responses to Male Rear and Male Nude (front view), Male Rear and Male Strap, Male Rear and Female Nude. It should be noted that *t*-tests between mean GSR value for Female Nude stimuli compared with Male Nude (front view), Male Strap, and Male Partially Clothed stimuli were nonsignificant, as were *t*-tests between other combinations. VRT and respiration rate responses failed to adapt out with repeated trials. The investigators concluded that the failure to find differences in the magnitude of physiological responses to the Female Nude stimuli compared with Male Nude, Male Strap, and Male Partially Clothed stimuli may have resulted because the pictures were not sufficiently emotionally arousing to allow differentiated physiological response. The present author also considers the possibility that medical students' clinical training may prepare them to respond with detachment to nudity presented under laboratory, or comparably neutral, conditions.

In order to investigate the emotional connotation of the stimuli and to relate these values to levels of physiological response, Hain and Linton conducted a second phase of the study, using a sample of 16 medical students from another medical school. Subjects rated each stimulus on 24 Semantic Differential Scales, following the technique developed by Osgood, Suci, and Tannenbaum (1965). Mean ratings were calculated for each picture and for gender types of stimulus. A plot of mean ratings for female nude stimuli compared with male nude stimuli

revealed that the female nudes received higher positive ratings along a large number of dimensions. More importantly, the mean ratings also varied within both stimulus groups (female nude and the male nude). The investigators concluded that the differences in subjective ratings of pictures within a stimulus group were large enough to account for comparable within-group differences in physiological response observed in the first phase. They then correlated data from the first and second samples in order to assess the relationship between mean connotative ratings of individual stimuli and mean GSR responses. Although the researchers acknowledged that correlation of data from two different samples was statistically suspect, they felt that the samples were similar enough to provide some indication of true relationships. Perhaps because of the random error introduced by the use of two different samples of subjects, only attenuated correlations were found. These connotations indicated that positive relationships tended to exist between GSR and connotations of sick, weak, little, passive, feminine, overweight, ugly, and delicate; however, only the correlation between passivity and GSR attained significance. The authors noted that stimuli with feminine connotations appeared to elicit higher GSRs. Thus, more feminine female stimuli might evoke stronger positive affect and more feminine male stimuli might evoke higher *negative* affect. In either case, elevated GSRs would be expected. These results support the findings of other investigators (Jordan & Butler, 1967; Koegler & Kline, 1965; Loisselle & Mollenauer, 1965) that negative reactions to sexual stimuli produce strong GSR responses. They also emphasize the difficulty of identifying the nature of the emotional substrate of GSR responses and partially explain the failure to find significant differences between physiological responses to male and female stimuli. The authors suggest that past experimental procedures which classified sexual stimuli by gender or degree of nudity are inadequate, for there appear to be more pertinent dimensions of sexual stimuli to be studied in relation to physiological response.

Hain and his associates are currently involved in further study of the relationship between emotional connotation and physiological response to sexual stimuli.¹ Subjects have rated over 100 hundred black-and-white photographs of nude males and females on 40 emotional and connotational dimensions by means of a Semantic Differential technique. From these ratings, the investigators have selected smaller groups of stimuli and connotational dimensions which varied the most among themselves. The relationship of subjects' ratings of stimuli to heart rate, GSR, respiration, and stomach potential is now under study.

Phallogplethysmographic measurement. Freund (1957) introduced a method of assessing sexual object preference by means of the phallogplethysmography, a device that records penile volume changes. Continuous recordings were taken while subjects were viewing projected photographs of possible erotic subjects. Freund, Diamant, and Pinkava (1958) applied a modified version of the technique to 123 psychiatric patients. According to their history, 58 were exclusively, or almost exclusively, homosexual; the others described themselves as exclusively, or almost exclusively, heterosexual. Each patient reported also his age preference in sexual partners. The stimuli were 40 color pictures, half of male and half of female nudes, further divided into five groups by age range. The point of greatest deviation from baseline, whether positive or negative, marked the Maximum

¹Hain, J.D. Personal communication.

Volume Increase (MVI) in response to a given picture. In the rare cases displaying both positive and negative changes following a given picture, the algebraic sum of the positive and negative MVI was used as a response measure. Phalloplethysmograph tracings were grouped as follows: I-marked, II-slightly marked, III-almost flat, IV-flat. Classification was based on the mean of the eight reactions achieved in the two erotically most powerful age groups of the predominant sex, as determined by the tracings. Among 77 subjects with marked tracings, only one case exhibited discrepancy between laboratory results and case history in regard to the determination of exclusive or almost exclusive homo- or heterosexuality. The slightly marked and almost flat tracings contained three discrepancies each as compared to, respectively 10 and 18 cases of concordant results. Freund and his associates detected some evidence of attempts to misrepresent object preference, probably by means of voluntary penile movements. Such attempts produced exceptionally rapid oscillations which were readily discriminable from recordings of normal volume changes. On the basis of concordance between laboratory results and case history data, Freund and his associates concluded that their method effectively differentiated subjects with predominantly homo-erotic from those with predominantly hetero-erotic object preference. Furthermore, laboratory findings appeared to coincide with subjects' reported age preferences for sexual objects. Application of the method to two additional samples (Freund, 1961, 1962) yielded comparable results.

Freund (1963) reported an attempt to heighten the usefulness of the method for differential diagnosis by increasing the number of pictures from 40 to 80. In this study Freund preceded each of the original stimuli with presentation of a photograph of a female nude, aged 19 to 25, or a male nude, aged 19 to 30. Two pictures were always projected in a sequence, involving a 12-second exposure of the first picture, a 2-second interval, and a 12-second exposure of the second picture. A further pair of pictures was not exposed until the stylus had reverted to approximate baseline. Patients were required to respond, by pressing a buzzer, to the appearance of flickering lights between or during stimulus presentations. Thus, the experimenters were assured that their subjects were observing the pictures. Responses were measured in terms of the differences in the height of the tracing at the beginning and end of each 12-second exposure. The activity degree (V) of each recording was established on the basis of the algebraic sum of the heights of responses, both positive and negative, to the first pictures of each pair, which represented a person of the preferred sex as determined by the record. The above modification was applied to 31 ostensibly heterosexual neurotic inpatients, 25 homosexuals interested in adults, and 14 homosexuals interested in adolescents or children. Within-pair responses were compared in order to establish the degree of difference between response to the picture of the man and the picture of the woman exposed at approximately the same time. The mean of within-pair differences was used to establish direction and magnitude of erotic preference. In all cases, dominant sexual orientation as revealed by laboratory responses coincided with case history data. In order to investigate signs of dissimulation and simulation systematically, both homosexual and heterosexual subjects were instructed to imagine a disagreeable situation while viewing a picture that would normally elicit arousal. Results suggest that disagreement between response patterns and reported orientation, or relative absence of

response, may indicate dissimulation, simulation, or some other orientation not covered by the test.

Brown (1964) criticized Freund's technique on two grounds: (a) its dependence upon equipment not readily available to working technicians, and (b) its use of response measures subject to voluntary distortion. Koenig (1965) noted that stimuli used in Freund's 1963 study were poorly described and that, as a result, comparability between the different sets used was difficult to assess. Furthermore, Koenig found Freund's study difficult to understand (as did the present author) largely because of Freund's failure to adequately label and define data tables.

More recently, Freund has applied his technique to the study of homosexual and heterosexual pedophilia (1965, 1967a, 1967b). After preliminary validation of the technique with pedophilic samples, three major hypotheses were investigated: (a) that pedophiliacs, as compared to males preferring adults, show different reactions to sexually neutral features of somatic maturity, and thus would demonstrate consistent age preferences to the nonpreferred as well as the preferred sex; (b) that pedophilia is based on a preference for sex-specific signs of an attenuated character; and (c) that pedophilia is based on an aversion to certain sex-specific signs found in adults but not children. It was expected that, if either or both of the latter proposals are valid, pedophiliacs would not be expected to differ from subjects preferring adults in their age preferences regarding the nonpreferred sex. On the basis of reported sexual orientation and age preference, heterosexual subjects were classified as normals (adult objects) or pedophiliacs (prepubescent objects); homosexuals were classified as androphiliacs (adult objects), ephebophiliacs (adolescent objects), or pedophiliacs (prepubescent objects). Results indicated that normals responded to objects of the preferred sex in descending order of age, but displayed no significant differential preferences among age categories within the nonpreferred sex. Thus, one may conclude that, with normals, gender is the crucial variable, and age exercises an influence only within the preferred sex. For each deviant group, objects of the preferred sex in all age categories were ranked above any category in the nonpreferred sex. Although the sex of the object appears to be the dominant determinant of deviant sexual preference, deviant subjects' predilections for specific age groups remain consistent within both preferred and nonpreferred sex groupings. Moreover, the order of age preference appears to follow a within-sex generalization gradient in all deviant groups. For example, ephebophiliacs prefer adults after adolescents, perhaps because adults display more characteristics in common with adolescents than do prepubescent objects.

Although Freund's method appears to corroborate empirically the preferences reported by his subjects and to reveal that order of age preference within the nonpreferred sex roughly parallels that within the preferred sex, his findings do not appear to provide evidence specifically relevant to the hypotheses advanced. Freund's data permit few conclusions about the stimulus components governing erotic preference. Although Freund hypothesizes that somatic characteristics are crucial, one could postulate with equal confidence that preferences for a given age group develop from early experiences, from expectations concerning the degree of receptivity or quiescence of various age categories, or from other age-specific nonsomatic stimulus characteristics. Generalization along the age dimension, within both the preferred and nonpreferred sex, may then be related to whatever

stimulus properties the individual associates with the preferred age category. Obviously, secondary sexual characteristics serve to identify the separate age groups; however, Freund's data provide no specific evidence that they are in themselves crucial determinants of age preference.

McConaghy (1967) modified Freund's technique by substituting motion pictures of nudes for the static stimuli used previously and by devising a much simplified and less cumbersome plethysmograph. Freund (1963) had acknowledged that still photographs fail to provide the sexual stimulation associated with movement and behavior. Since motion pictures of nudes convey more information and more nearly approximate sexually arousing situations in the natural environment than do still pictures, one may plausibly assume that they would be more stimulating. However, this assumption awaits empirical verification. McConaghy restricted his stimuli to depictions of prosaic activities, such as hair-combing, toweling, and taking off items of clothing rather than blatant portrayals of sexual activity. Ten sequences portraying nude males and 10 portraying nude females were inserted in a travelogue-type film and were exposed alternatively at 1-minute intervals for 10 seconds. Each male sequence was preceded by photographs of a green triangle; each female sequence was preceded by a photograph of a red circle. These symbols served as conditional stimuli. Continuous phallopneumographic and GSR responses were recorded as subjects viewed the film. Twenty-two homosexual candidates for aversion therapy and 11 heterosexual medical students served as subjects. In general, McConaghy's results corroborated those of Freund, indicating that, in most cases, dominant sexual orientation of subjects can be adduced from differential changes in penile volume following exposure to photographs of male and female nudes. McConaghy concluded that subjects reporting both heterosexual and homosexual behavior may display either orientation. Here one would expect that situational factors or the relative valences of the specific pictures viewed might determine direction of response. Both Freund and McConaghy regarded either a negative or a positive deflection as an equally significant response. In the rare instances when a positive and negative response appeared together, Freund subtracted one from the other. McConaghy, however, modified Freund's scoring procedure. When means of responses to male and female stimuli were both positive, the higher mean was assumed to identify the sexual orientation. If only one mean was positive, it was assumed to indicate the sexual orientation, irrespective of the relative values of the two means. When both means were negative, the greater was assumed to indicate the sexual orientation.

In two ingenious experiments (Rachman, 1966; Rachman & Hodgson, 1968) experimental induction of boot fetishism was demonstrated by phallopneumographic measurement of penile volume changes. Using a classical conditioning paradigm, the experimenters repeatedly projected a colored photographic slide of a pair of female boots (CS) upon a screen just prior to projecting slides of sexually arousing nude women (UCS). In the first experiment, the three subjects reached criterion of five successive penile responses to the boots in 30, 65, and 24 trials respectively. The subject who took twice as long as the others to condition showed the greatest resistance to extinction. In a second subject, the CR proved unstable and was extinguished after only four CRs were elicited. All the subjects displayed stimulus generalization to at least one stimulus (low-heeled black shoes)

and two subjects also showed a GCR to high-heeled shoes. All three subjects achieved spontaneous recovery. The second experiment replicated the procedure with five subjects, all of whom reached criterion, and indicated that pseudoconditioning did not occur when order of stimulus presentation was reversed. The authors regarded the results as demonstrating genuine conditioning rather than sensitization or faking. They viewed the studies as opening two possible areas of investigation: (a) the influence of various events and conditions (for example, drive strength) upon parameters of deviant sexual response; and (b) the effects of variables in aversion therapy, such as variations in the duration and intensity of the aversive stimulus or the temporal relations involved in the treatment procedure.

Evaluation of the studies utilizing phallogplethysmographic technique indicates that the procedure provides useful information about one physiological correlate of sexual arousal. One might question, however, whether the amount of additional diagnostic information it provides warrants the additional time, effort, inconvenience to subject, and outlay for equipment it entails. Most subjects who are willing to divulge their sexual preferences undoubtedly can identify them with reasonable accuracy. On the other hand, subjects who feel compunctions about revealing deviant sexual preferences may generate misleading responses—voluntarily or because of competing emotions—as has been demonstrated. The technique may prove primarily useful for research rather than for diagnosis. Among the relevant questions which await investigation are those concerning: (a) the degree of concordance between changes in penis volume and other physiological and subjective indices of arousal, (b) the effects of competing emotions on arousal, (c) the investigation of relative erotic valence of various olfactory, auditory, tactile, and visual stimuli, and (d) the effects of nonsexual stimuli upon penile response.

Pupillary dilation. Hess and Polt (1960) found that in humans the size of the pupil varied with a subject's interest in various pictorial stimuli. Male subjects exhibited a larger pupil while looking at pictures of women than when looking at pictures of men. Hess, Seltzer, and Shlien (1965) reasoned that this difference might reflect interest in the male or female figure as a sexual object and that homosexuals would therefore be expected to show a larger pupil response to pictures of their own sex. To test this hypothesis, the investigators selected five subjects known to choose only heterosexual outlets and five subjects known, through observation, interview, and in every case by voluntary admission, to have overt homosexuality as their sole or primary outlet. Fifteen picture slides were projected on a screen for individual viewing by each subject. Five pictures portrayed female nudes (four paintings and one photograph); five pictures, culled from "physique" magazines, portrayed nude or seminude males; and five pictures portrayed "artistic" paintings with little explicit sexual content. The latter were used (a) to reduce the threat assumed to be inherent in presentation of exclusively sexual material, (b) to control for artifactual response elevation accompanying exposure of first and second stimuli, and (c) to test the hypothesis that homosexuals show high interest in artistic material. Changes in pupil size were measured with a millimeter rule from magnified photographs of the pupil, taken by a concealed camera as each slide was being viewed. Heterosexual subjects, as a

group, displayed significantly greater pupil response to female pictures; homosexuals, as a group, displayed significantly greater response to male pictures. Homosexuals also exhibited high response to the nonsexual art pictures, but low response to the female pictures, even though the latter surpassed the relatively crude male pictures in artistic excellence. Thus, the results suggest that either aesthetic or sexual interest may influence response.

Although each subject's overall results agreed with his reported sexual orientation, some of the male pictures drew a high-positive response from heterosexuals, and some of the female pictures drew a high-positive response from homosexuals. This finding may reflect selection of stimuli whose sexual content was relatively attenuated or diluted by other interesting, but nonsexual, content. Judging from the description of the stimuli, the investigators selected stimuli of relatively moderate erotic valence. Perhaps more explicitly erotic pictures would have elicited fewer anomalous positive responses. Despite the moderate eroticism of the stimuli, however, total homosexual response to each of the five male pictures was positive, and total heterosexual response to three of the five female pictures was positive. This pilot study suggests that changes in pupil size may serve as indices of sexual preference, although changes appear to be associated with a more general orienting response. The relationship of pupil size to other indices of subjective arousal remains to be investigated.

Measurement of average evoked potential. Using scalp EEG recordings, Lifshitz (1966) investigated average evoked cortical response (AER) to neutral photographs, repulsive medical photographs, and nude art scenes. Significantly different response patterns to each of the three stimulus classes were reported. In addition, subjects reported affective responses appropriate to each class.

Measurement of acid phosphatase excretion. Clark and Triechler (1950) studied the effects of "pornography" by measuring increase in prostate gland activity following exposure to erotic motion pictures. As manifested by increased excretion of the enzyme acid phosphatase in the urine, four out of five male subjects exhibited increased prostatic activity following viewing. The fifth, who exhibited no change, reported that he was embarrassed by the films. Two female subjects exhibited no change. In a second phase of the study, two male subjects apparently responded to the excitement of appearing in a play by excreting an amount of acid phosphatase equivalent to that excreted while viewing the erotic films. The experimenters concluded that increased acid phosphatase excretion was perhaps related to increased autonomic activity rather than specifically to sexual arousal.

Direct measurement of sexual arousal. The 12-year investigation of the anatomy and physiology of human sexual response conducted at Washington University School of Medicine (Masters & Johnson, 1966) represents by far the most comprehensive laboratory study of human sexual behavior reported to date. Although thus far the authors have published primarily physiological data dealing with gross physical changes which develop during human sexual response cycles, Masters (1967) reports that extensive psychological data collected during the study will be published in 1970. The study population comprised 382 active female and 312 active male subjects who engaged in coition, masturbation, or (in

the case of some female subjects) simulated coition involving a plastic penis while under laboratory observation by teams of researchers. Color motion-picture closeups of localized secretory, dermal, and vasocongestive responses were augmented by detailed recordings of heart rate, blood pressure, muscle tonus, respiration, and other somatic processes. In addition, subjects were repeatedly interviewed.

A thorough discussion of the extensive findings of the Washington University researchers exceeds the scope of this paper. Moreover, the work has been extensively reviewed by numerous authors, including Brecher and Brecher (1966), Farber (1964), and Pomeroy (1966). Nevertheless, it is important to recognize the great significance of the study for future psychological and physiological sex research. Not only did the Washington University group develop new observational and recording techniques and new methodologies, but they also replaced numerous unsupported, and often fallacious, assumptions concerning human response with scientific data. Perhaps the greatest contribution that the study has made to future sex research is its successful breaching of taboos against direct observation of human sexual activity. The investigators demonstrated that they could observe overt sexual activity in the laboratory without seriously inhibiting the participants and without incurring widespread censure. Hopefully, this example will encourage behavioral scientists to design experiments which will sample the domain of human sexual behavior more courageously and directly than have the predominantly innocuous and timorous experiments of the past.

To summarize the studies of physiological correlates of sexual arousal, it appears that both male and female subjects exhibit a variety of autonomic changes when presented with visual or symbolic erotic stimuli. Evidence indicates that erotic stimuli may produce positive, negative, or ambivalent affective changes, but that these are difficult to differentiate on the basis of physiological data alone. Moreover, autonomic responses appear to be susceptible to inhibition or facilitation by a number of environmental and subject variables, as well as by the nature of the stimulus. Such variables include the subject's sexual orientation, the effects of habituation, and the conditions under which stimuli are presented.

Direct measurement of secretory, dermal, and vasocongestive changes in genital and secondary sexual areas appears to yield the least equivocal indices of sexual arousal. However, the work of Masters and Johnson (1966) illustrates that using such techniques entails heavy investment in complex and costly laboratory equipment, meticulous selection of personnel, substantial expenditure of staff time, and the study of a biased sample, comprising only those subjects able to transcend prevailing taboos. Phalloplethysmographic measurement of male subjects may provide relatively unequivocal data with reasonable economy; however, investigators must first establish that penile volume remains unaffected by nonerotic emotional responses. Thus it appears important to refine existing techniques for abstracting indices of sexual arousal from general autonomic changes, in order that a broad spectrum of male and female subjects may be tested efficiently. Perhaps a detailed study of simultaneous changes in a variety of somatic processes would reveal discriminable patterns paralleling changes in the levels of discrete subjective emotions. Future studies might focus upon developing techniques for somatic pattern analysis and defining the relationship between changes in physiological and subjective emotional states.

Several investigators have employed projective tests to assess sexual arousal. Typically, projective procedures require subjects to invent stories based on ambiguous pictorial stimuli or to supply endings for incomplete stories. Researchers base the use of projective procedures on the rationale that responses will reveal individual defenses and unconscious motivation that might otherwise remain concealed. Unlike self-report, fantasy productions are presumed to be relatively impervious to voluntary distortion. For example, the TAT protocol of a subject who has recently viewed erotic stimuli presumably represents his unfeigned emotional responses. Unfortunately, inter-rater reliability is notoriously low among interpreters of projective tests (Mischel, 1968). Moreover, while projective test responses provide a sample of the sorts of stories individuals produce after viewing sexual stimuli, they provide little direct information concerning individual arousal levels. Thus, the theoretical orientation and specific interpretive techniques favored by an investigator appear to be major determinants of the sorts of inferences about sexual arousal he is willing to make from projective test results.

Clark (1952) found that subjects who had been exposed to life-sized photographs of female nudes before testing produced less manifest sexual content in TAT protocols than did subjects who were exposed to neutral photographs. Attributing his results to the inhibitory effects of guilt, he argued, on the basis of evidence from infrahuman research (Conger, 1951), that subjects who had been consuming alcohol in a permissive atmosphere would experience reduced guilt and therefore would express sexual fantasies more overtly. To test this hypothesis, a second group of subjects viewed the nude or neutral pictures and were administered the TAT during a fraternity beer party. As predicted, more sexual content was found in the stories obtained during the party situation than in the university setting. Unlike the nondrinking subjects who exhibited no significant difference between experimentals and controls, alcoholic experimentals exceeded controls in expression of sexual materials.

Clark and Sansibar (1955) rescored the protocols for symbolic sexual content. They predicted, on the basis of psychoanalytic theory, that protocols of subjects who were too inhibited to express sexual material overtly would exhibit greater symbolic sexual content than would protocols of subjects who expressed manifest sexual material freely. A curvilinear relationship was found, indicating that both high and low manifest content was associated with high symbolic content. The authors reasoned that those who had low manifest content scores were responding to repressed sexuality by expressing greater symbolic content, as predicted, and that those who had high scores were responding to response-produced anxiety resulting from expression of sexual material.

Clark's procedure was adapted by Mussen and Scodel (1955), who studied the effects of presenting the stimuli under formal, as compared to informal, conditions. A "formal, professorial, and somewhat stern man in his sixties" instructed one group of male college students to rate photographic slides of nude females for attractiveness and indicate the criteria for judging. A young, informal, permissive graduate student presented the same series of slides and instructions to a second group. Following the second viewing, all subjects were administered TAT cards by a third experimenter. As was the case in Clark's study, the informal

condition produced more sexual content in TAT protocols than did the formal condition. According to the authors, the data indicated that arousal of socially disapproved needs in the presence of authority figures results in greater inhibition of subsequent expression of that need than arousal of the same need in a permissive setting.

The results of both the Mussen and Scodel and the Clark studies demonstrate that viewing erotic stimuli in a permissive, informal setting, as compared to a formal setting, results in greater expression of sexual material in subsequently executed TAT protocols. This finding suggests that the situational context, as well as the nature of the stimulus, influences the magnitude of response to visual erotic material. However, as Cairns et al. (1962) point out, one cannot ascertain from these studies whether the subjects actually experienced a heightened level of arousal under the informal conditions or whether they merely were able to express sexual content more freely in a permissive setting. The failure of these two studies to permit valid comparison of arousal level under varying conditions illustrates the shortcomings of projective tests as quantitative indices of emotional arousal.

To assess the effects of "sex guilt" upon TAT responsiveness, Leiman and Epstein (1961) administered to 60 unmarried college males a specially constructed thematic test comprising a series of pictures, ranked according to their degree of "sexual relevance." For example, one high-relevance picture portrayed a man recumbent upon a bed, embracing and being kissed by a woman who was leaning over him. Low-relevance pictures depicted neutral scenes, for example, a man writing a letter. After being tested, all subjects executed a questionnaire designed to assess level of guilt associated with sexual thoughts or behavior. The inventory included such items as: "I avoid sexy shows when I can"; "It is wrong to indulge in sex strictly for pleasure"; "I feel guilty about my sexual behavior"; "I find discussions about sex slightly annoying." Results indicated that subjects with high self-reported sex guilt gave fewer sex responses in their stories about the most sexually relevant picture than did subjects with low self-reported guilt. The groups did not differ significantly in number of sex responses given to the pictures of low sexual relevance. But the authors did not report whether high-guilt subjects expressed different amounts of sexual imagery to high-relevance pictures as compared to low-relevance ones. These results support (a) Clark's finding that, under certain conditions, a sexually relevant external stimulus may elicit less expression of sexual fantasy than would have been the case with a stimulus of less sexual relevance, and (b) Mussen and Scodel's conclusions that sex guilt tends to inhibit expression of sexual fantasy material. However, the comparability of results in the three studies may be questioned on the grounds that subjects in the Leiman and Epstein experiment were responding to stimuli of presumably lower erotic valence than were the subjects in the other two experiments.

An experiment by Miller and Swanson (1960) evaluated the relationship between the degree of subjects' masculine identification and the transfer effects of viewing nude pictures. On the basis of their assessed strength of masculine identification, male college students were divided into three groups. All viewed photographs of nude females. Before and after viewing, each subject completed a series of equivalent incomplete stories dealing with interpersonal problem-solving which were subsequently scored for their degree of organization and clarity.

Results were interpreted as indicating that subjects in the "effeminate" and "unconsciously feminine" groups displayed impaired organization and clarity following presentation of the photographs. In contrast, subjects in the "masculine" group exhibited no significant pre-post differences in performance.

To summarize results of studies investigating the effects of viewing or reading erotic stimuli upon subsequent fantasy productions, it appears that fantasy responses are influenced by two classes of variables: (a) the nature of the stimuli, and (b) the conditions under which the stimuli are presented. In this respect, fantasy responses do not differ from physiological response measures. However, studies based on projective responses and their interpretations are difficult to validate empirically.

Subjective ratings of sexual arousal

The relative scarcity of studies employing subjective ratings of arousal appears to reflect a lack of confidence in the validity of subjective reports. Exponents of physiological measures cite the ease with which subjects, especially those with deviant sexual orientations, can fake ratings as compared to physiological responses (Freund, 1957). The use of projective tests also reflects the prevalent assumption that subjects will not candidly divulge sexual preferences or responses if queried directly. Although some few subjects who are ashamed or fearful of revealing deviant sexual object choices might, in fact, dissimulate, there appears little justification for believing that dissimulation must necessarily constitute a serious problem in laboratory studies. By guaranteeing anonymity through the use of self-selected code numbers, investigators could minimize subjects' reluctance to respond candidly. Furthermore, when samples are composed of subjects who have already admitted deviant proclivities as, for example, in studies of self-identified homosexuals, subjects would appear to have little motivation for faking responses. Perhaps the disinclination to use subjective ratings of specific stimuli as measures of arousal derives mainly from failure to differentiate between this use of self-report and its use in collecting interview data. As has been mentioned, investigators are well aware of the unreliability of sexual history data elicited by interview or questionnaire techniques. They recognize that subjects may tend to remember selectively; to willfully or inadvertently distort responses, often in the direction of social acceptability; to fill memory gaps with fabrications in order to oblige the examiner; or simply to be unable to assess past responses or events with a significant degree of precision. Moreover, interviewers may bias results by posing leading or judgmental questions, by focusing on certain areas and ignoring others, or by misinterpreting replies. Some investigators, notably Kinsey and his associates, have attempted to control distortions inherent in self-report sexual histories. Others have ignored the probability of distortion and have thus impaired the validity of their results.

The experimental technique of requiring subjects to view erotic stimuli and to make simultaneous ratings of degree of arousal appears relatively free of the shortcomings ascribed to interview techniques. In addition, analyses of response measures other than self-report reveal that they, too, are susceptible to distortion by subjects or misinterpretation by investigators. Therefore, subjective ratings, especially when used in conjunction with other measures, probably constitute a useful source of data concerning response to erotic stimuli.

Some researchers have used subjective ratings to assess subjects' preferences for those female body parts which determine heterosexual attractiveness. To investigate the hypothesis (derived from psychoanalytic theory) that men who prefer large-breasted women are more dependent than men who prefer women with moderate or small breasts, Scodel (1957) presented subjects with pairs of photographs depicting nude females varying in breast size. Each subject was requested to designate which figure of each pair he preferred. Although preference and arousal are presumably related, Scodel did not specifically assess arousal level in response to individual stimuli, but only correlated individual preferences for female breast-size with fantasy measures of dependency. He found that dependent men preferred small-breasted women, presumably because they had found the breast nonreinforcing during infancy—a conclusion based on an ingenious fusion of psychoanalytic and learning theories.

Wiggins and Wiggins (in press) and Wiggins, Wiggins, and Conger (1968) also studied male preferences for various types of female figures. Using silhouettes of females, the investigators analyzed the correlation between subjects' preference ratings and characteristics of the silhouetted figure, such as size of legs, breasts, and buttocks. These investigators, as did Scodel, measured preference rather than arousal. Actually the silhouettes were probably too abstract and devoid of detail to elicit measurable sexual arousal. However, results suggest that if photographs of nude females had been used, those exhibiting somatic characteristics preferred by an individual subject might have elicited higher magnitude of arousal than photographs of females exhibiting nonpreferred characteristics.

Byrne and Sheffield (1965) utilized subjective ratings of sexual arousal to test the hypothesis that individuals who employ sensitizing defenses respond to sexually arousing stimuli with greater verbalized anxiety than do individuals who employ repressing defense mechanisms. Forty-four repressors and 44 sensitizers were selected on the basis of scores on the Repression-Sensitization Scale. Half of the subjects read a series of vividly descriptive sexual passages; the other half read neutral passages from the same books. Immediately after reading the literary selections, the subjects were asked to indicate the extent to which they were sexually aroused, disgusted, entertained, bored, anxious, and angry. Results indicated that sexual arousal was significantly greater for the group that read the sexual material. Repressors and sensitizers did not differ significantly in reported arousal; however, as predicted, sensitizers experienced more concomitant anxiety than did repressors. In addition, correlational analysis revealed that for sensitizers sexual arousal is also associated with feeling more entertained and less bored. On the other hand, repressors reported that they felt more disgusted and angry as sexual arousal increased. These results suggest that differential responses of individuals to erotic stimuli, as measured by physiological, fantasy, and behavioral indices, may reflect differences in concomitant emotions as well as differences in levels of subjective arousal. For example, two subjects who verbally report equivalent levels of arousal may exhibit different levels of physiological responsivity as a result of differing emotional responses. Thus, it would appear that self-report of arousal assesses a discrete response domain which differs from those domains assessed by other techniques.

Mosher and Greenberg (in press) empirically tested the finding reported by Kinsey et al. (1953) that reading erotic literature produced sexual arousal in female subjects. They hypothesized that females identified as exhibiting a high disposition toward sex guilt would report a lower level of sexual arousal and a greater increase in the affective state of guilt after reading erotic materials than would subjects identified as exhibiting a low disposition toward sex guilt. They predicted also that the presence of an experimenter during the reading would facilitate anxiety but not guilt, since, they argued, guilt constitutes a response to breaching of internalized standards, while anxiety springs from the imminence of external censure or punishments. Seventy-two college females, divided at the median into high and low sex-guilt groups according to their scores on the Mosher Forced-Choice Guilt Inventory (MFCGI) were assigned to four experimental treatments. The arousal groups, either with or without a female experimenter present, read an erotic passage from the novel *Eternal Fire* by Calder Willingham; the nonarousal groups read a scientific passage under the same conditions. Changes in guilt, arousal, and anxiety following the reading were assessed by comparing pre- and post-reading scores on the Nowlis Mood Adjective Check List (MACL), to which had been added seven adjectives describing guilt and seven adjectives describing sexual arousal. Changed scores on the MFCGI were used as additional measures of guilt. Results indicated that reading the passage (a) produced significant elevation of sexual arousal, (b) increased reported sex guilt of high-guilt subjects and decreased reported sex guilt of low-guilt subjects, and (c) produced increased anxiety in all groups, but a significantly greater increase in groups of subjects who read with the experimenter present. Thus, the study supports Kinsey's finding that females experience sexual arousal as a consequence of reading erotic literature. The authors suggest that arousal is greater in response to material containing romantic or tender elements than to explicit erotica because the romantic components neutralize concomitant anxiety that might otherwise inhibit arousal. The finding that the presence of even a young and nonthreatening female experimenter during the reading facilitated anxiety provides additional evidence for the depressive effects of an inhibitory environment upon arousal (see Clark, 1952; and Mussen & Scodel, 1955).

Only one group of investigators has used subjective ratings of arousal as a primary measure of response to visual erotic stimuli. Using data collected from 68 male graduate students at a State university, Brady and Levitt (1964) and Levitt and Brady (1965) reported relationships between subjects' ratings of erotic photographs and a series of demographic and personality variables; Brady and Levitt (1965b) described the scaling of sexual history data collected from these subjects; and Brady and Levitt (1965a) reported relationships between the subjects' sexual histories and sexual preferences, as indicated by their ratings of the erotic photographs.

Sexual preferences of subjects were first assessed by requiring them to rate a series of 19 thematically different photographs which represented a wide range of potentially arousing stimuli. Each subject was then given the task of rating each photograph on a six-point scale indicating the degree to which he found it sexually stimulating. This procedure was repeated with two additional sets of 19 pictures which depicted the same sexual themes as the first set but comprised

different pictures. Levitt (1969) reported the themes, ranked in order of sexual properties, as follows:

1. Heterosexual coitus in the ventral-ventral position
2. Heterosexual coitus in the ventral-dorsal position
3. Heterosexual petting, participants nude
4. Heterosexual petting, participants partly clad
5. Heterosexual fellatio
6. Nude female
7. Heterosexual cunnilingus
8. Masturbation by a female
9. A triad of two females and one male in conjunctive behavior involving coitus and oral-genital activity
10. Partly clad female
11. Homosexual cunnilingus
12. Homosexual petting by females
13. Sadomasochistic behavior, male on female
14. Homosexual fellatio
15. Sadomasochistic behavior, female on male
16. Masturbation by a male
17. Homosexual anal coitus
18. Nude male
19. Partly clad male.

Both individual and subject ratings and ratings across sets and subjects proved highly reliable.

Levitt and Brady (1965) noted that subjects differed in reactivity; therefore they computed a Reactivity Index for each subject by adding his individual ratings of the 57 stimuli. Individual reactivity to the stimuli appeared to be normally distributed. Product-moment correlations were computed between the scores on 15 subscales of the Edwards Personal Preference Schedule, the 19 theme ratings, and the Reactivity Index. Significant negative correlation with the Endurance subscale of the EPPS was found for the Reactivity Index; this finding was interpreted as suggesting that persistent, hard-working individuals are relatively indifferent to fantasy sexual stimulation.

Brady and Levitt (1965a) investigated the relationship between a subject's ratings of the 19 sexual themes and his experience with sexual activities that roughly paralleled the themes depicted by the photographs. Sexual history data was collected by requiring subjects, after they had rated the erotic photographs, to complete a Sexual Experience Inventory. Items on this inventory ranged (in decreasing frequency of response) from "kissing with tongue contact" to "penile-anal penetration by another male." Brady and Levitt (1965b) reported that these items, when subjected to a scalogram analysis, were found to conform roughly to a Guttman scale, suggesting that the sexual experience of the group followed a fairly cumulative pattern. The data collected in the manner described above was subjected to three correlational analyses: correlations among the ratings of the various photographs, correlation among the inventory items, and correlations between sexual preferences and past sexual experience.

After partialling out differences resulting from differential reactivity among subjects (that is, the tendency toward generally elevated, generally moderate, or generally depressed ratings), correlations among sexual preferences were found to coincide, in the main, with expectations. Thus, for example, ratings of the two photographs which depict frank female homosexual activity (photos 11 and 12) were positively correlated; three of six possible intercorrelations of ratings of photographs with male homosexual import (photos 14, 17, 18, and 19) were significant; and ratings of the two photographs depicting sadomasochistic activities (photos 13 and 15) were positively correlated. Many significant correlations were also found among experientially similar questionnaire items.

In computing correlations between reported sexual experiences and thematic ratings, reactivity was again partialled out. It was noted, however, that subjects who reported more sexual experience on the questionnaire tended toward higher ratings. The authors interpreted the higher "reactivity index" as signifying less defensiveness on the part of more experienced subjects in reporting sexual responses rather than greater capacity for sexual arousal. Self-ratings of arousal appear, as do all other response measures, to be susceptible to distortion caused by defensiveness. Partialling out differences in general reactivity facilitates comparison of relative preferences among subjects, but it does not measure discretely the effects of response inhibition upon expression of arousal. Several interesting correlations between themes and sexual experiences were found. First, all six of the homosexual experiences were positively correlated with the ratings of theme 19, which pictures a partially clad male, but are not correlated with the ratings of the photographs which depict frank homosexual activity. The authors theorize that photos of partially clad men, having a more subtle homosexual connotation, are more capable of detecting differences in sexual orientation of subjects who have or have not had homosexual experiences than the more blatantly homosexual stimuli. Secondly, the two experiences involving anal intercourse (Items N and P) approach significant correlation (at the 5% level) with theme 15, which depicts a masochistic experience from the male point of view. The authors interpret this finding as suggestive of a relationship between anal intercourse in youth and masochism. Finally, only one positive correlation was found between having had a particular sexual experience and reported sexual arousal on viewing the same activity in the photographs. This correlation was found only between the ratings for theme 5 (oral-genital contact, female on male) and subjective report of having had this experience.

Impressed by the finding reported above that a simple photograph of a nude woman ranked sixth among the 19 sexual themes represented, Levitt and Hinesley (1967) investigated the hypothesis that erotic photographs in which the depicted individuals are nude would be more sexually stimulating than comparable photographs showing identical activity but in which the individuals are minimally unclothed. In addition, they compared the erotic valence of line drawings and photographs, exactly matched for activity depicted. They hypothesized that the photographs, since they more nearly resembled reality, would be more sexually stimulating than comparable erotic drawings. Results based on rating techniques identical to those used in the earlier studies supported both hypotheses. The authors also reported one additional finding. In comparing data from the earlier and later study they found that mean arousal levels for all categories of stimuli

investigated in both studies was significantly lower in the latter study. They attributed the drop to changes in experimental procedure and concluded that procedural components appear to influence response. Although the authors did not mention this, the change might also reflect desensitization of the later sample to visual sexual stimuli as a result of the recent trend toward unrestrained portrayal of nudity and erotic activities in magazines, motion pictures, and other media. Furthermore, as college students move toward more matter-of-fact acceptance of sexuality, as manifested by experiments in group nudity, more revealing apparel, more explicit sexual conversation, and more permissive sexual behavior, their responsiveness to more commonplace stimuli, such as the type of nudes found in *Playboy*, may become blunted. More explicit and realistic stimuli, such as motion pictures of sexual activity, may be required to elicit scalable responses. In summary, the use of subjective ratings for assessing sexual arousal appears to yield valid data. Although the technique contains methodological shortcomings, these can be minimized by appropriate experimental and statistical controls. Steps to guarantee anonymity may reduce subjects' tendency to dissimulate. Results can be more readily generalized across subjects by partialling out individual differences in magnitude of responsiveness. Results of the studies cited above indicate that subjects' ratings of thematic categories generally display internal consistency; however, an individual's responsiveness to a particular erotic theme appears to be unrelated to his having experienced, or not having experienced, the depicted activity. Perhaps his fantasies concerning a given activity may be more important than his actual past experience in determining his degree of responsiveness to a stimulus depicting the activity. Finally, as is the case in all methods of measuring sexual arousal, both the nature of the stimulus and the conditions of presentation affect responsiveness.

Behavioral measures of sexual arousal

Studies discussed thus far have focused on three classes of response to erotic stimuli: autonomic reactions, fantasy productions, and subjective ratings of arousal. In addition, a group of studies has investigated the rate, frequency, or duration of subjects' attention to erotic stimuli. Skinner (1953) commented that,

A direct inventory may be made by allowing a subject to look at an assortment of pictures and recording the time he spends on each. The behavior of looking at a picture is reinforced by what is seen. Looking at one picture may be more strongly reinforced than looking at another, and the times will vary accordingly. (p. 74)

Although it may be tempting to regard sexual arousal as reinforcing and thus to assume that the amount of time spent looking at erotic stimuli increases with level of arousal, this assumption must be qualified. Evidence cited above indicates that some subjects experience sexual stimuli as anxiety-provoking (Koegler & Kline, 1965). Therefore, one might predict that such subjects *avoid* looking at highly arousing stimuli in order to escape concomitant anxiety. Thus, it is conceivable that these subjects spend more time looking at moderately arousing stimuli than at highly arousing stimuli. Obviously, then, behavioral measures, like other indices of sexual arousal, cannot be interpreted unequivocally.

Zamansky (1956) presents suggestive evidence for a positive relationship between an individual's reported sexual orientation and the duration of his attention to appropriate sexual stimuli. He presented 20 homosexual males and 20 "normal" heterosexual males with cards, each containing a pair of pictures, variously portraying men, women, neutral objects, and pastoral scenes. Subjects were required to judge which picture of each pair was larger. The experimenter recorded the duration of each subject's eye fixation upon each picture of a given pair. Zamansky found that homosexual subjects spent a significantly longer time than did controls in viewing pictures of men in preference to pictures of women. In fact, the homosexuals avoided viewing pictures of females, even when these were paired with neutral pastoral scenes. This finding was corroborated by the observation of Hess, Seltzer, and Shlien (1965) that homosexuals responded more strongly to nonsexual art pictures than to pictures of female nudes. Since the stimuli depicted only clothed figures, Zamansky's results provide only suggestive evidence for the validity of fixation-time as an index of arousal.

Bullock (1959) reported that when two male and two female subjects (workers in a social agency) were allowed to view slides depicting landscapes or female nudes for as long as they wished, male subjects spent more time on nudes than on landscapes, and females spent less time on nudes than on landscapes.

In an unpublished study, Buchwald (1962) reports using a disguised task to assess differential responses of men and women to a variety of themes depicted on cards. The five classes of experimental stimuli comprised depictions of food, children, animals, extreme violence, and female nudes. Control subjects were shown cards bearing a rubber-stamped circus scene. Subjects were informed that they were participating in a test of extrasensory preception and that each time the experimenter drew a card from the deck they were to guess whether or not it contained a picture or was blank. Each deck contained equal numbers of blank and picture cards. If the subject responded, "picture," he was shown the reverse side; if he responded, "blank," he was informed whether he had responded correctly or incorrectly but was not shown the reverse side. Thus, responding "picture" more frequently than "blank" permitted the subject to view more pictures. Each of the six stimulus classes was viewed by one male and one female group. Buchwald reported that only a single subgroup, that in which male subjects viewed female nudes, produced a higher proportion of "picture" responses than did the controls. These results corroborate the evidence reported by Bullock and numerous other investigators that "normal" males demonstrate a greater interest in viewing photographs of nude females than in viewing photographs of nonsexual stimuli. Because it employs a disguised task, Buchwald's method might provide a means of assessing deviant sexual orientation while minimizing subject dissimulation. Each subject's responses to pictures of nude females could be compared with his responses to pictures depicting appropriate deviant objects (for example, suspected pedophiles would view both adult female and child nudes).

Citing evidence that vasoconstriction and other autonomic responses may fall under voluntary control, Brown (1964) criticized Freund's (1963) use of the phalloglethysmograph for diagnosing sexual orientation and proposed an alternate method employing an operant response. Brown presented to a single subject—a motorcycle fetishist suspected of homoerotic interest—a series of stimuli consisting of photographs of males and females "having some sexual stimulus value" and

photographs of inanimate objects. Stimuli were placed behind a movable weighted shutter for brief periods and the subject was instructed to raise the shutter by means of a cord as frequently as he wished. He opened the shutter significantly more times to male pictures than to either of the other two classes. Although Brown argued that the possibility that penile volume changes were under operant control invalidated Freund's procedure and that his own operant technique precluded faking, both assumptions were challenged by Koenig (1965). Furthermore, Koenig criticized Brown's failure to describe stimuli and procedure adequately and his use of questionable statistical procedures. Although Brown (1965) attempted to refute Koenig's criticisms, his arguments and data in fact do not appear to support the claims made for his technique. First of all, it would appear more accurate to regard sexual arousal as exhibiting *both* respondent and operant components rather than concluding that all components of arousal are under voluntary control. Secondly, although Brown uses nine sessions to minimize the possibility of faking—an unwieldy expedient in itself—it would appear that a subject bent upon dissimulation could readily minimize the number of responses to his preferred stimulus class. Although Brown appears to believe that a heavy preponderance of responses to any single stimulus class indicates faking, this assumption is not supported by Zamansky's (1956) finding that homosexuals actually *avoid* looking at pictures of women and thus manifest much greater interest in pictures of men. Brown's technique, which uses a frequency measure, exhibits no apparent advantage over the methods used by Bullock in which viewing time served as the response measure.

Two experiments reported by Martin (1964) utilize behavioral measures to study the effects of inhibitory, as opposed to permissive, social settings upon the expression of sexual motivation. On the basis of results reported by Clark (1955) and Leiman and Epstein (1961), Martin predicted that subjects would spend more time looking at pictures of nudes under permissive conditions than under inhibitory conditions, and that palmar skin conductance scores would increase under inhibitory, as compared to permissive, conditions. Twenty unmarried college males were used in each of two experimental groups, and 10 similar subjects were used in each of the two control groups. On the pretext that he was studying their physiological responses, the experimenter exhibited six photographs of nude females to each subject. During presentation, palmar skin conductance was recorded. Immediately after initial presentation, the experimenter instructed each individual to sort the pictures in order of attractiveness while additional skin conductance measures were to be taken. A similar procedure was followed for the control group, except that each control subject was presented with pictures depicting landscapes. Half of the experimentals and half of the controls were given instructions designed to promote a relaxed and permissive atmosphere. The others were given instructions designed to arouse memories of interactions with parents and to create a formal atmosphere. Results supported both predictions. Average sorting time was less under inhibitory than permissive conditions, and palmar skin conductance scores tended to show greater increases during serial presentation of nude pictures under inhibitory than permissive conditions, thus indicating that reduced sorting time under inhibitory conditions resulted from sexual anxiety. A second experiment essentially corroborated the results of the first, although variations in the degree

of pre-arousal produced no significant main effects or interactions. Thus, it would appear that the conditions under which visual sexual stimuli are viewed affect behavioral, as well as fantasy, measures of sexual expression.

Evidence that various behaviors can be modified by modeling influences led Walters, Bowen, and Parke (1964) to predict that subjects who observed a model looking at sexual stimuli would reproduce the model's looking behavior when subsequently given the opportunity to view comparable stimuli. Sixty unmarried male college students were assigned to four experimental conditions. Under the guise of training subjects to evaluate the effectiveness of various advertising photographs, the experimenter showed each subject a film portraying a model looking at photographs of nudes while his eye movements were recorded by a Mackworth eye-movement camera. Eye fixations were recorded on the film as spots of light. One group of subjects saw a version of the film on which the model fixated sexual areas of the filmed nudes and was verbally reinforced on the accompanying sound track for these fixations. A second group viewed the identical film minus the sound track. A third group viewed a film on which the model was verbally reinforced for fixating only background areas. A fourth group viewed this film minus the sound track. All subjects were then asked to view a series of slides comprising photographs of male and female nudes and neutral photographs which they could expose for as long as they wished by pushing a button. During viewing, GSRs were recorded. Subjects were asked to view the entire series after which they would be asked to judge the effectiveness of the stimuli as advertising art. Results indicated that subjects spent significantly less time viewing slides portraying nudes than neutral slides and that GSR responsiveness was greater to sexual slides than neutral, thus suggesting that the sexual slides elicited avoidance tendencies. This finding is at variance with Bullock's (1959) report of longer viewing time by males for female nudes than for landscapes. However, this discrepancy may be attributable to Bullock's use on only two male subjects and to their greater age and sophistication relative to the college subjects used by Walters et al. Analysis of eye-movement data revealed that subjects who viewed the nonavoiding model spent significantly more time fixating sexual body areas than did subjects who viewed the avoiding model. Modeling exerted no significant effects upon viewing of neutral stimuli. Effects of reinforcement also failed to attain significance.

Although studies utilizing perceptual defense tasks have been excluded from the present review, one such study (Mosher, 1965) merits inclusion because the experimenter attempted to induce sexual arousal in subjects before assigning them the perceptual task. The study was designed to assess the interaction of fear and guilt in inhibiting identification of sexual words. Eighty college males completed a questionnaire designed to measure three subcategories of guilt (sex guilt, hostile guilt, and morality-conscience guilt), after which they participated in an arousal task. All subjects were shown six "pin-ups" of nude and seminude females and were asked to rate them on several characteristics. Forty subjects were then randomly assigned to a condition designed to induce fear of censure for manifesting sexual interest, and forty were assigned to a condition designed to minimize fear of censure for manifesting sexual interest. Following this, subjects were assigned a perceptual task designed to assess recognition thresholds for

sexual and neutral words. As had been predicted, subjects low in sexual guilt and in the fear reduction condition achieved the lowest perceptual defense scores. However, results did not support a second expectation that subjects who were high in sexual guilt and in the fear induction condition would achieve the highest perceptual defense scores. The author conjectured that this unexpected finding may reflect the propensity of high-guilt individuals to attend to internalized cues and thus to remain relatively unaffected by manipulation of external cues.

Galbraith and Mosher (1968) further investigated the effects of sexual arousal, sex guilt, and expectancies for censure upon associative responses to double entendre sexual words. On the basis of questionnaire scores on sexual guilt items, 168 college males were divided at the median into high and low sex-guilt groups. Subjects were then assigned to four conditions: (a) sexual stimulation with high expectancy for censure, (b) sexual stimulation with low expectancy for censure, (c) sexual stimulation with no attempt to structure expectancy for censure, and (d) no sexual stimulation and no expectancy manipulation. Subjects in the first three groups were presented with a board upon which 27 pictures of nude or seminude girls were pasted. They were asked to study the pictures for 7 minutes and to rate them on several characteristics. Experimenters then expressed permissive or censorious attitudes toward nude pictures to individual subjects in the low- and high-expectancy conditions. All subjects then completed a word association test containing 50 words, 30 of which were double entendre sexual words (such as, "cock," "screw," "pussy"). Responses were scored for degree of sexual explicitness. Results indicated that individual differences in sex guilt were positively related to the inhibition of sexual responses. Low sex-guilt subjects identified more double entendre words as sexual than did high sex-guilt subjects. In addition, the experimenter's expression of permissive attitudes toward nude pictures led to significant increases in the sexual responses of low sex-guilt subjects, but to no corresponding increase in the responsivity of high sex-guilt subjects. Censorious statements by the experimenter produced no difference in response between high- and low-guilt subjects. These findings corroborated the results of the Mosher (1965) study and supported the assumption that high-guilt subjects responded primarily to internalized cues. The authors concluded that the effects which situationally-induced changes in approach and avoidance behavior exert upon overt sexual responses are apparently mediated by the individual level of sexual guilt.

A few studies report attempts by investigators to induce in subjects the spurious belief that they have exhibited arousal to inappropriate stimuli or that they have exhibited greater arousal to one stimulus than to another. Bramel (1962) tested a hypothesis, derived from Festinger's (1954) dissonance theory, that a person who receives undesirable information about himself which is dissonant with his self-concept will project this information upon another individual to an extent positively related to the amount of dissonance. Further, it was hypothesized that certain types of defensive projections are likely to be selectively aimed at persons who are favorably evaluated by the threatened individual. One group of experimental subjects received falsified test results that tended to raise their self-esteem; another group received falsified test results that tended to lower their self-esteem. Both groups then received fraudulent information that they had exhibited homosexual GSR responses while viewing

photographs of men. During the presentation of the disturbing material, each subject made estimates of the degree of homosexual arousal of another subject with whom he was paired and whom he had met only rather briefly just prior to the experiment. The results supported the hypotheses. High-dissonance subjects attributed to their partner about the same degree of arousal as they themselves appeared to be having. Those in the low-dissonance condition in general attributed to their partner a level of arousal lower than their own.

A second study (Bramel, 1963) employed a similar procedure to investigate factors governing the choice of a target for defensive projection. As in the previous experiment, experimental subjects were induced to believe that they had registered GSR responses indicative of homosexuality. Students with higher self-esteem exhibited higher projection than those with low self-esteem. However, when subjects rated the homosexuality of a speaker telling TAT stories, subjects who had been informed that he was a student attributed significantly more homosexuality to him than did subjects who had been informed that he was a criminal. Thus, the hypothesis that a person is more likely to project dissonant information about himself upon someone in his own social category was supported.

Valins (1967) also used spurious feedback on subjects' physiological responses to manipulate their perceptions of the extent to which they were aroused by photographs. Male college students were classified as "emotional" or "unemotional" on the basis of a questionnaire. While viewing slides of seminude females, subjects listened to a tape recording of sounds that were allegedly their own heartbeats. To five of the slides they heard a marked change in their "heart rates"; to the other five they heard no change. It was found that relatively emotional subjects labeled nudes as attractive or unattractive depending upon whether they thought their hearts had reacted. The effect was significantly less marked for unemotional subjects. These individual differences were still apparent two months later when subjects were allowed to choose photographs of the nudes as rewards. These findings supported the author's hypothesis that emotional subjects made greater use of cues concerning internal reactions.

Two additional studies have employed sexual material in order to test hypotheses derived from dissonance theory. Aronson and Mills (1959) compelled two groups of female subjects to undergo either a mild or a severe initiation before being admitted to a simulated discussion group. The severe initiation required the subjects to pass an "Embarrassment Test" consisting of reading aloud to the experimenter 12 cards containing obscene words, such as "fuck," "cock," and "screw," and two passages taken from contemporary novels, vividly describing sexual intercourse. Subjects in the mild condition read relatively innocuous words and passages. As predicted, subjects in the severe condition expressed greater liking for the simulated discussion groups, which were actually quite dull, than did subjects in the mild condition.

Eisenman and Coyle (1965) adduced from dissonance theory the hypothesis that sexually inadequate subjects, as compared to those exhibiting greater sexual adequacy, would be more readily influenced by verbal statements designed to alter their sexual behavior. After infiltrating a fraternity house as alleged relatives of certain members, the experimenters compiled behavioral ratings of subjects' sexual adequacy. They then attempted to arouse subjects' sexual interest by the

following statement: "I can get you a date with a good-looking girl. She's pretty free sexually, and I think you would get along well with her." Two days after making the first statement, the experimenter told half of the subjects individually, "Premarital sex is becoming more and more acceptable. A person is certainly stupid to miss out on good opportunities" (positive sex statement). The other subjects were individually told, "Premarital sex results in syphilis very frequently, and furthermore, it is immoral" (negative sex statement). One hour after these statements were made, each student was individually asked if he would be willing to drive his car 50 miles to meet the attractive date. The authors reported that the four subjects ranked least inadequate maintained their original attitude toward the date despite the intervening positive or negative statement made by the experimenter, while the other 11 subjects tended to act in a direction consonant with the experimenter's statement. The authors interpreted the results as evidence that the sexually inadequate subjects, unlike their more adequate peers, experienced psychological stress because of discrepancy between their perceived and ideal selves, and thus were more susceptible to manipulation. As an alternate explanation, one might argue that the sexually inadequate subjects, because of unresolved doubts and misgivings concerning sexual activity, probably had more ambivalence about approaching the girl and, as a result, could be readily influenced by either positive or negative appeals. Perhaps most relevant to the present review is the evidence that sexual approach to a specific object can be facilitated or inhibited by manipulating general attitudes toward sexual behavior. Here again one observes the potent influence of situational factors upon arousal.

Moss and Gengerelli (1967) attempted to induce a variety of emotions, including sexual arousal, by means of telepathy. According to the authors, telepathy usually occurs when the transmitter (T) is under emotional stress, is isolated from the receiver (R), and is bombarded visually and aurally by emotionally charged stimuli. Thirty individuals who thought that they possessed telepathic facility served as subjects and were assigned to T-R pairs. Individuals serving as transmitters were presented with slides and audiotapes designed to induce six different emotions. The sexual arousal slides consisted of photographs of partially draped and undraped girls with beautiful and sensuous bodies. Receivers were required to identify the emotion experienced following each transmission. Identification by receivers of sexually arousing transmissions, as compared to other transmissions, was only moderately good. Results did not support the efficacy of telepathic sexual arousal.

In general, results of behavioral studies of sexual arousal suggest that subjects may manifest either more or less attention to sexual than to nonsexual stimuli, depending upon the nature of experimentally induced response sets and the characteristics of the stimuli. Modeling, for example, can be used to influence the subsequent viewing behavior of subjects, and persuasive communications can facilitate or inhibit sexual approach behavior. Under permissive conditions, heterosexually oriented males appear to attend longer to female nudes than to other classes of stimuli, and male homosexuals appear to attend longer to pictures of males or male homosexual activity than to other classes of stimuli, provided that the depiction of homosexual activity is not overly blatant. If the subject receives spurious feedback on sexual arousal, his belief tends to conform to the information transmitted.

Numerous clinicians have adapted experimental procedures for sexual arousal in order to modify deviant sexual behavior. Although a variety of procedures has been employed, the usual approach involves pairing a primary aversive stimulus with the stimulus which elicits an undesirable response. This technique is designed to endow the inappropriate stimulus with negative properties or at least to divest it of positive attributes. Numerous cases of aversive treatment of sexual deviations have been reviewed by Feldman (1966), Grossberg (1964), Kalish (1965), Rachman (1961), and Ullmann and Krasner (1965).

Stimuli eliciting deviant responses have included pictures of inappropriate objects such as individuals of the same sex, children, or fetishistic objects. Some therapists have utilized actual fetish objects to induce arousal. Others have instructed subjects to imagine vividly the inappropriate object or event, and one therapist (Bancroft et al., 1966) managed to shock a pedophilic patient by means of a portable transducer and phallophlethysmograph each time the patient manifested increased penile volume while encountering immature females in the natural environment.

To treat a variety of deviant patients, faradic shock has been paired with arousal stimuli by Bancroft et al. (1966), Barker, Thorpe, Blakemore, Lavin, and Conway (1961), Blakemore, Thorpe, Barker, Conway, and Lavin (1963), Kushner (1965), Kushner and Sandler (1966), Lavin, Thorpe, Barker, Blakemore, and Conway (1961), Marks and Gelder (in press), Marks, Rachman, and Gelder (1965), McGuire and Vallance (1964), Solyom and Miller (1965), Thorpe and Schmidt (1964), Thorpe, Schmidt, and Castell (1963), and numerous others.

Some therapists have paired arousal stimuli with apomorphine, emetine, or other emetics (Clark, 1963; Cooper, 1963; Davies & Morgenstern, 1960; Freund, 1960; James, 1962; and Raymond, 1956; among others).

Barker (1965) and Rachman (1961, 1965) have discussed the relative merits of emetic, as compared to faradic shock, aversion. Rachman emphasizes the greater degree of control over timing afforded by the shock technique. He cites several additional disadvantages of chemical techniques, including possibility of depressive side effects; limitations on repeated presentations imposed by the arduous, complicated, and unpleasant nature of aversion sessions; increased aggressiveness and hostility in patients; unpleasantness of treatment for therapist and attendants; and possibility of dangerous physiological consequences to patients, especially those with gastric or cardiac conditions. Apparently as a result of their greater efficiency and because of the disadvantages of chemical aversion, shock techniques have greatly increased in popularity during recent years, while the popularity of chemical techniques has declined greatly.

Cautela (1967) and Davison (1968) used covert sensitization, a method of imaginal counterconditioning, to avert subjects to inappropriate arousal stimuli. This technique entails instructing the patient to imagine simultaneously both a sexually arousing scene and an extremely disgusting scene. Gold and Neufeld (1965) treated a male homosexual by a similar method, first instructing the patient to imagine disgusting males, then verbally reinforcing him each time he signalled indifference to imaginal males presented in ascending order of attractiveness.

Therapists have attempted to increase the strength of appropriate stimuli by pairing them with positive consequences. Freund (1963), after averting male homosexuals to pictures of men, exposed them to pictures of attractive nude females, following injection of testosterone propionate. Thorpe et al. (1963) reported pairing female pictures with homosexuals' masturbatory orgasms in an effort to induce in them an interest in females. Davison (1968) utilized a similar approach to countercondition sadistic fantasies in a college student, employing both imaginary scenes and *Playboy* pictures as arousal stimuli to be paired with masturbation.

Imaginal stimuli have been used in the counterconditioning of anxiety associated with sexual activity. Brady (1966) reports using Brevital, a fast-acting muscle relaxant, to enable frigid females to remain calm while imagining a series of erotic scenes, arranged in hierarchical order on the basis of the amount of anxiety elicited. Brady cites a personal communication from Lazarus (1966) reporting good results in 9 of 16 cases of frigidity treated by systematic desensitization. Lazarus paired the arousal stimuli with verbally induced deep muscle relaxation, following Wolpe's (1958) method.

Although the case reports cited in this section have primarily described attempts to modify deviant sexual behaviors of individual patients, they may also be regarded as reports of single-subject own-control experiments, since both the theoretical model and the treatment procedure are drawn from experimental psychology. The selected case reports summarized above illustrate a variety of ways in which laboratory methods for inducing and measuring sexual arousal have been applied to the modification of deviant sexual behavior. However, the relationship between research and treatment appears to be reciprocal, since these case reports not only describe applications of experimental procedures, but also cite results that raise questions for further research.

SUMMARY AND CONCLUSIONS

The above overview of the studies of human sexual arousal reveals, for the most part, tentative and ambiguous evidence. Most studies have employed only moderately powerful arousal stimuli and indirect response measures and, as a result, have produced attenuated effects. Furthermore, methodological variations among studies prevent precise cross-study comparisons and logical synthesis of disparate findings. Nevertheless, the evidence, despite its inadequacies, suggests the following propositions, which may be tentatively held, subject to further empirical testing:

1. A significant proportion of male and female individuals, when exposed to pictures or literary descriptions of nudes or sexual activity, exhibit changes in somatic processes, fantasy productions, subjective ratings of sexual arousal, and various behaviors. Direct observation of somatic changes in genital and other erogenous areas, augmented by subjective reports, yields the most comprehensive and straightforward measures of arousal. Indirect techniques produce sparser and more ambiguous data, but are less costly than direct techniques and may be applied to a broader spectrum of subjects.

2. Although viewing pictures of female nudes produces affective changes in both males and females, the qualitative nature of the affect varies greatly among individuals. Male responses may reflect an admixture of negative affect, such as anxiety. Females respond more strongly to literary than to visual stimuli, and their responses frequently embody negative affect. Male homosexuals may actually be repelled by female nudes.

3. Differences in age, experience, and scores on standard personality questionnaires correlate with male individual differences in response levels. Older and more mature males and males scoring relatively high on measures of masculine identity and relatively low in sex guilt display comparatively little response inhibition.

4. Females scoring high on the Hysteria Scale and either high or low on the Mf [masculine-feminine] Scale of the Minnesota Multiphasic Personality Inventory show high GSR reactivity to pictures of male and female nudes. This finding suggests that females in these categories freely express sexual anxiety, but also may experience some degree of positive affect.

5. Response is affected by numerous characteristics of the stimuli, including degree of realism, degree of nudity portrayed, aesthetic value, subtlety, and congruence of stimuli with individual preferences for specific physical components or varieties of activity. Photographs elicit stronger responses than drawings. Depiction of sexual activity involving nude participants elicits stronger responses than comparable photographs of clothed participants. Homosexuals apparently prefer subtle, rather than blatant, portrayals of homosexual objects or activities. Stimuli of higher aesthetic quality within a given stimulus class appear to elicit stronger responses than comparable stimuli of lower aesthetic value, although individual preferences for specific stimulus components also account for within-class variability.

6. Environmental conditions under which subjects view stimuli also influence response levels. Permissive atmospheres tend to facilitate strong responses; restrictive, formal atmospheres tend to inhibit them. However, existing results do not permit differentiation between the effects of atmosphere upon level of arousal and its effects upon the free expression of arousal.

7. Sexual behavior can be readily modified by modeling, classical conditioning, attitude manipulation, and spurious feedback. The effects of operant conditioning upon sexual arousal remain to be investigated. ESP transmission of arousal stimuli produces little effect.

In summary, empirical evidence suggests that human sexual arousal is a complex physiological and psychological process, comprising many response components and influenced by numerous individual, stimulus, and environmental variables. Responses may vary in strength and affective toning within different situational contexts; stimuli may vary in erotic value within different social contexts. For example, the well-turned ankle that titillated Victorian males would attract little masculine attention today. Obviously, as our society moves toward sexual permissiveness, investigators will have to employ progressively more explicit stimuli in order to elicit measurable responses.

Hopefully, increased permissiveness will also permit broader research, comparable to that of Masters and Johnson (1966), involving direct observation and measurement of the entire range of human sexual activities. Such research is indispensable to an understanding of the important and largely uncharted area of human sexual behavior. Investigators using less direct methods should also be able to broaden the effectiveness of their research by employing more powerful visual and literary stimuli and by investigating tactile, auditory, olfactory, and other sensory modalities. They might also attempt to refine existing measurement techniques in order to differentiate more precisely among the various positive and negative affective responses to erotic stimuli. Steps toward this goal might include techniques for pattern analysis of various concurrent physiological responses and investigation of relationships between somatic response patterns and behavior measures.

Research findings might serve several practical needs, providing techniques for modifying deviant sexual behavior, drafting laws governing dissemination of erotica, altering inappropriate attitudes toward sexuality, and enriching individual sexual experience. In order to facilitate the practical application of findings, investigators might design empirical studies to be carried out in a natural environment. For example, subjects viewing a variety of dancers in a "topless" club or a variety of erotic short films in an "underground" motion picture theater might be asked to rate the level of arousal elicited by each presentation or by changes in lighting, sound, proximity, or other variables associated with each presentation. Investigators might gain the cooperation of entertainment entrepreneurs by purchasing tickets for volunteer subjects. Investigators might also study subjects drawn from other than college or deviant populations—the foci of most previous studies—including samples composed of individuals who patronize erotic entertainments or buy erotic publications.

Obviously our society expresses a pervasive interest in human sexuality and demonstrates the need for a broader understanding of the subject. Yet a great disparity exists between society's interest and need for information and the meager body of existing evidence. Hopefully, the forces of social change will enable researchers to free themselves from obsolete taboos and impel them to accelerate their study of human sexual arousal.

Table 1

SUMMARY OF THE REPORTED EFFECTS OF EROTIC STIMULI

		Sexual Response			N
		Definite frequent	Sometimes	Never	
Portrayals of nudes	male	18%	36%	46%	4191
	female	3%	9%	88%	5698
Observing genitalia	male *	"many"	"many"	"few"	
	female	21%	27%	52%	617
Commercial films	male	6%	30%	64%	3231
	female	9%	39%	52%	5411
Burlesques and floor	male	28%	34%	38%	3377
	female	4%	10%	86%	2550
Observing sex acts	male	42%	35%	23%	3868
	female	14%	18%	68%	2242
Reading literary materials	male	21%	38%	41%	3952
	female	16%	44%	40%	5699
Reading erotic stories	male	16%	31%	53%	4202
	female	2%	12%	86%	5523

* Percentages not reported.

Adapted from Kinsey et al. (1953) by Cairns et al. (1962).

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Physiological Measures of Sexual Arousal in the Human

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In an article about sex research which appeared in the *N.Y. Times*, Gebhard is quoted as saying to Masters during an automobile trip, "Watch where you're going, Bill. If you get us all killed, there goes sex research in the United States" (Buckley, 1969, p. 106). Although Gebhard's statement is somewhat exaggerated, it is true that the Kinsey Institute and the Reproductive Biology Research Foundation represent the major sources of scientific information about human sexual patterns. However, many investigators are now becoming active in this field, and it may be helpful to survey some of the physiological methods in current use. This article will deal with quantifiable physiological methods of measuring human sexual arousal. Many of these methods are still in developmental stages, and details about them were provided by generous investigators. It is hoped that by facilitating scientific communication, more research will be stimulated in this vital area.

Many important questions seem to be awaiting the development of appropriate methodology. One example which involves an area of public debate is the question of pornography. Every investigation of this problem from a legal or social standpoint has concluded with the statement that not enough scientific information is available. It is obvious that scientists cannot answer questions such as how arousing pornography is, or who is most aroused by pornography, until they can decide on reliable methods for measuring sexual arousal. Theoretical questions, such as those posed by Hardy (1964), must also await the development of suitable methodology for measuring sexual arousal.

Whalen (1966) has made a useful distinction between sexual arousal (the momentary or current level of sexual excitement) and sexual arousability ("an individual's characteristic rate of approach to orgasm as a result of sexual stimulation") (p. 152). The distinction is similar to that made between state and trait by other investigators concerning other emotions (Cattell & Scheier, 1961; Spielberger, 1966; Zuckerman, Persky, & Link, 1967). Zuckerman et al. (1967) suggested that a trait may be measurable as the average and variation in a series of

state measures. If this were applied to sexual arousability, it would be possible to define arousability by a series of measures of sexual arousal to standard stimulation. Beach (1956) reported high reliabilities for various behavioral indices of sexual arousal in rats. Comparable data on humans is simply not available.

Sexual arousability could be measured by behavioral and verbal report measures. Latency to orgasm, frequency of orgasm, and subjective estimates, of arousal are some alternatives to physiological recording. However, physiological measures offer some obvious advantages in their objectivity, continuous time sampling, and the fact that they can be used to measure arousal without necessarily inducing orgasm. Although some mechanical devices have been developed for inducing orgasm in a somewhat standard fashion (Masters & Johnson, 1966; Sobrero, Stearns, & Blair, 1965), most measurements which rely on orgasm introduce many uncontrolled variables, the least of which is movement. The social nature of conventional sexual stimulation, the influence of the setting in which orgasm is induced, and volunteer selection are all problems in this kind of experiment. Psychological or visual and auditory stimuli are more easily standardized and allow the researcher to sample a wider variety of subjects. Furthermore, it is questionable that arousal can be measured by orgasmic ejaculation since the two may depend on different neural mechanisms. This problem will be discussed later.

It should be pointed out that the tremendous fund of data collected by Kinsey and his coworkers (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953) were based on retrospective reports. The data presented by Masters and Johnson (1966) are physiological and anatomical, but not very quantitative. In describing the course of physiological reactions during the various stages of arousal, Masters and Johnson reported modal reactions and ranges of reactions with little indication of normal variation. Some of the changes described may be intrinsically difficult to measure, but most, such as blood volume changes, temperature changes, muscle tension, hyperventilation, tachycardia, and sweating, are accessible to measurement by standard psychophysiological techniques. Special applications of these techniques will be described later in this paper. The description of modal patterns is useful, but more quantitative specificity is necessary in studying relationships between variables and comparing individuals or groups of individuals.

CENTRAL NERVOUS SYSTEM

Sexual arousal is undoubtedly mediated through the central and autonomic nervous systems and may also involve the pituitary gonadotropic and gonadal system.¹ Money (1961) has summarized:

among the coordinates of sexual function there are three: local genital surfaces, the brain, the hormones, any of which can fail in its contributions without total destruction of sexual function Nonetheless, it is evident that loss of any one of the three constituents is an immense handicap to effective sexual functioning. (p. 1396)

¹ Although the gonadotropic and gonadal hormones have been shown to play an essential role in the anatomical development of the sexual systems, their role in sexual arousal in man is less clearly understood.

Beach (1958) noted species and sex differences in the degree to which sexual arousal depends on the neocortex and hormones. The evolutionary trend is toward more stress on the neocortex and less on the hormones.

MacLean (1965) has discussed the psychosexual functions of the brain. Visual and olfactory senses are important in the initial stimulation of sexual arousal, and MacLean suggested that the visual sense has become more important in the course of evolution. However, the importance of visual and auditory stimulation in the displays and calls of mating birds would suggest that the crucial roles of these senses are not confined to higher species of mammals. More specific sexual arousal centers have been found in the limbic system of the squirrel monkey, using the method of intracranial stimulation. Penile erections were elicited by stimulation of hippocampal projections to parts of the septum, anterior thalamus and hypothalamus; parts of the Papez circuit (mamillary bodies, mamillothalamic tract, anterior thalamic nuclei, and anterior cingulate gyrus); and parts of the medial orbital gyrus, medial dorsal nucleus of the thalamus, and regions of their connections. The medial part of the medial dorsal nucleus and medial septopreoptic region are said to be modal points for erection. Stimulation in the septum and rostral diencephalon, which results in erection, is also noted to be associated with afterdischarges in the hippocampus, during which time erections become throbbing in character and reach maximum size. Following these hippocampal afterdischarges, the monkeys appear to be calm and placid for some time. There is a strong suggestion that the hippocampal discharges are linked to the phenomenon of orgasm and postorgastic decline of arousability in the male; they are not, however, associated with ejaculation. Stimulation in the thalamus of other points within and bordering on the caudal intralaminar region and along the course of the spinothalamic pathway elicit seminal discharge with motile sperm and quasipruritic scratching of the genitalia. The seminal discharge could occur without the appearance of throbbing penile erection. Beach (1956) suggested a distinction between a sexual arousal mechanism (SAM) and the intromissive and ejaculatory mechanism (IEM) in the male,² and MacLean's evidence shows the neural separation of these mechanisms. Sobrero et al. (1956) used a vibrating cup applied with gentle pressure to the glans penis to obtain semen samples from schizophrenic males and males with infertility problems. Although ejaculation was eventually induced in all 40 infertile males, "no full erection was ever observed, although in some instances a partial, very soft erection was observed at the time of ejaculation" (p. 767). Similar results were obtained with five normal subjects. Only five of these 45 subjects reported erotic fantasies or orgasmic feelings. In Hohmann's (1966) study of the effects of spinal cord lesions on emotional feelings, 15 of the 25 subjects were still able to have erections, but only three reported ejaculation, and four reported the experience of orgasm. These data provide behavioral evidence for the separation of SAM and IEM. Other findings relevant to the independence of ejaculation and orgasm have been discussed by Beach (1966). The implication of the independent functioning of these systems is that latency of ejaculation cannot be equated with penile erection as alternate indices of sexual arousal. The IEM seems to be more dependent on autonomic and sensory feedback than the SAM.

²In the later articles Beach refers to these as the arousal mechanism (AM) and consummatory mechanism (CM).

AUTONOMIC NERVOUS SYSTEM

The limbic structures which are involved in sexual arousal have connections with the hypothalamus, which in turn may involve the autonomic and pituitary-gonatropic systems. Gellhorn and Loofbourrow (1963) stated that appropriate hypothalamic lesions may abolish sexual behavior; but if the hypothalamus is intact, destruction of large parts of the cerebral cortex has little effect (in rats and rabbits). Sex hormones may sensitize the hypothalamic centers involved in the sex drive. According to these authors, the sex act is accompanied by simultaneous parasympathetic and sympathetic discharges. Wenger, Jones, and Jones (1956) suggested that the sacral portion of the parasympathetic nervous system dominates in the initial phases of sexual arousal, but that the sympathetic system becomes more prominent as orgasm approaches. After orgasm there is a over-compensatory phase of parasympathetic dominance.

Kinsey et al. (1953) reviewed the literature (what there was of it) on autonomic components of sexual arousal. What is interesting in this review is the contrast of the autonomic patterns in sexual arousal with those in anger, fear, epilepsy, and pain. The problem of emotional specificity is an important one to consider in measuring responses to sexual stimuli, since these stimuli might also elicit secondary reactions, the effects of which might be mistaken for those of sexual arousal. Both anger and sexual arousal may elicit increases in pulse rate, blood pressure, hyperventilation, adrenaline secretion, muscle tension, and inhibition of gastrointestinal activity. However, sexual arousal is distinct in the "invariable increase" in surface temperatures, tissue color and tumescence, genital secretions, rhythmic muscular movements, and orgasm. Fear may also increase pulse, blood pressure, breathing rate, adrenaline secretion, and muscle tension; however, the increase in peripheral circulation of blood, vasodilation, genital secretions, salivary secretions, and rhythmic muscle movements are more characteristic of sexual arousal. The muscular tensions and rigidities of epileptic seizure are common to both epileptic fits and sexual responses as orgasm is approached. In some cases, orgasm may actually occur during epileptic seizures. In general, only tumescence, vasodilation, genital secretions, and rhythmic muscular movements are characteristic of sexual arousal alone. The rhythmic muscular movements are controlled by a spinal neural mechanism and are limited to the postintromission phase of sexual arousal just prior to and during orgasm.

Masters and Johnson (1966) summarized their findings for the four phases of sexual arousal: excitement, plateau, orgasmic, and resolution. In the excitement phase, penile erection thickening, flattening and elevation of the scrotal integument, and moderate testicular elevation and size increase are the only typical reactions in the male. Nipple erection, vaginal lubrication, thickening of vaginal walls, flattening and elevation of major labia, and expansion of the vaginal barrel are found in women. Only penile erection and vaginal lubrication are found in the immediate response (3 to 15 seconds) to sexual stimulation. Sympathetic system responses such as hyperventilation, tachycardia, and muscle tension are not characteristic until the plateau phase of arousal (approaching orgasm). Cowper's gland emissions in the male and Bartholin's gland emissions in the female are also found in this phase. Sympathetic reactions reach a peak during the brief orgasmic phase when involuntary muscle contractions appear. Various contractions in genital and accessory organs and in the external rectal sphincter are seen during orgasm. Sympathetic reactions and vasocongestion diminish gradually

during the resolution phase. A sweating reaction is seen in 30% to 40% of subjects. According to these authors, the only specific indices of sexual arousal which could be used early in the excitement phase of sexual arousal would be penile erection in the male and vaginal lubrication and possibly nipple erection in the female. A "sex tension flush" is seen in a minority of females (25%) during the excitement phase, but only comes into prominence in a majority (75%) of females in the plateau phase. Masters and Johnson's description of the stages of arousal seems to support the theory (Wenger et al., 1956) of the predominance of parasympathetic phenomena during the early stages of arousal and the appearance of sympathetic phenomena during the later preorgasmic phases of arousal.

Perhaps Wenger's theory may be applied to the two mechanisms postulated by Beach: parasympathetic activity stimulating SAM and sympathetic activity associated with IEM. Some interesting and relevant data is available on the sexual effects of tranquilizing and antidepressant drugs. Blair and Simpson (1966) reported that tranquilizing drugs (Perphenazine, Trifluoperazine, Butaperazine, and Reserpine), which act as central sympathetic nervous system depressants, interfere with emission and ejaculation. The authors³ also reported that only six of 60 chronic patients on the drug Thioridazine (also a central autonomic depressant) could experience ejaculation; and 10 normals on Tofranil all had some degree of retarded ejaculation. Many other investigators have reported inhibitions of ejaculation produced by Thioridazine (Cohen, 1964). Money and Yankowitz (1967) found that the sympathetic-inhibiting drug Ismelin produces ejaculation problems.

On the other hand, Simpson, Blair, and Amuso (1965) found that anti-depressant MAO-inhibitors, which have indirect sympathetic stimulation effects and antiparasympathetic effects, can interfere with erection and cause impotence. When the drugs are discontinued, potency usually returns.

The possibility that sympathetic dominance may inhibit arousal and facilitate ejaculation may explain why sexual anxiety may be expressed in an inability to attain or maintain an erection *or* premature ejaculation. Assuming that anxiety creates a state of heightened autonomic arousal, these effects would follow.

HORMONES

Although a large amount of data has been collected on the role of hormones in sexual behavior in lower species (Beach, 1948, 1958, 1965), their role in human sexual arousal is not well defined. One of the reasons for the state of affairs is that extirpation experiments can be done freely with animals, but human data must be obtained from clinical case studies. Another reason is that sex hormone determinations have only recently been improved so that their total production rate can be measured. Formerly, investigators had to rely on unstable plasma measures or the metabolic end products of the hormones.

Money (1961) reviewed the evidence from clinical studies, including his own extensive series of cases. Sex hormones play a crucial role in the growth of the genital structures in man, as in lower species. However, anatomy is not necessarily destiny, Freud to the contrary. The gender role and erotic orientation of hermaphrodites, for instance, is determined by the social role assigned to them after birth. While hormones do not seem to play an important role in determining

³G. M. Simpson and J. Blair, personal communication, August 1, 1969.

the direction of sexual interests, they may have crucial consequences for the strength of the sex drive or sexual arousability. The hormone androgen stimulates growth and dilation of the vasculature of the penis and clitoris. The maintenance of erection by engagement of the penis with blood is facilitated by androgen. "Tumescence of the penis can occur in the absence of androgen, but the erection is generally not complete and long lasting" (p. 1387). "Erotic drive" in hypogonadal males is generally heightened by androgen administration, and withdrawal of androgen, or substitution of placebo, generally results in a loss of arousability. In one group of hypogonadal cases in which androgen administration was stopped, the ejaculate diminished in volume until no fluid was emitted, and the men reported that they had fewer erections and less urge to masturbate or initiate heterosexual activity. Even reports of erotic imagery and daydreams were reduced.

The ovaries in women do not seem to be crucial for sexual arousability. Estrogen in women facilitates vaginal lubrication but lack of lubrication is not an insurmountable problem in sexual intercourse. Money marshalls considerable clinical evidence to support the hypothesis that androgen is the hormone which is related to sexual arousability in women as well as in men. Androgens in women probably originate in the adrenals. Many women who receive androgen therapy report increased sexual desire. Androgen sensitizes the clitoris and, if prolonged, may result in hypertrophy of the clitoris. Hyperadrenal pseudohermaphroditic females produce high levels of androgen, but the effects on erotic behavior are variable.

Most cases of impotence in males and frigidity in women are not expressions of hormonal insufficiencies and do not respond to treatment with additional exogenous hormone. Sex hormones probably serve to lower thresholds for sexual arousal, but beyond a certain level additional hormone supplies may not cause a significant change.

Despite the importance of sex hormones (and probably the gonadotropic hormones) in sexual arousability, this writer has been unable to locate a single published study of the effects of sexual arousal on sex hormone levels in the human. Masters reports that he is pursuing such studies, but it will be several years before these data will be made available.

Because of the important role of the autonomic nervous system in sexual arousability, the adrenal medullary hormones may play a role in general arousal. Several studies on the effect of sexual arousal on these hormones will be discussed later in this paper.

SKIN POTENTIAL AND SKIN RESISTANCE

It is of some historical interest to note that Wilhelm Reich (1937) experimented with skin potential measurement in an attempt to provide empirical evidence for a theory of the electrical nature of sexual excitement. He applied electrodes to various body parts including the penis, vaginal mucosa, tongue, lips, and mucosa, nipple, palm of the hand, earlobe, and forehead. He claimed that erogenous zones (all of the aforementioned ones were considered erogenous) have a much higher potential than nonerogenous zones of the body, and that sensations of pleasure are associated with rises in potential while sensations of

displeasure are associated with falls in potential. His crude apparatus and unusual experimental techniques, such as using the electrode itself to stimulate the site, make his data questionable. Little need be said about the somewhat gradiose theory extrapolated from the data.

Davis and Buchwald (1957) used GSR and other autonomic measures of response to see if different types of pictures produced different kinds of somatic response. Twelve pictures were projected on lantern slides. There were two pictures for each of six categories: cartoons, landscapes, female nudes, horror (e.g., photograph of a starving man), fear (e.g., photograph of alligator head), and geometrical abstractions. Each picture was presented for one minute followed by a one-minute rest period. Three GSR measurements were made from palmar electrodes: (a) maximum GSR resistance decrease in the first 10 seconds of picture presentation expressed in percent of base level; (b) skin resistance change from the beginning to the end of each stimulus presentation expressed as percentage change; and (c) number of GSRs during the stimulus. The 12 stimuli were ranked in order of the mean magnitudes of response for each of the 11 physiological measures used, including the three GSR measures. The ranks of the mean responses to the 12 stimuli for each measure were correlated with sums of the ranks on all measures to provide a measure of response generality. The ranks of pairs of stimuli ($N=6$) were also correlated to see if the responses to classes of stimuli differed in a reliable fashion. For males, there was significant concordance among response variables; for females there was not. Also for males, there was significant group reliability of combined responses to the pairs of pictures; for females there was not. For both sexes, the two pictures of nudes elicited greater combined response than the other pictures. For males this was also true for the initial galvanic skin response, and the net skin resistance change where ranks one and two were assigned to the nudes. Both of these measures also correlated significantly with the combined ranks and yielded significant correlations between pairs of pictures. The number of GSRs did not yield significant correlations with variables or across pairs of pictures. While the method of data analysis in this paper leaves something to be desired (individual data, even rankings, were not examined), it does tend to show that differential autonomic responses do occur to categories of pictures, that female nudes have a highly stimulating value, and that GSR and skin resistance seem to offer a reliable way of measuring arousal in response to pictures. However, these conclusions apply only to males. There is some evidence that males are more responsive for the GSR than females, even to meaningless stimuli (Kimmel, 1965). This lower GSR responsiveness of females was found in the Davis and Buchwald experiment as well.

Loisselle and Mollenauer (1965) used male and female pictures as stimuli. Within each set there were three clothed, three seminude, and three nude figures. The subjects were 20 female college seniors. These women showed significantly greater GSRs to nude than to clothed figures, and greater GSRs to nude male figures than to nude female figures. The authors were careful to say that the GSR may have measured negative reactions as well as sexual arousal. It would be of great value in this type of experiment to obtain self-ratings of sexual arousal and other feelings in order to see the relations between physiological response and subjective reactions. An interesting sidenote to this study is that women scoring as more masculine on the Masculine-Feminine Scale of the MMPI (Minnesota

Multiphasic Personality Inventory) gave stronger GSR responses to both clothed and nude figures than did subjects scoring as more feminine. This result parallels the sex difference in GSR responsivity noted above.

Although women in the aforementioned study showed greater GSR responsivity to nudes of the opposite sex than to nudes of the same sex, males in an experiment by Hains and Linton (1966) failed to show a difference between response to male and female nudes. This failure of GSR discrimination is even more significant in view of the fact that there were large differences in Semantic Differential ratings of the two types of stimuli by another group of males.

Martin (1964) added another dimension to the standard experiment comparing reactions to nudes and landscapes. For half of his subjects, the presentation of pictures was preceded by a permissive set; for the other subjects, by an inhibitory set. GSR was measured continuously from dry silver electrodes on the palmar surfaces of two fingers. The measure of response was the change in skin conductance from the beginning to the end of an entire series of pictures. One group was shown six pictures of *Playboy*-type nudes interspersed with six pictures of landscapes. The other group was shown 12 pictures of landscapes.

In the first experiment, both picture type and the interaction between set and picture type were significant. There was less drop in skin conductance when nudes were being shown, and this difference between stimuli was more marked after an inhibitory set. In the second experiment, only the set variable was significant. This experiment underlines the importance of the social setting in which an experiment is performed.

Autonomic variables are not immune from this type of effect. For instance, Zuckerman, Persky, and Link (1969) showed that breathing and GSR responses to sensory deprivation may depend on the set given to subjects in the instructions and by the total experimental setting.

Speisman, Lazarus, Davison, and Mordkoff (1964) attempted to separate the effects of male nudity from those of mutilation in the film depicting Australoid Aborigine circumcision rites. The film was analyzed by dividing it into three sections: neutral, nudity, and mutilation. The subjects were 12 male and 12 female undergraduates. All subjects viewed all three sections of the film in a counterbalanced order. Skin conductance and heart rate were sampled at 10-second intervals during the film periods and for 2.5-minute baseline periods. Analysis of covariance was used to eliminate the influence of baseline levels. Mutilation scenes elicited greater skin conductance and heart rate increases than neutral scenes; nude scenes did not elicit responses different from those to neutral scenes on either measure. The predominant mood, elicited by both mutilation and nudity sections of film relative to the neutral section, was tension. The fact that nude Australoid Aborigines elicit little sexual arousal in young female or male undergraduates is not surprising.

Koegler and Kline (1965) used the aborigine circumcision rite film along with two sexual films and three neutral films to compare the responses of 20 male medical students, 10 male undergraduates, and 20 female undergraduates. The film intended to induce heterosexual arousal in males showed nude and seminude women in strip-tease sequences. Another film showed two seminude males in wrestling and massage sequences and was aimed at homosexual arousal. They used measures of palmar GSR resistance, GSR lability (number of fluctuations), heart

rate, finger pulse volume, and respiration. Unfortunately, their data was presented in such a way that comparison on the separate autonomic measures between films and subject groups was not easy to evaluate. The subincision film resulted in significant changes in GSR level, GSR lability, and heart rate, particularly in the male and female college students. Little effect was seen on blood volume and respiration measures. The medical students showed less subjective and autonomic reaction to this film, viewing it more intellectually and less empathically. However, all males enjoyed the heterosexual movie and found it exciting. They showed autonomic reactions of a magnitude comparable to those of the girls to the subincision movie. The authors felt that arousal in positive and negative affective states was not distinguishable: "Thus it seems that the direction of autonomic change is independent of the nature of the psychologic stress" (p. 274). However, they noted that while the males found the homosexual movie unpleasant, they showed less autonomic reaction to it than they did to the heterosexual movie. Three homosexuals showed a stronger reaction to the homosexual movie than to the heterosexual movie. The results suggest that intensity of nonspecific autonomic reactions might be used to differentiate sexual arousal to preferred and nonpreferred sexual objects, but cannot be used to distinguish between positive and negative affective arousal. However, the stimuli and the affective reactions are confounded. Homosexual and heterosexual movies are likely to stimulate both positive and negative arousal, depending on the type of subject and the style of the movie itself.

Fisher and Osofsky (1968) recorded skin resistance and spontaneous GSRs in 42 married women during three sessions: a control session while they were fully clothed and lying quietly; a second session during which a male gynecologist examined electrodes placed on the breast and labia and made "touch threshold" determinations; and a third session in which a standard gynecological examination was made. It is possible, but not probable, judging from most women's reports, that the gynecological examinations produced sexual arousal. At any rate, no self-ratings were made by the subjects on their state of arousal during the examinations. Whatever the cause, anxiety or sexual arousal, the examinations produced greater GSR frequency and amplitudes and lower palmar and leg skin resistance than the control session. The authors also measured skin resistance of the labia and breast in sessions two and three. While there was no baseline against which to assess these comparisons, it is interesting that skin resistance on the labia was lower than on the palm, while skin resistance on the breast was higher. These authors are the first since Reich to make electrical recordings in these erogenous areas of skin.

Another method of stimulating sexual arousal is to present erotic passages in printed form. This method demands more imagination from the subject. However, in view of the fact that women report less arousal than men in response to pictures and movies, but report more arousal in response to erotic passages in literature (Kinsey et al., 1953), this method of presentation may be useful in making comparisons of the sexes. Jordan and Butler (1967) used four passages from fiction presented on cards: two descriptions of sexual seduction and two neutral scenes. The subjects were 32 females: 16 who had scored high on the Hysteria Scale of the MMPI, and 16 who had scored low. The experimenter was female. GSR was measured using a Keeler Polygraph, and change in skin resistance

was measured by pen excursion units. Sexual and neutral themes were alternately presented with a 45-second pause between them. Significant differences in skin resistance change were found for diagnoses (high vs. low hysteria scores), passages (sexual vs. neutral), and the interaction. Sexual material elicited more response in skin resistance than neutral material. High hysteria scorers showed more response than low scorers to the sexual passages, but these groups did not differ in response to the neutral passages.

Wenger, Averill, and Smith (1968) studied the reactions of 16 male subjects as they read erotic and innocuous passages presented on slides. Palmar skin conductance was one of 10 autonomic functions measured; it proved to be the most sensitive one, yielding highly significant differences between the erotic and control passages. The number of GSRs during presentation of the passages was also tabulated, but no results were reported on this variable.

Physiological indices have been increasingly employed in the study and treatment of sexual deviants. Solyom and Beck (1967) used three fetishists and one homosexual as subjects in a study of GSR reactions to pictures of the fetish objects (a seminude male was used in the case of the homosexual patient). Neutral geometrical designs and seminude female figures were also used as stimuli. Each picture was presented on a slide for a period of one minute. There were six GSR indices of reaction used: fall in skin resistance during the first GSR response (percentage of pre-stimulus level), latency of first GSR, latency of maximum fall skin resistance, recovery time to regain pre-stimulus level, change in skin resistance over each one-minute interval (expressed as percentage of baseline), and number of GSRs over each of the one-minute intervals. Of the six GSR measures used, only the amplitude of the first GSR response, recovery time, and change in basal skin resistance showed significant variation from picture to picture. Analysis of variance was used to compare the effects of stimuli and trials (each type of stimulus was presented four times). Significant differences were obtained between stimuli: the fetish (seminude male in the case of the homosexual) object and the seminude female elicited a greater GSR amplitude than the neutral object, but did not differ significantly from each other. A somewhat weaker trial effect was also found with habituation from the first to the fourth trial.

Steffy (1967) has been attempting to develop a Sexual Attractiveness Scale (SAS), which measures physiological (GSR) arousal and verbal report of preference to a range of visual sexual stimuli. The stimuli consist of 18 categories of pictures representing combinations of the following major categories: sex (male, female), age (child, pubescent, adult), and state of dress (dress, partially dressed, and nude). Each of the categories is represented by five pictures, and 10 geometrical forms are added as neutral items. The subject observes each picture for 10 seconds, at which time GSR response is recorded from finger electrodes. At the end of each 10-second period, the subject rates the attractiveness of the picture on a 10-point scale.

In his 1967 report, Steffy presented mean conductance change data for some male subjects who had been exposed to the stimuli described above. The normal control group showed a major interest in adult female pictures in all stages of dress, as reflected in both ratings and conductance change. There was only a slight indication of a gradient going from dressed to partly dressed to undressed. Heterosexual prisoners showed a pattern of response similar to normal males.

Homosexual prisoners showed somewhat more response to nude adult and pubescent males than did heterosexual prisoners, but their greatest response was still to nude adult females. Heterosexual pedophiles rated all females higher than all males, and their GSR responses showed greater response to females than to males; however, only the GSR reaction to the nude and dressed female children differed significantly from the response to male figures. Homosexual pedophiles expressed greater interest in both pubescent males and adult females than in other categories, and the GSR reflected this interest. Both homosexual groups in the experiment expressed interest in both males and females, but the authors caution that the GSR may be measuring negative as well as positive affective responses. The psychophysiological technique developed by the author is a promising one, but the sampling of stimuli is not balanced by a sampling of autonomic responses. Better discrimination of sexual types has been achieved using penile erection measurements; these techniques will be discussed in a later section.

Barlow, Leitenberg, and Agras (in press) have used GSR to measure changes in response to imagined scenes during the course of behavioral therapy. They reported on two subjects: a male pedophilic and a male homosexual. The therapy consisted of an association of the fantasy arousal stimuli with a covert noxious stimulus (imagining nausea and vomiting). GSR arousal was measured as change in log conductance over each of the four experimental periods: baseline, acquisition, extinction, and reacquisition. During acquisition, fantasied sexual stimuli were associated with fantasied nausea and vomiting. In the pedophilic, there was a dramatic drop in conductance during acquisition, a rise during extinction, and a drop during reacquisition. In the homosexual, conductance declined during acquisition, but did not recover during extinction even though reports of subjective homosexual arousal increased during that period.

Galvanic skin responses to pictures of nude females are quite pronounced in most studies, exceeding responses to clothed figures and neutral forms. Similarly, GSR seems to be a sensitive measure of response to the reading of erotic material and fantasizing of erotic scenes. The magnitude of the initial conductance change seems to be more sensitive than the other indices used, such as number of GSRs during a stimulus presentation. Attempts to show differential GSR reaction to male and female sexual stimuli generally have not been successful. Female nudes seem to have a great arousal effect for heterosexual, homosexual, and fetishist males. Several authors have cautioned against interpreting GSR as a specific measure of sexual arousal, since it is known to be equally responsive in negative affective reactions. This caution is well taken. It is conceivable that a group of males might show equal GSR responsivity to male and female nudes, because the former might elicit anxiety or surprise, while the latter might elicit sexual arousal. From the GSR alone, there might be no way to differentiate these reactions.

CARDIOVASCULAR CHANGES

Cardiovascular responses during sexual arousal may be divided into two types: (a) local vasocongestion in the primary and secondary erogenous zones, and (b) more general reactions, such as an increase in heart rate and blood pressure. Vasocongestion is the cause of tumescence of the penis and the clitoral glans, increase in diameter of the clitoral shaft, increase in breast size, and other changes occurring in the labia, vagina, and uterus (Masters & Johnson, 1966). The initial

sexual excitement is expressed in a dilation of blood vessels carrying blood to the primary erogenous zones of the body and probably a vasoconstriction of vessels leading away from these zones. Pronounced tachycardia and elevations in blood pressure are said to be more characteristic of the plateau phase of arousal, reaching a peak in the orgasmic phase of arousal. Masters and Johnson (1966) reported recorded heart rates in males and females averaging from 100 to 175 B.P.M. (beats per minute) during the plateau phase, and 110 to 180+ B.P.M. during orgasm. Systolic blood pressure elevations of 20 to 60 mm. Hg in the orgasmic phase are reported in the female; for males, the increase was 20 to 80 mm. Hg in the plateau phase and 40 to 100 mm. Hg in the orgasmic phase. Masters and Johnson claimed that heart rate and blood pressure elevations in the excitement phase increase "in direct parallel to rising tension," but it is not clear if these reactions would be useful in measuring responses to visual stimuli. The authors were presumably referring to increases occurring with genital manipulation.

Masters and Johnson (1966) presented sample EKG recordings of one male and one female during manipulation, orgasm, and postorgasmic resolution. It is apparent that marked increase in heart rate occurs within about half a minute after the start of manipulation and reaches a peak during orgasm. Clearer recordings of rate were presented by Bartlett (1956). This author recorded heart and breathing response in three couples during foreplay, coitus, and orgasm. Each subject signaled intromission, orgasm, and withdrawal by pressing a button. Marked heart rate fluctuation is seen in both sexes during foreplay prior to intromission, but the constant acceleration to orgasm is not apparent until after intromission. Marked hyperventilation also occurs after intromission. Heart rates approaching 170 B.P.M. were recorded during orgasm. A marked parallelism of heart rates of the sexual partners was seen after intromission, although orgasms were not simultaneous. A sharp decrease in rates occurred following orgasm. Both the movement and the hyperventilation may account for some of the heart rate increase during coitus. However, Masters and Johnson reported comparable increases following manipulation, which involves much less muscular activity.

Davis and Buchwald (1957) measured volume pulse amplitude from the finger, pulse cycle time, pressure pulse amplitude, bone cardiogram amplitude, finger volume, and chin volume in their study of responses to pictures (described in the previous section on GSR). Volume pulse, pressure pulse, and pulse time showed reliability for responses to pairs of pictures of similar content. Only volume pulse and pulse time showed a correlation with combined ranks for all pictures (a measure of generality of arousal). Only pressure pulse showed the high arousal to both sexual stimuli found in the GSR variables.

Wenger et al. (1968) used systolic and diastolic blood pressure, heart rate, and finger pulse volume in their study of reactions to visually presented erotic prose (described in prior section). Only systolic and diastolic blood pressure significantly differentiated responses to erotic and control slides. Maximal mean rises of about 4 mm. Hg were found for systolic blood pressure, and about 5 mm. Hg for diastolic blood pressure. Mean heart rate showed no change in response to erotic or control slides. Finger pulse volume showed a slight biphasic response, first decreasing, then increasing. However, the change was not significant. While

the mean changes in blood pressure were significant, they were minimal when compared to the changes reported by Masters and Johnson during manipulation.

Heart rate changes to visual or auditory input may be biphasic (Lacey, Kagan, Lacey, & Moss, 1963), first showing deceleration, then acceleration in the return to baseline. Procedures which use average heart rate may average out significant responses if the biphasic nature of heart rate is not considered.

Wood and Obrist (1968) used *Playboy* pictures of nudes as unconditioned stimuli (USC) in a conditioning task. A red light was used as a conditioned stimulus (CS) which preceded the nudes by 7 seconds. Heart rate was recorded for each second subsequent to the CS and following the UCS, which was presented for 8 seconds. Our main interest is in reinforced trials where the nudes were actually presented. In the first experiment with the nude UCS, no significant trends were found on reinforced trials. In postexperimental reports, some subjects reported the nudes to be monotonous or tedious (Hugh Heffner take note!). A second experiment was designed to increase the subjects' motivation to look more carefully at the nudes by offering money as a reward for answering a post-experimental questionnaire regarding pictures. Using this procedure, a significant effect was found on reinforced trials. A deceleration was found in the second prior to the stimulus presentation and during the first second of the UCS presentation. In the next 3 seconds, an acceleration was seen, followed by another deceleration in the last 3 seconds. The data of these authors suggests that: (a) *Playboy* nudes are not very arousing stimuli for North Carolina undergraduate males, (b) even when subjects were motivated to attend to the nudes, the heart rate response is a very brief biphasic one, and (c) if one wishes to use heart rate as a measure of sexual response to pictures, heart rate must be recorded beat by beat using a cardiometer.

Bernick and Kling (in press) measured heart rate in nine male subjects during presentation of neutral slides, a heterosexual "stag" film, a homosexual "stag" film, and an Alfred Hitchcock suspense film. Mean heart rates were calculated for the 4-minute slide periods and the 16 minutes of each film. Using the heart rate during the neutral slides as a baseline, the mean changes were +7 B.P.M. during the heterosexual film, +6 B.P.M. during the homosexual film, and +4 B.P.M. during the suspense film. The increases were significant for the heterosexual and suspense films but not for the homosexual film; none of the differences between films were significant. Subjects reported the percentage of viewing times that they had an erection. Seven of the eight subjects reported more erection during the heterosexual than the homosexual movie. While such self-reports may be of dubious reliability, it is interesting that there was no significant relationship between reports of erection and increases in heart rate, and the correlation was actually negative in the heterosexual film session.

Corman (1968) examined the effect of slides of *Playboy* nudes and an erotic motion picture on eight autonomic variables, including heart rate. The subjects were 10 young married men. Reactions were measured in response to a sound stimulus, 50 control slides (Expo '67), 15 *Playboy* nude slides, and an erotic motion picture. The materials were presented in the sequence listed. The motion picture was made for the experiment and portrayed two people making love in bed, without explicit views of genitalia. Soft music was played with the movie. These details of the movie presentation are interesting in view of the positive

results obtained. Apparently "hard-core" pornography is not necessary to elicit arousal. The physiological data were examined during the sound stimulus, at standard points in the slide presentations, and during crucial scenes in the motion picture. Heart rate did not increase significantly in response to the *Playboy* slides as compared to the control slides. However, the erotic movie significantly increased heart rate by an average of 5 B.P.M. during the most arousing scene. Heart rate was significantly higher during the movie scenes than during the control slides, the nude slides, and the noise stimulus. Both systolic and diastolic blood pressures showed significant increases (about 5 mm. Hg) in response to the slides of the nudes as compared to the control slides, and further significant increases (11 mm. Hg systolic and 6 mm. Hg diastolic) in response to the peak scenes of the movie as compared to the nudes. The response to the movie was significantly greater than the response to either the slides of nudes or the noise stimulus.

Fisher and Osofsky (1968), in their experiment comparing reactions in a control session and after gynecological exams, found that the latter produced significant heart rate increases. As was mentioned in the GSR section, it is not clear whether this autonomic arousal was produced by anxiety, sexual arousal, or both.

The research using heart rate as a measure of sexual arousal indicates that this measure is not very sensitive to sexual arousal prior to intromission or genital manipulation. Erotic motion pictures may stimulate a small increase in heart rate. Part of the problem may lie in the biphasic nature of the heart rate response to exteroceptive stimuli, but in the one study where rates were taken every second, the amount of acceleration was small and briefly sustained. Even with the highly erotic stimulus of a stag movie, heart rate changes were minimal in most subjects and, where pronounced, were not associated with a more direct measure of arousal, penile erection. Furthermore, heart rate increases were not different in response to sexual and suspense movies.

Of the other cardiovascular variables examined in these experiments, only blood pressure showed any significant response to erotic stimuli. The response to pictures of female nudes or printed erotic passages were not pronounced, amounting to significant changes of a few mm. Hg of pressure, but larger systolic blood pressure changes were produced by an erotic motion picture. Blood pressure seems to be one of the few variables that shows a graded reaction, with some response to still pictures of nudes, greater response to erotic motion pictures, and even greater response during coitus and orgasm.

RESPIRATORY MEASURES

Masters and Johnson (1966) stated that hyperventilation is a late plateau phase reaction for both sexes, with peaks as high as 40 per minute. Bartlett (1956) measured respiratory rate, minute volume, and tidal volume in couples during coitus.

A simple mouthpiece was valved so that atmospheric air was inhaled and the expired air was passed through a dry-gas test meter. Respiratory volumes were obtained by reading the volume of expired air at ½-minute intervals.

Respiratory rate was recorded on a smoked drum by a tambour which was attached to the exhalation side of the mouthpiece to record pressure changes. From a knowledge of the minute volume and rate, the tidal volumes were calculated. The nose was lightly clamped to prevent an error in the measurement of the expired air. (p. 469)

One must admire the heroic performance of Bartlett's subjects under these conditions. The results on the three respiratory measures were similar to those for heart rate: (a) fluctuations before, but no accelerating trend until after, intromission; (b) marked peaks at orgasm, with rates of 20 to 70 reached during orgasm; and (c) a parallelism of male and female rates. The authors speculate that this extreme hyperventilation at orgasm could account for the partial lapse of consciousness in some persons at this time.

Returning to the more gentle arousal induced by visual stimuli, we find breathing measures considerably less responsive. Davis and Buchwald (1957) measured breathing cycle time (duration of first breathing cycle in the stimulus interval) and maximum breathing amplitude of inspiration or expiration during the stimulus interval. Breathing cycle amplitude was reliable across pairs of pictures of similar content; breathing cycle time was not reliable. One of the sexual stimuli elicited a strong response on both measures, the other did not.

Wenger et al. (1968) found no differences between respiration rates recorded while subjects read erotic and control passages. Hain and Linton (1966) measured depth of respiration and inhalation rates (time taken for largest depth of respiration divided by the time taken for the complete inhalation-exhalation cycle) in response to pictures of male and female nudes. Neither measure yielded a difference between male and female nudes. The I-fraction showed no habituation, but the depth of respiration measure diminished with repeated stimulus presentations. Koegler and Kline (1965) reported that respiration changes were rarely seen in response to erotic or stressful movies. Corman (1968), whose experiment was described in the preceding section, found no significant changes in respiratory rate or variability produced by slides of nudes or an erotic movie. When baseline respiratory measures were compared to those recorded during the scene designated by each subject as the most subjectively arousing, significant *decreases* in rate and increases in respiratory variance were found. Apparently respiratory measures will not be useful in assessing sexual arousal to visual stimuli.

PENILE ERECTION MEASURES

Masters and Johnson (1966) have summarized what is known about the anatomy and physiology of the penis. Running through the body of the penis are three cylindrical bodies of erectile tissue. Two of these cylinders, the corpora cavernosa, lie parallel to each other, and a third, the corpus spongiosum, runs along the ventral portion of the penis and contains the urethra. Stimulation of the splanchnic nerves dilates the penile arteries, and blood flows into arterioles in the corpora cavernosa and fills the sinuses. A center for reflex erection is said to exist in the sacral section of the spinal cord. (In Hohmann's study of the effects of spinal cord lesions, four of five cases with damage in this area were incapable of reflexive erections). Of course, stimulation of erection may also be directed from

higher cortical centers. "Erection is lost when the sympathetic nerve supply causes constriction of the penile arteries" (p. 179). Active constriction of the arterioles allows the trapped blood to escape from the cavernous sinuses through the penile veins. Thus, penile erection is a function of a localized vasodilation stimulated from spinal or higher neural centers. Sympathetic innervation results in a vasoconstriction which may inhibit erection or cause detumescence following erection. This description fits Wenger's theory of the predominance of parasympathetic activity in the initial phase of sexual arousal. However, the apparent sympathetic dominance during the plateau and orgasmic phases leading to ejaculation does not seem to interfere with erection. The relative roles of sympathetic and parasympathetic systems is obviously complex, and some local autonomy of autonomic response is apparent. Sensory distractions, such as loud, sudden noises which stimulate the central nervous system may also impair penile erection.

Masters and Johnson have pointed out that penile erection may occur in states other than sexual excitement. One of these states, the Rapid Eye Movement (REM) arousal stage of sleep, will be discussed later in this section. However, in the presence of sexual stimulation, penile erection would seem to have some "face validity" as a specific measure of sexual arousal in the male. (It is conceivable that while a male may be emotionally aroused, penile erection may be inhibited by anxiety-related sympathetic system reaction. This is one reason why the term "arousal" must be qualified by operational definition.) Several investigators have developed devices for measuring penile erection and these will be discussed in the following paragraphs.

Freund, Sedlacek, and Knob (1965) have described a transducer for mechanical plethysmography of the penis. The penis is inserted through a flat, soft sponge rubber ring and an elastic rubber tube, made from a condom, into a glass cylinder. The cylinder tapers down at the end to a narrow funnel which connects by tube with the volumetric instrument. The sponge rubber ring, which acts as a pad for the cylinder, is fitted on the penis. The glass cylinder is attached to the body of the subject with straps. The elastic cuff is inflated with air to fill up the broad end of the cylinder to make its base airtight. The supply of air to the cuff is shut off and the funnel of the cylinder is connected by tube to the volumetric device. The article provides a diagram of the device and instructions for its construction.

Freund has applied this device to the diagnosis of various sexual deviances, including homosexuality and pedophilia. The technique consists of exposing subjects to pictures of nude males and females in five age categories ranging from children to adults.

Penile volume recordings are made to measure reactions to pictures in each of the categories. In the first study (Freund, 1963), the method was applied using 58 homosexuals and 65 heterosexuals. These groups were further subdivided into those who preferred adults, adolescents, or children as sex objects. Each picture was exposed for 13 seconds with an interval of 19 seconds between pictures. If the tracing of penile volume was still falling or rising or if it was still some distance from its original level, the presentation of the next stimulus was postponed. Summed reactions in each category of pictures correctly diagnosed 48 of the 58 homosexuals and all 65 of the heterosexuals. Six of the 10 misdiagnoses of homosexuals occurred in cases where responses to the stimuli were flat, or

almost flat. There was also significant agreement between subjects' age preferences for sexual objects and their reactions to adult and child figures of the appropriate sexes; for example, subjects who preferred adolescents or children showed greater penile volume responses to younger age figures than to older age figures. A retest of 86 cases showed high consistency in the size of volume changes. A second experiment modified the presentation method described above by presenting paired pictures with a short interval between exposures of the pictures in each pair. This method correctly diagnosed all 31 heterosexual neurotics and all 39 homosexuals. A final experiment was performed to test the effects of simulation. Heterosexuals were asked to simulate homosexuality and homosexuals were asked to simulate heterosexuality. Five of the 42 heterosexuals were able to simulate homosexual responses on two diagnostic criteria, and another five simulated response on one of the criteria or showed obvious simulation efforts. Six of 24 homosexuals were able to simulate, and five others were partially successful.

Freund (1965) applied a new form of his test to the diagnosis of heterosexual pedophilia using 20 heterosexual pedophiliacs and 20 heterosexual controls who were alcoholics. Alcoholics are not a good control group for studies of sexual arousal. The cirrhosis in chronic alcoholics may cause difficulties in the metabolism of estrogen resulting in high plasma levels and testicular atrophy (Korenman, Perrin, & McCallum, 1969). In the new modification of the techniques, 20 male and 30 female pictures were used and divided into three age groupings. Each picture was exposed for 7 seconds, and volume measurements were taken at the beginning of the exposure, at the end of the exposure, and 7 seconds after the slide was turned off. New slides were not presented until reaction had subsided. Diagnosis was made by analyzing the proportions of the ten slides which elicited highest response to determine the predominant sex and age group. In all 40 subjects in this experiment, the proportion of female to male pictures stimulating high reaction exceeded 2 to 1. None of 35 homosexual males reached this proportion. When the two groups of this study, pedophiliacs and normal heterosexuals, were compared for age group of high reaction pictures, there was little overlap or misdiagnosis. Freund (1965, 1967) has extended his studies to more groups of pedophiliacs and homosexuals with results showing good differentiation of age and sex preferences in sexual objects.

McConaghy (1967) also described a simple penile plethysmograph device. The end of a finger stall was cut off and the cut end was stretched over the open end of a cylindrical tin. A nipple was soldered into the closed end and connected by a plastic tube to a Grass pressure transducer. The penis is inserted through the open end of the finger stall, which maintains an airtight connection. The author used movies of singly appearing nudes, 10 males and 10 females, engaged in nonsexual activity. These stimuli were shown at one-minute intervals and incorporated into a travelogue type of movie. The subjects consisted of 22 male homosexuals referred for aversion type behavioral therapy and 11 heterosexual medical students. Fourteen of 19 homosexuals showed a greater response to male nudes than to female nudes, and ten of 11 heterosexuals showed a greater response to female nudes. The difference was significant.

Bancroft, Jones, and Pullan (1966) described a simple transducer for measuring penile erection. The device consists of a strain gauge made of 18 cm. of silicone

rubber tubing filled with mercury and fitted with platinum electrodes. Two transistors are mounted in a brass block. The circuit is powered by two 1.5-volt batteries which are kept outside of the box. A circuit diagram is provided in the article. The strain gauge is fitted around the penis and changes in circumference of the penis are registered on a 50 microammeter as changes in current. The initial tension can be standardized by tightening the gauge and setting the reading to zero. The strain gauge can easily be put into position by the subject and works under normal clothes. The authors report that movement is not a problem with the subjects comfortably seated. With the gain setting used, a change of $2 \mu a$ is equivalent to an alteration of 0.63 mm. in circumference of the penis. The authors report an average increase of about 25 mm. in full erection. A case is described in which the device was used to measure changes in arousal during aversive conditioning in behavioral therapy of a pedophilia. The use of the device in the electric aversion treatment of sexual deviants is described in two articles (Bancroft & Marks, 1968; Marks & Gelder, 1967).

Barlow,⁴ Becker, Leitenberg, and Agras have described a strain gauge for measuring penile volume changes. They claim their device is less cumbersome and restrictive than Freund's. The authors say that in Bancroft's device the mercury tends to separate at the upper range of volume displacement. They also claim Bancroft's device is temperature sensitive and somewhat difficult to build and seal. Their own device consists of a simple rugged strain gauge encompassed in a ring of plastic material. The ring surrounds the penis, but they claim it does not constrict and causes no discomfort. Changes in the diameter of the ring are recorded on a Grass pre-amplifier. Recordings from the ring are said to be linear, with volume changes within a range of 25 to 40 mm.

The authors report using the device to measure changes in response to colored slides of nudes. They note that volume displacement may take as long as 5 minutes to return to baseline after stimulation, and it may not return to the previous baseline, but may level off at a greater displacement, necessitating a resetting of the baseline. Measurements on seven subjects over a period of 18 months yielded stable and reliable individual reactions. Reliable increases of about 1 mm. may be recorded even though the subject is unaware of the change.

Abel, Levis, and Clancy (1969) used a modification of the penile transducer developed by Bancroft et al. (1966) in a preliminary study of the effects of aversive therapy on sexual deviants. Voyeurs, exhibitionists, and transvestites were used as subjects. Subjects made tapes recording incidents of their deviant sexual behavior. Shock was used as an UCS to parts of the deviant tapes. Prior to treatment, strong sexual arousal to deviant and nondeviant tapes was measured with the penile transducer. Stronger response was associated with deviant than with nondeviant tapes. One week after the conditioning treatment, the responses to the shock-conditioned deviant tape and nonconditioned parts of the deviant tapes were minimal, while the response to the nondeviant tape remained strong. Eight weeks after treatment, the responses to the deviant tapes were still minimal, while the responses to nondeviant tapes were even stronger.

Other methods of measuring penile erection have been devised by sleep researchers interested in the association between penile erections during sleep and the REM stage of sleep. Fisher, Gross, and Zuch (1965) have experimented with a

⁴D. H. Barlow, personal communication, July 17, 1969.

number of methods of recording penile erection during sleep. Their first attempt consisted of a polyvinyl tube about the size and shape of a doughnut. The tube was filled with water and fitted around the base of the penis. During erection the pressure on the tube resulted in a rise in the water level of a smaller tube attached to it. Apparently the size and bulk of the tube caused stimulation of the penis.

Their second attempt involved the use of a small thermistor attached to the penis which recorded the changes in temperature produced by the increased blood flow during erection. This device proved to be too difficult to keep attached to the penis, and valid recordings were obtained in only two of 17 cases. The most successful device proved to be a mercury strain gauge developed by Shapiro and Cohen at the Downstate Medical Center. This device consists of an elastic silicon plastic tube 1 mm. in diameter which is filled with mercury and sealed at both ends with platinum electrodes to form a loop. The gauge forms one leg on a Wheatstone bridge circuit and minute variations in resistance are measured as the tube is stretched during erection. The resistance changes were recorded on the DC circuit of the Offner Type-T EEG. The strain gauge may be calibrated by measuring the amount of deflection on the graphic tracing per unit change and circumference of the gauge as it is moved down on a tapering cone-shaped device graduated in centimeters. The authors stated that the rise in tracing is roughly linear to increase in circumference. Degree of erection for each subject is estimated by having the subject take measurements of the flaccid and erect penis. The sensitivity of the device was increased 40 times by raising the gain setting. Using the more sensitive gain, minute increases of fractions of a millimeter were measurable. Using all devices, full or partial erection was found to be associated with 95% of the 86 REM periods studied. A close temporal relationship between REM periods and erections was noted. Increases in circumference of 2 cm. or more were found to represent full or nearly full erection in most subjects. Partial erections ranged from 2 mm. to 2 cm.

Shapiro and Cohen's strain gauge device was used in a study of the relation between the erection cycle during sleep and dream anxiety (Karacem, Goodenough, Shapiro, & Starker, 1966). Most, but not all, of the REM periods were accompanied by erection, but of the periods which were accompanied by erection, 95% yielded dream reports as opposed to 85% of nonerection REM periods. REM awakening reports with a high anxiety content were less likely to be accompanied by erection.

The techniques of pneumatic plethysmography have been discussed by Lader (1967). Until recently these methods have been primarily used with a digit, usually a finger. The application of this method to the penis, as in the methods of Freund and McConaghy, may create certain kinds of problems. Since the penis is quite sensitive to stimulation, the stimulation from the device itself could result in an initial arousal reaction. Asking subjects to insert their penises in such devices might cause some anxiety in subjects. Shapiro and Cohen's and Bancroft's strain gauge devices would seem to be preferable since they are simpler to apply and do not stimulate as large an area of the penis. Furthermore, calibration is simpler with a near linear relationship between circumference and change in current. Freund and McConaghy seem to rely on relative measures of penile volume rather than measures on a known scale. Freund has indicated some problem with the effects of movement, which he says are detectable as rapid oscillations. The strain

gauge method is probably less vulnerable to such effects, which makes it preferable in sleep studies where the subject would be turning considerably during the night. However, despite the drawbacks of the pneumatic plethysmographic devices, they have proven to be highly reliable and discriminating in studies of sexual arousal, more so than any other physiological methods discussed in prior sections. Measures of penile erection will probably be the methods of choice in future studies of sexual arousal in the male. Is there a similar specific measure of arousal available for the female? Here is an area where the methodology is currently evolving and mostly unpublished. The work on this area will be described in a later section.

SCROTUM AND TESTES

Masters and Johnson (1966) have noted changes in the scrotum and testes during sexual arousal. During the excitement phase there is a tensing and thickening of scrotal integument, an effect of localized vasocongestion, and contraction of the smooth-muscle fibres of the dartos layer. There is an elevation of both testes toward the perineum, accomplished by shortening of the spermatic cords. The constricted scrotal sac provides secondary support to the reaction of testicular elevation. The testicular elevation progresses during the plateau phase until pre-ejaculatory positioning where the testes are in apposition with the male perineum. Masters and Johnson state that this elevation of the testes is essential to ejaculation.

If the testes do not undergo at least partial elevation the human male will not experience a full ejaculatory sequence When the testes do rise to a position of close apposition to the male perineum, an orgasmic phase is certain to follow if effective sexual stimulation is maintained. Full testicular elevation is pathognomic of impending ejaculation. (p. 208)

Another arousal phenomenon is an increase of testicular size (about 50%), also attributed to the vasocongestive reaction.

Bell and Stroebel⁵ have attempted to record scrotal and testicular reactions. In addition to the penile strain gauge developed by Shapiro and Cohen (see prior section), they have used a scrotal strain gauge placed around the neck of the scrotum. Muscle activity is measured in the cremaster and dartos muscles using Beckman electrodes placed slightly below the lower inguinal ring and right and left about two-thirds of the way toward the bottom of the sac. Palmar GSR and cardiac rate are recorded along with the scrotal reactions. The authors have studied responses to emotionally charged interviews. They have theorized that the testicular elevation may occur in states of stress as well as in sexual arousal. If this is true, then testicular elevation would not be useful as a specific indicator of sexual arousal. The authors are still in the data collection phase, but they have reported the following in a personal communication:

So far, some scrotal retraction highly correlated with GSR has been observed. Analysis of the data is still incomplete. There is a suggestion of localized dartos activity preceding retraction and GSR. There is a suggestion of dartos rhythm

⁵Anita I. Bell and C. F. Stroebel, personal communication, May 20, 1969.

between one and three seconds of each cycle. It tended to be pronounced at the beginning of recording sessions; however it gradually disappeared. We are not sure yet whether it is an artifact or real activity. We have seen it in two-thirds of the subjects. We find one to three seconds per fluctuation; amplitude decreases as session proceeds.

Further results on this new psychophysiological method should be of great interest to investigators interested in sexual arousal. The fact that the authors find responses during emotionally charged interviews suggests that this measure may be a generalized stress indicator rather than a specific measure of sexual arousal.

VAGINAL BLOOD FLOW

Masters and Johnson (1966) have found that the first physiological evidence of the human female's response to any form of sexual stimulation is the production of vaginal lubrication. They suggest that this "sweating" phenomenon is not glandular, but is the result of marked dilation of the venous plexus which encircles the entire vaginal barrel. "Apparently the transudation-like material which lubricates the vagina develops from the activation of a massive localized vasocongestive reaction" (p. 70). It is notable that the transudate appears even in artificial vaginas, which are sections of bowel transplanted with blood vessels intact to the vaginal site. These vaginas have no connection with the cervix.

As sexual excitement progresses, there is a lengthening and distention of the inner two-thirds of the vaginal barrel and an alteration of the color of the vaginal wall from a normal purplish-blue to the darker purplish hue of vasocongestion. The labia majora and labia minora also show color and size signs of vasocongestion and a separation as if in involuntary preparation for penetration. The initial reaction of the clitoris during arousal is tumescence, with a vasocongestive increase in the diameter and length of the clitoral shaft. During the plateau phase there is a withdrawal of the clitoral body—a retraction against the anterior body of the symphysis.

Shapiro, Cohen, DiBianco, and Rosen (1968) have asked whether the association between penile erection and REM periods in the male might have a parallel in the female vaginal responses. They first attempted to measure secretions from the vaginal wall. They used a platinum electrode held in a tampon saturated with hypotonic saline. A reference electrode was located on the pubic symphysis. An attempt was made to measure production of lactic acid in the vagina by measuring pH. Intravaginal temperature was also measured. These procedures have not produced reliable data because of movement and position artifact, and because the measurable responses were not large enough to be differentiated from the basal levels involved. For some subjects, the process of attaching or inserting electrodes proved to be erotically stimulating so that arousal was present before measurement was started. In order to induce arousal, the authors selected female subjects who could sexually arouse themselves through fantasy. They indicated when they were "turned on" or "turned off" by pressing a button which marked the record. At times the reading of erotic materials was used as a stimulant.

The last, and to date most successful, of the methods was a thermal flowmeter designed to measure changes of blood flow in the vaginal wall. A vaginal

diaphragm with the center cut out was used to hold the measuring instrument in place. Subjects are fitted with the proper size diaphragm and insert the diaphragm themselves. This ingenious method solved the problems of holding a sensor in place and reduced the problems of stimulation and movement artifact. Two thermistors mounted in a plastic holder about one cm. apart were attached to the outside of the ring and held against the vaginal mucosa by the diaphragm. The matched thermistors are operated in a low current DC bridge in such a way that ambient temperature changes do not affect the bridge output. One of the thermistors is heated a few degrees above body temperature by square wave pulses to a heating element imbedded in its glass envelope. After initially establishing a heating level and rebalancing the bridge to zero output, an electronic negative feedback loop is closed (this varies the external heating to the thermistor, maintaining the null output condition). Since changes in blood flow alter the thermal conductivity of the tissue in contact with the heated thermistor, monitoring the power (heating) supplied to this thermistor yields an indication of relative blood flow changes in the underlying tissue system.

The results obtained from a small number of subjects seem to indicate that the vaginal blood flow technique is sensitive to reported changes in sexual arousal. It is not certain at present to what extent these results can be generalized, and work to perfect the technique is continuing at the Downstate Medical Center. The use of the diaphragm ring to hold electrodes has led to a reexamination of the other techniques—vaginal pH and conductance measurements—which were given up in part because of the problems of holding electrodes in place.

Tart⁶ has invented a device to measure blood flow in the clitoris: a "clitoroplethysmograph." The device is attached to a stabilizing rod which fits into the vagina and is mounted surrounding the clitoral tissue mass. A photocell records blood volume changes in the clitoris. Provision is also made for a photocell in the stabilizing rod to measure vaginal blood flow and silver cloth electrodes for impedance plethysmography voltage or resistance measurement.

A modification of Tart's device using only the photoelectric cell for the vagina has been developed by Fisher and Davis⁷ at Mt. Sinai Hospital. A photocell is used to record fluctuations in light transmission through tissue. The light reflected back to the photocell from the vaginal capillary bed is measured. A solid state light source, which emits light in the red spectrum without heat, is used instead of incandescent bulbs which generate heat. The complete device also includes a thermistor to measure temperature changes and a strain gauge to indicate intravaginal movements. Silicone rubber is used as a platform for the plethysmograph components in order to make the device both comfortable and sterilizable. The authors investigated changes in vaginal blood flow during sleep. The investigators expected to find a progressive increase in pulse volume during REM periods on the assumption that the vagocongestion seen in sexual arousal would characterize REM periods in females. They found marked fluctuations in REM periods rather than progressive changes, but these fluctuations were also found in a peripheral site, the toe. The implication is that the fluctuations in pulse volume were expressions of the general cardiovascular changes seen during REM periods.

⁶C. T. Tart, personal communication, April 29, 1969.

⁷D. M. Davis, personal communication, June 30, 1969.

UTERINE CONTRACTIONS

Masters and Johnson (1966) stated that as excitement-phase levels of sexual tension progress toward the plateau, the entire uterus is elevated from its position in contact with the posterior vaginal floor to a posterior and superior plane in the false pelvis. Full elevation is not achieved until the plateau phase. Corpus irritability increases from early in excitement "and resolves into an identifiable contraction pattern that has specific orgasmic-phase orientation."

Bardwick and Behrman (1967) suggested that uterine contractions might have some significance for sexual arousal early in the excitement phase. They used 10 paid volunteers as subjects. On the basis of psychological tests the subjects were divided into one group of subjects who were sexually anxious, passive, and neurotic, and another group who did not rank high on these traits. The subjects were studied at various points in their menstrual cycles. Sexual stimuli used included erotic passages from books, double entendre words, and cartoons from *Playboy*. The device used to measure uterine contractions consisted of a thick-walled polyethylene tube connected to the tip of a rubber balloon which was inserted through the cervix into the uterus and filled with water. The pressure in the water was standardized to atmospheric pressure through a transducer and led into a Sanborn Type-R recorder. A half hour was allowed for stabilization before stimuli were presented. Measures included amplitude, tonus (tonus as defined appears to be interchangeable with amplitude) contraction duration, and number of contractions. Menstrual cycle phase seemed to affect the duration of the contractions more than it did the amplitude or tonus. Psychological stimulation seemed to affect the amplitude and tonus, but not the duration of contractions. The authors state:

The present data indicate that the uterus, *at any cycle phase* will respond to anxiety and sexual stimulation with an increased mean amplitude and amplitude variance When the S data were pooled, there were no consistent differences in uterine motility between sessions in which the psychological stimuli had sexual content and those in which the content was neutral. When the Ss were divided into those who were highly sexually anxious, we found that the sexually anxious Ss reacted more strongly to the sexually relevant stimuli. (p. 476)

Highly anxious women tended to extrude the intrauterine balloon, while "low anxious" subjects merely had uterine spasms without balloon extrusion. Balloon extrusion in "high anxious" subjects occurred particularly when sexual material was being presented.

The data from the experiment suggests that uterine contractions are a joint function of sexual arousal and anxiety. The article does not make clear whether sexual arousal and anxiety reaction could be distinguished using this technique. Insertion of a balloon in the cervix is quite painful for many women, and this obviously limits the usefulness of this technique.

TEMPERATURE

Masters and Johnson (1966) have noted the "sex flush" that develops in response to sexual stimulation. In the female, the flush appears late in the

excitement phase, first over the epigastrium, then spreading rapidly over the breasts. In the plateau phase, the flush is said to have widespread distribution. Males show no evidence of the flush in the excitement phase, but in some it appears over the epigastrium in the plateau phase and spreads to the anterior wall, near neck, face, and forehead. The sex flush is not universal, appearing in 75% of females and only 25% of males. However, the phenomenon suggests that skin temperature measurements might have some usefulness as measures of sexual arousal. Masters states that skin temperature changes are unreliable as measures of arousal, since they are not constant within subjects on different occasions.⁸

Wenger et al. (1968) measured face and finger temperatures in their study of autonomic responses to erotic literary passages. Finger temperature showed a significant decrease during the reading of erotic materials; face temperature did not yield significant differences between erotic and control materials.

Corman (1968) found similar results on temperature measures. Face temperature was not significantly affected by either slides of nudes or an erotic motion picture. Finger temperature showed a significant decrease in response to the motion picture, but no significant change in response to the *Playboy* nudes.

Fisher, Gross, and Zuch (1965) attempted to measure penis and groin temperature during REM phases of sleep, but there was considerable difficulty in keeping thermistors attached to the penis. An interesting finding of an inverse relationship between penis and groin temperatures (groin temperatures tend to fall when penile temperatures rise and vice versa) suggests that blood is withdrawn from adjacent areas to fill the penis during erections.

Shapiro et al. (1968) used a thermal flowmeter as an index of vaginal blood flow. Their technique was described in a prior section.

Fisher and Osofsky (1968) measured the head and leg temperatures of females during control sessions and after gynecological examinations. Rectal and vaginal temperatures were measured only after the genital stimulation of the examinations. As was mentioned previously, there is no reason to believe that the gynecological examinations were sexually arousing, although they did affect GSR, skin resistance, and heart rate. No changes were found in head and leg temperatures. Rectal and vaginal temperatures after the examination were almost identical. Vaginal temperature correlated significantly with GSR frequency, heart rate, and rectal temperature.

Although not enough data is available on skin temperature as a measure of sexual arousal in the excitement phase, it would appear that such measurement would be valuable only on or in the genitals. The vasocongestive response during erection appears to involve some diversion of blood from surrounding tissues, and a drop in skin temperature might be recorded from these tissues or even in more peripheral areas such as the finger. Care must be taken during temperature measurement to keep the ambient room temperature and humidity constant, since skin temperature changes are liable to be small.

PUPILLARY RESPONSE

Studies by Hess and Polt (1960) and Hess, Seltzer, and Schlein (1965) have stimulated research in the use of pupillography as a method of measuring sexual

⁸W. Masters, personal communication, May 1969.

little effect in inhibiting the tendency to play up the results. Generalizations about pupillographic sex differences based on these two females and four males have been widely promulgated, despite the fact that the author has not yet published an extended study based on an adequate number of subjects.⁹ The stimuli in this experiment were pictures of a baby, a mother and baby, a nude male, a nude female, and a landscape. The female subjects showed more dilation than males to the baby, mother and baby, and nude male pictures; the males dilated more in response to the nude female. The authors concluded that "men are more interested in partially nude women, women are more interested in partially nude men" (p. 132). While there might be some truth in this conclusion, the data presented are hardly sufficient to make such a sweeping generalization.

Another "pilot study" by Hess and his coworkers (Hess et al., 1965) compared the responses of five homosexual and five heterosexual males to 15 slides, comprised of five nude male slides, five nude female slides, and five art slides. The authors made an index of the relative responses to male and female stimuli. All five heterosexuals had a positive index, showing relatively greater pupil dilation to females than to males; four of the homosexuals had a negative index, indicating greater dilation to nude males. The author's theory claims that dilation is an expression of positive arousal and contraction is an indication of negative arousal. It is interesting, in view of this theory, that two of the heterosexuals actually dilated in response to male stimuli, and only four of the heterosexuals actually dilated in response to female stimuli. Also, while four of the homosexuals dilated in response to male stimuli, three of them also dilated in response to female stimuli.

The assumption that contraction indicates negative arousal is questionable. There is little indication that anything but light or other visual reflexes can cause constriction. Bender (1933) studied the effect of loud noise (gunshot), pin pricks, electric shocks, and the negative stimulus of a white rat, all presented immediately prior to or simultaneous with exposure to light. All of the emotional stimuli resulted in inhibition of the normal contraction to light, longer latencies, more extensive responses, and a longer time for the pupil to reach maximum contraction. While painful stimuli caused some oscillation of response, the dominant response in most subjects to most stimuli was a "dilatory" contraction. In no case did a stimulus do more than slightly delay the powerful contraction response to light. This maximal response is reached rather quickly without other stimulation: 3.5 seconds in four subjects and 3.0 seconds in two subjects. Emotional stimuli merely extend the duration of response a few seconds. It is easy to see how differences in illumination of stimuli presented could mislead investigators to assume that they are measuring differences in emotional reactions. Hess claimed that illumination differences would affect all subjects similarly, but, as Woodmansee (1966) pointed out, shifts in fixation within each stimulus might vary from subject to subject.

Hess (1968) has gone so far as to suggest that "pupil response can serve as a more accurate representation of an attitude than can responses to well-drawn questionnaires or to projective techniques" (p. 580). The following studies suggest that this claim may be premature. Seven experiments have been published

⁹ In a personal communication (July 17, 1969) Hess states that the Hess and Polt (1960) study has been "consistently replicated" "with a few thousand subjects." In a second communication (August 5, 1969) Hess says that he has "personally run several hundred subjects" and found similar results.

arousal or interest. Hess (1968) has reviewed some of this work. The anatomy and physiology of the pupil have been described by Lowenstein and Loewenfeld (1962). The main function of the iris is to regulate the amount of light entering the eye, to increase depth of focus of the eye, and to reduce chromatic and spherical aberrations, especially in bright light. The size of the pupil is controlled by the sphincter pupillae and the dilator pupillae. The pupillary sphincter is an annular band of smooth muscle which encircles the pupil. It is activated by parasympathetic fibers and can constrict from 8 mm. (dark) to 2 mm. (light) in seconds. The dilator pupillae are radial strands of smooth muscle which cover upon the pupil, "similar to wheel spokes." These muscles are controlled by sympathetic fibers. The size of the pupil is a function of spontaneous or reactive shifts of the dynamic equilibrium of sympathetic and parasympathetic innervation. Specific reflexes are imposed on this equilibrium. Increase of light and convergence of the eyes and accommodation of the lens when viewing a near object cause contraction of the pupil. Decrease in illumination and sensory or emotional stimuli result in dilation. Dilation is the result of two neural effects: (a) sympathetic discharges which reach the dilator pupillae and cause it to contract, and (b) inhibitory impulses which cause the sphincter pupillae to relax.

The reciprocal innervations of the iris by the sympathetic and parasympathetic systems make it an organ of some interest to psychophysiologicalists. However, the great sensitivity of the organ to changes in illumination has resulted in methodological problems which have not always been sufficiently recognized. This is particularly true when complex visual stimuli are used to stimulate emotional changes. Woodmansee (1966) has described the methodological problems in the use of pupillography to measure psychophysiological reactions. He pointed out that controlling the overall illuminance of visual displays is not sufficient, because the pupil may contract 1 to 5% in size when the gaze shifts from a relatively dark to a relatively brighter area of a test stimulus. Since the reactions to emotionally arousing stimuli rarely exceed 5%, they might easily be accounted for by a subject's shift of fixation. Pupillary responses are similar to GSR in the marked "arousal decrement effect" or habituation. In experiments where several control and test stimuli are presented, the major responses are to the first stimuli, and the differences between test and control stimuli may become smaller as the subject becomes less interested in the experiment. The near vision reflex can also account for shifts in pupillary size. If the subject focuses on test stimuli but allows his vision to blur on control stimuli, by fixating behind the plane of projection, constriction may occur on the control stimuli and dilation when he fixates the test stimuli. Finally, the author states that the high variability of spontaneous pupillary activity (1 to 20%) can produce considerable "noise" in an experiment. The test-retest reliability of pupil size is said to be only about 0.30. However, the reliability of response to a constant stimulus may be greater. Bender (1933) found marked consistency of individual reactions in a day-to-day response to a standard light stimulus. Woodmansee suggested various ways of reducing these extra-experimental influences, and these will be discussed after examination of the experiments which have used pupillography to measure responses to sexual stimuli.

Hess and Polt (1960) presented "pilot" data on two females and four males. Parenthetically, it is amazing that the labeling of an experiment as "pilot" has so

which provide data relevant to Hess' hypotheses: three of these used only male subjects, while the other four compared responses of both males and females.

Sims (1967) investigated the responses of 12 pairs of married subjects to pictures of clothed men and women. There were two pictures of each sex, one in which the pupils of the picture subject were retouched to appear dilated, and the other in which the pupils appeared constricted. Subjects' pupils dilated significantly more in response to pictures of the opposite sex than to pictures of the same sex. Furthermore, the subjects showed greater response to pictures of the opposite sex with dilated pupils than to those with constricted pupils. The opposite was true for pictures of the same sex. While the author did not use nude pictures, the results tend to substantiate the Hess hypothesis of greater pupil dilation to pictures of the opposite sex. The results of portraying pupil size in the pictures tend to indicate that the dilated pupil in the opposite sex is an arousal stimulus. A paper by Hicks, Reany, and Hill (1967) tends to support the latter finding, although preferences were expressed verbally and pupil measurements were not made in this study.

Scott, Wells, Wood, and Morgan (1967) used four pictures in each of four categories: clothed males, clothed females, female nudes (from *Playboy*), and seminude males (from *Muscleboy*). Gray rectangles were used as control stimuli; these were trimmed so that they reflected the same amount of light as the pictures. The pupillary responses of 10 male and 10 female undergraduates were compared. No significant effects were found which could be attributed to sex of subject, sex of pictures, nudity of pictures, or any of the interactions of these variables. Four of the males dilated more to male seminude pictures than to female seminudes: three of the females dilated more to the female than to the male pictures. These data clearly provide no support for Hess' hypothesis of male-female differences. The second experiment tested the responses of five homosexual and five heterosexual males to these stimuli. Two of the five subjects in each group dilated more in response to male pictures than to female pictures. The difference between groups was not significant. A third experiment examined the responses of independent groups of 10 males and 10 females to (a) a pistol shot, (b) seminude male pictures, and (c) seminude female pictures. Again, no significant sex differences in response to the different stimuli were found. Males actually showed more dilation in response to male pictures than to female pictures.

Peavler and McLaughlin (1967) examined the responses of four male and four female college students to various stimuli, one of which was a female nude "pin-up." Control stimuli were blank slides made darker than the darkest points on the test stimuli. The mean response to the nude was 2.2% dilation, while all other stimuli produced constriction, as would be expected from the brightness differences between the test and control stimuli. No mention was made of sex differences. In the second experiment, words rated on a "good-bad" continuum were presented as visual stimuli. No relationship was found between pupil diameter and rated evaluations of the words, casting some doubt on Hess' hypothesis of direction of arousal and dilation-contraction of the pupil.

Lawless (1968) used 14 airmen and seven female nurses as subjects. The stimuli were photographs and paintings which included male and female nudes and clothed figures. There were no significant differences in the relative male-female

response (Hess' index) of male and female subjects to male and female stimuli. Male subjects actually showed significantly more dilation to male pictures than to female pictures, and reacted faster with a shorter latency to male pictures. Both groups reacted faster to nude figures than to clothed figures.

Nunally, Knott, Duchnowski, and Parker (1967) examined the responses of 30 male students to a series of four slides showing a girl getting undressed. In the first picture the girl was clothed, and in the last three pictures she was in various stages of undress. The control slides were numbers on a gray background; these were made darker than the test slides, setting a bias against finding greater dilation to the test stimuli. A significant increase in dilation of 7% was found between the slides showing the girl fully clothed and in the first stage of undress. Further progressions in the strip-tease produced no increase in dilation. All test slides taken together produced significantly more dilation than control slides. Another experiment showed that dilation was produced by novel as opposed to non-novel stimuli, particularly on the first presentation of a novel stimulus. Positive affect pictures (faces of pretty girls) produced more dilation than neutral or negative affect pictures (faces with cancerous growths), but negative affect did not produce constriction, as postulated by Hess. Dilation was also produced by muscle strain, auditory stimuli, and expectancy of gunshot. The results show that pupillary dilation may be produced by many kinds of arousal, one of which is the pleasant reactions of males to semiclothed or pretty girls.

Bernick and Kling (in press) measured pupil responses of nine male medical students to slides of clothed males and females and three movies: a heterosexual stag movie, a homosexual stag movie, and a suspense movie. Brightness and contrast variations within each subject were said to be effectively eliminated by the illumination of the rear projection screen to a constant minimum brightness level. The brightest and darkest area were limited to a range of 24 to 26 foot-candles. There were no significant differences in pupillary response to male and female slides. All of the movies produced more pupillary dilation than the slides. Significant differences were found between movies, with less dilation to the suspense movie than to the sexual films. Significant correlations were found between self-reported erection durations to sexual films and pupillary dilation. It should be noted that the design of the experiment confounded type of stimuli and novelty of stimuli (the heterosexual film was presented on the first occasion for all subjects). The lack of differences on male and female slides, and between heterosexual and homosexual films, does not support Hess' hypothesis (assuming that the subjects were not bisexual).

The final study by Chapman, Chapman, and Brelje (1969) points up a variable that is too often ignored in these experiments: examiner influence. The subjects were 51 male undergraduates. The stimuli were slides of nude, seminude, and clothed men and women, plus control slides of numbers and landscapes. Two experimenters were used: one was a serious-looking older graduate student who dressed and behaved in a formal manner and the other a younger undergraduate who dressed informally and conducted the experiment in a "breezy" manner. The formal experimenter elicited greater dilation to female than to male slides in 14 out of 22 subjects; the informal examiner elicited greater pupillary dilation in 20 out of 25 subjects. The difference between stimuli was significant in the case of the informal examiner and was not significant for the subjects of the formal

examiner. However, for both examiners the primary direction of response to the male stimuli, as well as to the female stimuli, was dilation, with 44 of 47 male subjects showing dilation to male pictures. The authors point out that if the examiners had been working in different laboratories, one would have reported positive results and the other negative results concerning the differential response of males to female stimuli. The question raised by this experiment (assuming that the experimenter difference was real and generalizable) is: How does a subject voluntarily inhibit pupillary response? The pupillary response is considered to be involuntary. Perhaps the lack of response to pin-ups with a formal experimenter is due to a general inhibition of sympathetic activity through inhibition of fantasy response to the stimuli. The study bears replication with additional data on subjective responses to the stimuli.

Simpson¹⁰ examined the pupillary constriction response and the delay of ejaculation time in response to antidepressive drugs. They found some suggestion of negative correlation between these variables: as the ability of the pupil to constrict lessens the ejaculation time tends to increase.

In the experiments most relevant to Hess' hypotheses, those using male and female subjects or heterosexual and homosexual subjects, only the study by Sims (1967) confirmed Hess' findings. From all of these studies, it would seem that pupillographic measures, like other peripheral autonomic measures such as GSR, are sensitive to the arousal produced by pictures of nudes or movies of sexual activity, but do not reflect the differential interest patterns of males and females in male and female figures. Furthermore, there is no support of Hess' hypothesis that dilation reflects positive interest and contraction negative interest. Rather, the magnitude of dilation seems to reflect sympathetic arousal value of novel, intense, or interesting stimuli. However, Hess (1968) has stated that "all of our subsequent research, involving a large number of subjects has more than confirmed these initial findings" (p. 575). Hess should collate and publish these findings to resolve the doubts raised by the published research of others. The results of the third study by Scott et al. (1967) suggest that GSR may be more sensitive to stimulus differences than pupil response. If this is true, one should consider the relative expense and methodological problems in the two methods. Neither seems to yield responses which discriminate between different types of stimuli, and both show response to novelty and rapid habituation. However, GSR tests are less expensive, and there are fewer methodological problems in the use of visual stimuli. Hess (1968) suggested that GSR might profitably be used to supplement pupillographic measurement. It should be pointed out that some of the problems with pupillography could be surmounted if: auditory stimuli were used instead of complex visual stimuli; lengthy trials were avoided; the responses were corrected for basal changes during the series; and the reliability of responses to specific categories of stimuli were checked. The one hopeful note in the possibility of pupillographic response as a measure of sexual arousal is in the high correlations with reported erection in the Bernick and Kling (in press) experiment. However, these correlations were based on a sample of nine cases, and erections were not actually measured or observed. These correlations

¹⁰ Unpublished study by G. M. Simpson, P. Harper, and E. Beckles entitled: The effects of three anti-depressant drugs on pupil response to light and ejaculation time, 1969.

certainly need replication with an adequate sample and one of the objective penile erection measures mentioned previously.

EVOKED CORTICAL RESPONSE

Lifshitz (1966) has studied the effect of various kinds of pictorial stimuli on the average evoked cortical response (AER). The stimuli used included bland, scenic photographs, a "negative affective" series of photographs of ulcerated legs, and a "positive affective" series of "art studies" of nude females. The subjects were 10 young males. Slides were projected in focused or unfocused presentations. It was possible to distinguish the focused or unfocused presentations from the form of the AER, but the author could not tell which set of slides was being viewed from the AER.

However in any particular individual the form differences between the AERs for the different subject slide groups tended to be consistent and in the four individuals who were subjected to repeated runs of the different slide groups it was possible, once their "code" was known, to tell from the AER which slide group they were looking at. (p. 61)

This is an interesting example of individual response specificity within a recording technique. However, the technique would not be useful in studying sexual arousal unless responses to other kinds of stimuli were studied within each individual subject.

BIOCHEMICAL DETERMINATIONS

As mentioned in the introductory section on hormones, there seem to be no studies of the effects of sexual arousal on sex hormones in the human. In fact, only two studies have been found on the effects of sexual arousal on any hormone. This is a neglected area of research. It is possible that the sex hormones influence arousability but are unaffected by arousal or sexual activity. But it would seem biologically feasible that sexual arousal would stimulate the production of Luteinizing Hormone (LH) from the pituitary, which in turn might stimulate the release of testosterone from the gonads in the male. Seventeen-ketosteroids, a metabolite of testosterone in women, could also be an indicator of sexual arousal.

Levi (1967) has studied the catecholamine excretion of subjects in response to many different kinds of stress or positive arousal. One of these studies concerns reactions to visual sexual stimulation (Levi, 1969). An experiment examined the effect of high quality "love films" which depicted sensual love scenes without showing human sexual organs. These scenes were shown to 15 female office clerks. Urinary adrenaline and noradrenaline were measured after a control period prior to watching the films, after the film period, and after a second control period following the film. The self-reported reactions were moderate and pleasant; the adrenaline and noradrenaline reactions were minimal or absent.

Levi then examined the effects of a more blatantly erotic movie, confiscated by the Swedish legal authorities and presented to the author for research purposes. The movie was shown to 53 females and 50 males, all of whom were physiotherapy and medical students. Urine samples were collected for three

90-minute periods: one prior to the film, one during the film, and one 90 minutes after the film. The first and third samples were used to provide a baseline for measurement of catecholamine reactions to the film. Both males and females showed a significant increase in adrenaline, but the increase in the male was significantly greater than that in the female. Both sexes also demonstrated a significant increase in noradrenaline, but the difference in the magnitude of increase was not significant. Both sexes also displayed a significant increase in urine volume and a decrease in specific gravity of urine during the film. There were no significant changes in creatinine.

Subjects also rated their subjective reactions. Both sexes reported an increase in sexual arousal during the film, but the increase was significantly greater in males, as were reports of pleasurable sensations. Both groups also reported increases in unpleasant sensations and general emotional arousal, but whereas in the males unpleasant sensations were minor compared to pleasurable sensations, in females the two kinds of sensations were about equal in intensity. Anxiety reactions and emotional upset showed small increases in both sexes. In the female group, low but significant correlations were found between self-ratings of sexual arousal and adrenaline and noradrenaline increases. Correlations with other affects were not reported. In males these correlations were minimal and nonsignificant. There were no significant differences between sexually experienced and nonexperienced females in adrenaline increase.

The authors interpret the adrenaline and sexual arousal self-rating data as supporting Kinsey's (1953) hypothesis that men are more responsive to visual sexual stimulation than females. It should be noted that significant increases in catecholamines were also found in response to movies portraying violence, sadism, cruelty, and even comedy. The catecholamine response to sexual stimulation is no more specific to sex than is sympathetic system arousal.

Bernick and Kling (in press) measured plasma 17-hydroxycorticosteroids (17-OHCS) in eight male subjects who watched, on three different occasions, a heterosexual stag movie, a homosexual stag movie, and a suspense movie. For each movie, blood samples were drawn before, 10 minutes after, and one hour after its showing. The changes in 17-OHCS levels from the first to the second sample were small and insignificant, and there were no significant differences between reactions to the three movies. The lack of adrenocortical reaction to the erotic movies in this experiment is interesting in view of the marked adrenomedullary response in the Levi experiment. However, Levi used urine samples from the entire period of stimulation to measure catecholamines, whereas Bernick and Kling drew their second blood sample after a 10-minute post-movie interview. Plasma levels of hydrocortisone can change rapidly, and the post-movie level may have reflected responses to the interviews as well as responses to the movie.

Clark and Treichler (1950) first suggested that urinary acid phosphatase (AP) may be an indication of sexual arousal in males; Gustafsen, Winokur, and Reichlin (1963) assessed AP and plasma nonesterified fatty acids (NEFA) as possible indicators of sexual arousal in men and women. AP in men may come from prostatic secretions and therefore might be influenced by sexual arousal. Stimulation of the prostate gland causes AP to be secreted into the urethra. The subjects consisted of 17 men and seven women. Three homosexual men were also tested. The stimulus was an 11-minute film portraying heterosexual relations. AP

was determined from urine and NEFA from blood samples taken before and after the film. Following the film, there was a significant mean increase in urinary AP in men (72%), and a nonsignificant mean increase in women (11%). Three of the five men who did not show an increase had higher initial levels than the other men, which may have limited their change (Law of Initial Limits). Only one of the three homosexuals showed an increase in AP. Serum NEFA was tested in eight of the men, and only five had increased levels after the film. All subjects reported being sexually aroused. Eleven more male subjects were exposed to the film with concomitant electric shocks. Only 29% of this group had an increase in AP as opposed to 72% in the other heterosexual male group. The authors speculate that an emotionally induced cholinergic discharge over the nervi erigens stimulates secretion of epithelial cells of the prostatic acini and that the AP found in urine came from the prostatic secretion. The differences between males and females and heterosexuals and homosexuals in this experiment is interesting, but, like so many other experiments in this field, the generality of findings is limited by the low number in the sample, inadequate matching of samples, and lack of comparisons with other types of stimulation.

Barclay has used the AP measure in three different studies to validate various forms of projective techniques. In the first study (Barclay, in press, a), an attempt was made to arouse anger in college students in order to demonstrate a connection between aggression and sexual arousal.¹¹ The subjects were fraternity men and sorority women, and anger was induced by an experimenter who demeaned the quality of students in these organizations. Urine samples were collected before the anger arousal and after TAT stories were written following the anger arousal. Male subjected to the anger arousal procedure showed more aggression in questionnaires and TAT stories than control males. Aroused males also had more sexual content on appropriate pictures and secreted more AP in urine than nonaroused males.

In Barclay's second study (in press, b), an attempt was made to test the response of urinary AP to more direct sexual stimulation. Fifty-five male subjects were assigned to one of three conditions: arousal with information, arousal with false information, and control. Subjects in the arousal conditions were shown pictures of nude females taken from nudist magazines; control subjects were shown pictures of buildings. The arousal with information group was told the purpose of the sexual stimulation, while the other arousal group was given false information in which the sexual arousal procedure was construed as irrelevant to the urine collection. The author hypothesized that subjects who know their physiological sexual arousal is being assessed may become defensive and this may actually reduce their AP measured arousal. The differences between the three groups on AP was not significant. However, subjects differed in their reported arousal by the pictures. Subjects who rated the pictures as more sexually arousing showed significantly more increase on AP than did controls, while subjects who found few of the pictures arousing did not differ from controls. Unlike Gustafsen et al. (1963), who found no relation between self-reported arousal and AP, Barclay found that the self-rated arousal was crucial. Perhaps this is because the

¹¹A recent finding of a substantial positive correlation between Testosterone production rate and a questionnaire aggression scale in young males tends to support this hypothesized connection.

nude photographs used by Barclay were not as uniformly arousing as the sexual movie used by Gustafsen.

Barclay's third study¹² did use an erotic movie to test the hypothesis of AP as a measure of sexual arousal and the influence of information or set on physiological sexual arousal. This study also examined the effect of the subjects' sexual experience on AP response. Nonexperienced subjects showed little or no AP response, regardless of whether they were stimulated or not, or what information was provided beforehand. Among the sexually experienced males, the aroused-noninformed group showed a significant AP response, and the aroused-informed and the control-noninformed groups did not, as predicted by the authors. However, a "paradoxical" finding emerged in the control-informed group, which knew that other subjects were watching erotic movies: these subjects showed an increase in AP following a nonerotic boring film. The author speculated that the information alone may have stimulated erotic fantasies in this group. High "sexual drive level" subjects (drive measured by number of reported orgasms per month) secreted significantly more AP overall than low drive subjects. This last intriguing finding suggests that AP secretion may be related to sexual arousability as well as to sexual arousal.

Barclay¹³ reports a fourth study underway to test the specificity of AP secretion as a measure of sexual arousal. The effects of sexual-, aggressive-, anxiety-, and euphoria-arousing conditions on AP are being compared.

The findings from the series of studies by Barclay are complicated, implicating arousal conditions, information or set, subjects' sexual experience, and drive levels as influences on AP secretion. However, there are presently strong indications that urinary AP secretion may be a useful measure of sexual arousal. The results of Barclay's study in progress will be crucial in determining the affect-response specificity of AP secretion.

CRITIQUE AND CONCLUSIONS

An examination of the publication dates of the references shows that the study of the physiology of the human sexual response is new. Kinsey (1948, 1953) and Masters and Johnson (1966) deserve much of the credit for the breakthrough in this previously taboo area. However, as with most new areas, much of the research is exploratory rather than hypothesis-testing. The sample size is often insufficient to make generalizations of any real import. How can one generalize about "sex differences" based on samples of a few subjects of each sex? Techniques are still being evolved, particularly in the measurement of female sexual arousal. Much of the research is poor in quality, since it lacks adequate controls, methodology, or matching of comparison groups. However, this author has not addressed many specific criticisms to the individual studies reviewed. One reason for this is that such criticism would make the review rather monotonous and carping. The other reason is charity. In a new area, every little bit of information is helpful; if these researchers have the courage to breach the walls of taboo, they may be permitted the indulgence of some "let's look and see" data collecting. Hopefully, as more

¹² Unpublished study by A. M. Barclay entitled: "Information as a defensive control of sexual arousal," 1969.

¹³ A. M. Barclay, personal communication, August 20, 1969.

investigators enter the field, the competition for journal space will result in a "natural selection" of better designed and conceived research.

The research review has attempted to answer some simple questions concerning sexual arousal. Do psychological sexual stimuli elicit physiological responses of greater magnitude than stimuli with nonsexual content? Do physiological responses distinguish the subject's favored sexual objects, that is, males for female subjects, females for heterosexual male subjects, males for homosexual male subjects, children for pedophiles, fetish objects for fetishists, and so forth? What is the effect of the experimental set or atmosphere on physiological responses to sexual stimuli?

Some other important questions have rarely been asked. What is the relation between quantity and variety of experience and sexual arousal? What is the effect of relative deprivation (time since last orgasm) on sexual arousal? What are the ingredients of a sexual stimulus which make it relatively more or less arousing?

In many studies, the authors seem to assume that the stimuli they are using are sexually arousing. *Playboy* nudes are a favorite type of stimulus. However, in this era of public nudity, such stimuli may become quite humdrum. The study by Corman (1968) showed considerably more arousal to erotic movies than to *Playboy* nudes. If discrete slides are used, why not use pictures of actual coitus? In a study by Brady and Levitt (1965), pictures of "ventral-ventral" coitus were rated by males as more arousing than nudes or portrayals of other forms of sexual contact. Movies of sexual activities are probably more arousing than static pictures, but there are problems in measuring physiological reactions during such complex visual presentations. Lazarus (1966) and his group in California have evolved a psychophysiological methodology for measuring reactions to movies which should be studied by persons using such stimuli. The typical low grade stag movie may elicit hilarity or disgust along with sexual arousal. The type of erotic movie used by Corman (1968) may be preferable to stag movies. Some attention should be given to the stimulus dimension of sexual arousal studies. The scaling of sexual stimuli such as that done by Brady and Levitt (1965) is an example of what needs to be done. Other modes of presenting stimuli have not been explored, such as auditory or combined visual and auditory presentations. While measurements of arousal during actual coitus pose many problems for physiological measurement, autoerotic manipulation or the use of mechanical masturbatory devices might yield valuable data.

This review has not dealt extensively with psychological methods used to measure subjective arousal. Many authors have even neglected to obtain such self-reports. Without this kind of data, it is impossible to assess whether the stimuli used were actually sexually arousing and if physiological reactions were more related to subjective sexual arousal or to some other types of affective reaction.

Experimenters attempting to use psychophysiological methods to measure sexual arousal face some old problems which are well-known to those who have attempted to use psychophysiological methods to study other emotions. Most measures from different peripheral autonomic systems are minimally or inconsistently correlated across subjects. One reason for this state of affairs is individual specificity of response. Most subjects seem to have a most likely, or most powerful, channel of response. One subject may be a GSR responder,

another subject a heart responder, and so on. When one compares all GSR responses with all heart rate responses, the relationship will be attenuated by the individual differences in liability of each system. For this reason, it is unlikely that the same peripheral autonomic indicator will be sensitive to sexual arousal in all persons.

Another problem is that of habituation. When the same type of stimulus is presented repeatedly over a lengthy series of trials, physiological responses are typically great to the first presentation and thereafter diminish in intensity. The reaction of the first trial may be as much a function of novelty or surprise as the nature of the stimulus itself.

Shifting baselines of response are a problem. The magnitude of response in many systems is inversely related to the baseline from which the response began. Results may be radically different depending on what kind of response or change measure is used. Covariance techniques and Lacey's Autonomic Liability Score (1956) can be used to remove the influence of the baseline measure from the response measure.

Stimulus-response specificity can only be assessed by comparing the responses to more than one type of stimulus. This involves more than comparing sexual stimuli to blank slides or neutral stimuli. The question posed by Kinsey et al. (1953) in their review of autonomic findings is: Are there any autonomic reactions that can distinguish sexual arousal from other states of arousal, such as fear and anger? Stimuli calculated to arouse emotional states other than sexual should be included in studies of this problem. Even if only sexual stimuli were used, it would be helpful to have verbal reports on other possible reactions to such stimuli.

The effects of the general experimental situations on the subjects have not been considered in most experiments. The experiments which considered these set factors (Barclay,¹³ Chapman, 1969; Martin, 1964) have found that even physiological responses, GSR, pupil size, and urinary acid phosphatase secretion may be influenced by set induced by instructions or the characteristics and behavior of the experimenter. Until recent times, sexual response has been considered a semiprivate matter beyond the realm of scientific study. Confronted with prying experimenters attaching electrodes, penile plethysmographs, vaginal devices, and showing pornographic stimuli, many subjects might be inclined to inhibit voluntary response. Such inhibition can also have consequences for physiological responses. A *Playboy* cartoon shows a naked man and woman all wired up and under the eye of the researchers' TV camera. The man plaintively says, "I just don't feel like it." Failure to consider the human qualities of subjects can often lead to erroneous conclusions in psychological experiments.

Certainly, GSR has been the most favored psychophysiological toy of psychologists. In most of the experiments, the nude adult female figure has proven to be a powerful stimulus for GSR. However, the amplitude of GSRs did not reflect the favored sexual object in several studies. Since sweaty palms are not specifically involved in the adaptive sexual reaction, it is clear that the GSR may reflect the novelty of nude stimuli, or even negative reactions, as much as sexual arousal. This may be particularly true of the reaction of women to male nudes, since Kinsey (1953) reports that most women say they are not aroused by the mere sight of the nude male body.

¹³A. M. Barclay, personal communication, August 20, 1969.

Although heart and breathing rates are remarkably accelerated during actual coitus, they do not seem to be very sensitive to the milder arousal produced by psychological stimuli, though erotic movies effect some increase. Blood pressure was the only cardiovascular measure which showed a graded responsiveness to erotic stimuli.

Hess' studies (1960, 1965, 1968) generated a flurry of interest in pupil size as an index of positive arousal in general, and sexual arousal in particular. However, the research has failed to support his hypotheses about the stimulus specificity of the responses of males and females, and heterosexuals and homosexuals. As with GSR, the nude figure does elicit larger responses than clothed figures, but the sex of the nude figure is not particularly relevant. In fact, there is a tendency in several studies for the male subjects to show more dilation in response to male nudes than to female nudes. Rather than doubting the sexual orientation of the subjects, one might consider the novelty quality of the stimuli. Pictures of totally nude males are less common than the sight of nude females. The "wide eyed" response of males to male nudes may reflect more surprise than interest or sexual arousal. Like the GSR, the pupil is a labile system, but unlike the GSR it poses many methodological problems when visual stimuli are used. It would seem that the only satisfactory way of controlling luminance is to keep the general illumination constant and present stimuli in auditory form.

Penile erection measures have proven to be the most sensitive indices of arousal in the male, and these measures are quite sensitive to differential arousal to favored and nonfavored sexual objects. The extensive series of studies by Freund has shown good discrimination of homosexuals, heterosexuals, and pedophiliacs. Comparable devices for measuring female sexual arousal are still in developmental stages. The development of the vaginal blood flow measure mounted on a diaphragm ring (Shapiro and Cohen) and the Fisher and Davis modification of Tart's device both seem to be promising methods.

In the biochemical area, there has been a sad neglect of the sex hormones as possible indicators of sexual arousal. Levi has shown that adrenaline and noradrenaline show responses to erotic films but they are elevated by other types of films as well. A suggestive finding by Gustafsen et al. (1963) using urinary acid phosphatase has been followed up in a series of studies by Barclay. This measure of prostatic secretion might offer a more specific biochemical index of arousal in males.

The potential applications of some of the methods being developed are already apparent in the diagnosis and treatment of sexual deviants. Many theoretical questions concerning human sexual behavior await the development of objective and quantitative methodology. This methodology is evolving and if research continues to grow in this field, one day Gebhard and Masters may be able to take auto trips together in the security of knowing that what they pioneered will go on without them.

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The Role of Pornography in the Etiology of Juvenile Delinquency

A Review of the Research Literature

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After a series of hearings in 1955, the chairman of the United States Senate Subcommittee to Investigate Juvenile Delinquency concluded that "undoubtedly, pornography is one of the contributing factors to the increase in juvenile delinquency and sex crimes in the United States" (Hearings on Juvenile Delinquency, 1955, p. 313). This conclusion was based on extensive testimony by attorneys, police officers, customs and postal service officials, psychiatrists, school authorities, youth workers, and clergymen. In general, their testimony was based on personal experience with individual case examples or on inferences made from statistics indicating the rising incidence of crime and delinquency.

Examples of testimony based on personal experience with cases are that of the officers who noted that erotic materials act "as an aphrodesiac resulting in rapes, seductions, sodomy, indecent assaults and indecent exposure" (Clor, 1969, p. 40), or the statement by Dr. Frignito, chief neuropsychiatrist of the Philadelphia Municipal Court, that his court "has case histories in which arousal from smutty books led to criminal behavior" (Armstrong, 1965, p. 133).

Such testimony may be subjected to a number of criticisms, but the most obvious is that the simple citation of a number of instances, even a very large number in which delinquents or criminals have been known to possess, read, or

view pornography is not sufficient evidence for the conclusion that pornography causes crime or delinquency or is even related to it in the sense that it is correlated with it. Rather, observations of a different order are required before such an inference can properly be drawn, such as the relative frequency with which pornography is possessed and used by people who are not criminals or delinquents, or the relative frequency of criminality and delinquency among people who are not pornography consumers.

Let us look at another example which may help to make the fallacy clear. I have often observed people drinking tomato juice and subsequently becoming intoxicated. Citing several, or even many, such cases of the conjunction of tomato juice and intoxication would not be a proper basis for the inference that the ingestion of tomato juice causes intoxication or is correlated with it. I can cite even more instances of people drinking tomato juice and not becoming intoxicated and of people who do not drink tomato juice and to become intoxicated. By making these and other observations and subjecting them to analyses that conform to the canons of inference, I may conclude that it is the vodka in a "Bloody Mary" that is correlated with intoxication—and not the tomato juice.

A number of people have progressed beyond the stage of simply noting instances of the conjunction of given phenomena with juvenile delinquency in their attempts to understand and explain juvenile deviance. They have produced many research reports based on rather comprehensive observations that have been analyzed in accordance with the canons of inference.

This paper reviews some of the voluminous professional theoretical and research literature on delinquency in order to answer the question: What do the major empirically based studies of juvenile delinquency have to say about the relationship between pornography and delinquency?

Since space and time preclude an enumeration of *all* the variables mentioned or examined in *all* of the major theoretical and empirical studies of the etiology of delinquency, a brief description of the contributory or causative factors noted in 12 of these major works will be reviewed below. The 12 studies included herein were selected on the basis of their historical representativeness and the variety of viewpoints or theoretical perspectives which they represent. In addition, it was considered desirable to include those works in which the authors present supportive data for their conceptualizations and research findings.

In addition to this review of 12 specific studies, a summary statement will be given of the role of pornography in the etiology of delinquency derived from the many other works examined.

At the time, early in this century, when biological and physical explanations of crime and delinquency were beginning to lose their appeal, William Healy (1915) began to study delinquency from a more eclectic, multifactored perspective. Convinced that no existing theory or conceptualization adequately explained the etiology of crime, Healy decided to embark on a study of individual cases of delinquency and simply to observe and note any "causal factor" present in a particular case. Information about the youths was gathered from a review of their family and "developmental" histories, their environment, including home and neighborhood, physical and psychological measurements, and medical and psychiatric examinations. This method resulted in a 9-page list of 170 distinct conditions or factors deemed conducive to delinquency. Emphasis was placed

upon psychological factors such as mental defects, mental dissatisfactions, emotional disturbances and aberrations, antisocial grudges, and negative reactions to environmental conditions. The author's absence of preconceptions freed him to observe and note any and all factors potentially conducive to delinquency. His report does not mention exposure to or consumption of pornography among the youths under study.

Sheldon and Eleanor Glueck (1968) described the findings of a lengthy and detailed follow-up inquiry into the conduct of 438 delinquent boys and 442 nondelinquents (matched according to age, ethnic-racial origin, general intelligence and residence) in order to determine what "accounts for the divergence in the behavior of the two groups of juveniles and also accounts . . . for their *continued divergence* during adolescence and early adulthood" (p. 4). The sample was derived from the original 500 pairs of matched delinquents and nondelinquents whose characteristics were studied and compared in *Unraveling Juvenile Delinquency* (Glueck & Glueck, 1950). In this earlier work, the major factors examined were: parental background, including the biological and cultural legacy of the parents, parental make-up and behavior; home and family life (stability, affectional ties, discipline, supervision); physique (body build); health; intelligence (composition); psychiatric status and personality-character structure; school experience (achievement and behavior); street life; and church attendance.

In the multifactored longitudinal study, continued until the subjects reached 31 years of age, the variables examined included: (a) home and neighborhood conditions, (b) physical and mental health status, (c) academic education and vocational training, (d) domestic relations, (e) industrial and occupational history, (f) economic conditions and status, (g) ambitions, frustration, and maturation, (h) military experience, and (i) church attendance, interests, companions and leisure time activities, including reading practices and attendance at movies and burlesque shows.

Although numerous factors were found to contribute, in varying degrees, to delinquency, exposure to or consumption of erotic materials was never mentioned as a contributory or casual factor.

From the findings of some studies of twins, a noted English psychologist has concluded that there is a biological basis to behavior and that heredity plays an important role in predisposing the individual to crime (Eysenck, 1964). Although he does not completely eliminate the significance of environmental conditions or family relationships, the author believes that their input in criminality and delinquency cannot be appreciated fully until we have a greater understanding of the individual's innate predisposition to crime. Eysenck suggests, in this regard, that differential reactions to stress situations are a function of the response of the autonomic nervous system over which the individual has no control. People who are impulsive, hyperactive, and extroverted tend to condition poorly and do not develop moral responses as early or as quickly as the introvert. Since the extrovert does not develop a strong conscience or superego, and since it is the conscience which, Eysenck believes, governs the manner in which we behave, it is the extrovert who will more often become criminal or engage in antisocial behavior. Exposure to or consumption of pornography is not mentioned anywhere in this theory.

Some professional workers in the area suggest that many delinquents and criminals exhibit a form of behavior indicative of psychopathic or sociopathic

personality, generally characterized by egocentricity, asocial behavior, insensitivity to others, lack of guilt for wrongdoing, and hostility. A recent research effort attempted to trace the natural history of the sociopathic personality syndrome in order to determine whether such pathology in later life might be predicted from certain childhood characteristics and behavior patterns (Robins, 1966). To accomplish this goal, Dr. Robins traced the adult adjustment of 524 children who had been referred, 30 years prior, to a child guidance clinic in St. Louis, primarily for antisocial behavior. A comparison group of 100 normal school children were also followed up.

Dr. Robins investigated many childhood characteristics of the patient and his family, including: sex, age at referral, birthplace of parents, religious background, family occupational status, financial assistance, neighborhood, quality of housing, living situation at referral, institutionalization and foster home placement, marital status of parents, parents' problems, siblings' problems, IQ, school progress, reason for clinic referral, postclinic adjustment, and so forth.

A follow-up investigation was made of each former patient's geographical mobility, arrests and incarceration, marital history, parenthood, occupation, financial dependency, social participation, military service, alcohol use, drug abuse, health, and medical care. The consumption of pornography was not noted at all in the study.

Conger and Miller (1966) presented the findings of a larger project begun in 1956 on the early identification of maladaptive behavior. The investigation involved samples of youths drawn from among 2,348 10th grade students in Denver, Colorado. The major aim of the study was to explore the "relationships between various personality and sociological factors on the one hand and delinquency on the other" (p. 14). It was hoped that early identification of the factors contributing to delinquency would be most beneficial in preventive efforts. The major hypothesis was that the nature and extent of differences between delinquent and nondelinquent youth are, in part, a function of socioeconomic status, intelligence, and personality characteristics at various ages. Information for the study was gathered from school records, including teachers' comments, ratings of social and personal adjustment, intelligence tests, and personality inventories. Again, pornography was not mentioned.

Albert Cohen (1955) explains the emergence of delinquent subcultures as a response to shared problems of low status among working-class youth. A delinquent subculture is defined as "a way of life that has somehow become traditional among certain groups in American society. These groups are the boys' gangs that flourish most conspicuously in the 'delinquency neighborhoods' of our large American cities" (p. 13). The behavior of these groups is characterized by the author as nonutilitarian, malicious, and negativistic—all of which is viewed as a reaction-formation to the status threats and frustrations arising from the working class boy's inadequate socialization of middle-class norms and values, and his consequent inability to attain adult recognition through achievement of middle-class social expectations. Consumption of pornography is absent in this description of the delinquent culture.

According to Walter B. Miller (1958), delinquency is the product of long established lower-class cultural traditions and values, and it is the structure of lower-class life which plays the dominant role in generating gang behavior. The male adolescent peer group of the street corner variety provides the training

ground and milieu in which lower-class youth can develop a sense of identity, "maleness," status and belonging, and can express with peer approval the lower-class focal concerns or values such as "trouble," "toughness," "smartness," "excitement," "fate," and "autonomy." In this description of gang behavior, the author never mentions consumption of pornography nor does he indicate that it is a significant element of lower-class culture.

Cloward and Ohlin (1960) posit that delinquent subcultures arise among groups of lower-class boys whose problems of adjustment derive from economic injustice rather than denial of middle-class status. In essence, it is the opportunity structure, both legitimate and illegitimate, which accounts for the form and content of the resultant delinquent subcultures. Where criminal opportunities are well integrated into the social structure of the neighborhood, the criminal subculture is the one most likely to develop. Here the major activities center around theft and initiation into the criminal underworld, and the image of the delinquent is that of the "budding ganster." In areas traditionally lacking criminality, the "conflict subculture" is more apt to emerge. In this group gang fighting, "bopping," and rumbles predominate. Boys who are denied access to both the legitimate and illegitimate opportunity structures more often withdraw into the "retreatist subculture" of the drug addict. In sum, Cloward and Ohlin have hypothesized that adolescents who form delinquent subcultures *have* internalized conventional, middle-class goals, but, faced with limitations in access to these goals, and unable to adjust their aspirations downward, they experience intense frustrations which justify their exploration of nonconformist alternatives. Again, exposure to or consumption of pornography is not discussed as either contributory or causative of delinquency, nor is it noted in the author's discussion of the content of these subcultures.

David Matza (1964) adopts the "soft determinism" approach to the etiology of delinquency. After criticizing the earlier positivistic theories for their erroneous perception of the background and behavior of delinquents as radically different from that of nondelinquents, their inadequate explanation of the fact that most of the delinquent's conduct is law-abiding, and their failure to account for the maturational reform of most youthful offenders, Matza offers an alternative theory of "drift." He suggests that delinquents are at least partially committed to the conventional social order since most of them experience guilt and shame when apprehended for their misdeeds. In essence, Matza hypothesizes that "the delinquent transiently exists in limbo between convention and crime, responding in turn to the demands of each, flirting now with one, now the other, but postponing commitment, evading decision. Thus he drifts between criminal and conventional action" (p. 28). The delinquent's episodic misconduct or deviance occurs at such time as his usual attachment and commitment to conventional conduct norms is temporarily weakened or broken, thus leaving him free to drift into delinquency (although not requiring it).

In an earlier work, Sykes and Matza (1957) argue that "much delinquency is based on what is essentially an unrecognized extension of defenses to crimes, in the form of justifications for deviance that are seen as valid by the delinquent but not by the legal system or society at large" (p. 666). These justifications for deviance or "techniques of neutralization" contrived by the delinquent are intended to assuage his guilt and exculpate him from blame. The five "techniques" enumerated by the authors include: denial of responsibility, denial

of the victim, denial of injury, condemnation of the condemners, and appeal to higher loyalties.

In neither of these works is the consumption of pornography considered a significant explanatory variable in the etiology of delinquency.

One of the task forces of the President's Commission on Law Enforcement and Administration of Justice was assigned the investigation of juvenile delinquency and youth crime. In the chapter of its report (1967) concerned with "Understanding and Preventing Juvenile Delinquency," the investigators discussed social and political inequalities suffered by disadvantaged segments of the population and placed primary emphasis upon "the conditions of life that drive people to commit crime and that undermine the restraining rules and institutions erected by society against antisocial conduct" (p. 41). Among the variables examined were the teenage culture and adolescent society, the impact of conditions prevailing in the slums and inner city core areas, the intergenerational transmission of poverty, the breakdown of the family, the failure of the schools and the community to meet the needs of today's youth and to serve them adequately and effectively in a variety of ways, and the employment and employability of youth. In addition, several consultants were called upon to submit papers on various youth-serving agencies and institutions, to report on rates and trends in delinquency in certain areas, to report on youthful offenders and criminal careers of male delinquents, to discuss affluence and adolescent crime, to describe the youth culture, to discuss delinquency in relation to the family, schools, religion, recreation and economic factors, and to offer recommendations for prevention and control of the delinquency. The subject of pornography never comes up either in the text of the report or in any of the consultants' papers which are reproduced as appendices to the report.

Martin, Fitzpatrick, and Gould (1970) take a structural approach to delinquency causation deriving from a multidisciplinary perspective. Their emphasis is upon "the various structural inequalities that affect the lives and behavior of individual offenders" (pp. 5-6). Delinquency, both isolated acts and patterned behavior, is best viewed within the total context in which it occurs and in relationship to the functioning personalities of individual offenders. "The focus is on the interrelationships between the delinquent's biography and the history of his people and on the growth, development, and contemporary characteristics of the community in which he and his family live. The configuration of events and social interactions characteristic of the immediate action situations in which the delinquent behavior occurred receives special attention" (p. 6). This analysis, even though it focused on the immediate action situation, did not reveal the consumption of pornography to be a contributing factor in delinquency.

In his discussion of the causes of delinquency, Hirschi (1969) takes issue with some aspects of the popular strain and cultural deviance theories of delinquency. He suggests, for example, that delinquency is not a social class phenomenon, and that the oft-repeated explanatory variables of broken homes or working mothers do not significantly differentiate delinquents from nondelinquents. Rather, adopting the perspective of the social control theorists (which assumes that "delinquent acts result when an individual's bond to society is weak or broken" (p. 16)), the author proceeds to classify and describe the elements of the bond to conventional society and to show how each of these elements is related to delinquent behavior and to each other. The elements of the bond described by

Hirschi include: "attachment" to individuals and social institutions, "commitment" to the conventional social order (commitment is seen as the rational component in conformity and the sociological counterpart to ego and common sense), "involvement" in conventional activities (thus limiting the time and opportunity to engage in deviant behavior), and "belief" in the moral validity of social rules. In essence, Hirschi's theory suggests that "there is variation in the extent to which people believe they should obey the rules of society, and, furthermore, that the less a person believes he should obey the rules, the more likely he is to violate them" (p. 26). In general, the more closely an individual is tied to conventional society through attachment, commitment, involvement, and belief, the less likely he will be to commit delinquent acts. Pornography is not considered to be of sufficient import to be discussed.

Clearly, none of the 12 works cited above provides even the slightest evidence to support the assertion that pornography is one of the significant factors causative, contributory, or conducive to delinquency. The same can be said of the other 39 books and articles reviewed for this paper. Stated most succinctly, exposure to and consumption of pornography are nowhere mentioned in the professional literature on the etiology of delinquency nor is there any suggestion as to their probable significance, nor is there any recommendation in this literature that the relationship between pornography and delinquency merits special investigation in the future.

Despite the fact that the relationship between pornography and juvenile delinquency was not investigated by the empiricists, one should not necessarily dismiss the possible relevance of pornography to the etiology of delinquency. Past failure to consider pornography as a significant contributory factor may simply be a function of the relatively recent and rapid rise in the volume and traffic of erotic materials.

It is, nonetheless, remarkable that even the most recent theoretical and empirical investigations of the causes of delinquency—particularly those that are concerned with enumerating significant environmental and cultural variables—fail to mention pornography or to suggest that an investigation be made of the relationship between pornography and juvenile delinquency.

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Theoretical Analyses

Pornography and the Mechanisms of Defense¹

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ABSTRACT

Every literary work transforms a nucleus of unconscious fantasy into meaning by forms similar to defense mechanisms. Interviews show that both normal and pathological readers reach into the story to draw out those parts of its unconscious fantasy which concern them. They add their own defenses to those of the story, and these extra defenses elicit significant affective responses.

Pornography defends against all unconscious fantasies save one, which is: "phallic gratifications need not be feared." Readers who enjoy this fantasy will respond to pornography by either sexual arousal or a lack of interest. Readers who cannot enjoy such a fantasy will need to add defensive measures of some kind. If government adds defenses on their behalf, it weakens their own adaptive capacity.

INTRODUCTION

Pornography is one species in the genus of literary arts (which includes drama and film). It is tempting to call pornography "the literature of sexual arousal," but reader response is precisely the matter at issue. It should be called, then, "the literature that deals explicitly with the genitals and their various uses and abuses." The use of the word in such a manner is not an attempt to distinguish legal from illegal, moral from immoral, aesthetically good from aesthetically bad, or

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successful (sexually arousing) from unsuccessful pornography; this is rather an attempt to isolate it as one of many kinds of literature.

Once this is accomplished, the difficulty of hypothesizing a reaction to pornography *per se* is easily seen. Such an attempt would be comparable to a theory of shaggy dog stories without a theory of humor. In *The Dynamics of Literary Response* (Holland, 1968), the author sets forth a general theory of response to literature which now has been tested more or less empirically.

LITERATURE MODELED AS FANTASY-AND-DEFENSE

In general terms, this theory suggests that a literary work is "work" in the sense of "dream-work" or "creative work." It transforms fantasy from the unconscious to the conscious, lending to it social, moral, or intellectual meanings. *Hamlet*, to take the *ur*-example of psycholiterary studies, transforms oedipal fantasies about killing the father and marrying the mother into generalized themes about the manner in which thought and action work upon each other. Swift's *Modest Proposal*, the famous satire in which he proposes the eating of Irish babies, advocates other methods of identification besides eating people. In almost any Hemingway story, fantasies about the dangers to a phallus are transformed into the stoic ethic of "playing the game fairly" in the face of inevitable loss.

Taken raw and untransformed, these fantasy materials—eating babies, being castrated, killing father and bedding mother—would be obscene in the original sense of the that word: foul, offensive, repellent, and disgusting, as are most unconscious materials if brought abruptly to consciousness. However, most literature is not obscene because most literary works embody a dynamic psychological process of transforming these raw fantasy materials.

There are two basic agents of transformation. One is the press toward theme and meaning, which is analogous to symbolization or sublimation. Thus, eating babies symbolizes identification with their plight. In the same way, assertive male sexual activity becomes fishing, hunting, bullfighting, soldiering, and the other activities one comes to expect in Hemingway's fiction.

The other agent of transformation is form, which means, very broadly, all the devices used to structure content, whether conscious or unconscious. If meaning resembles sublimation, form resembles a more general set of defense mechanisms. For example, Swift's satire is effective as reaction-formation: our revulsion at the idea of eating babies makes us adopt a more humane identification with the long-suffering Irish. In *Hamlet*, there is an elaborate set of doublings and splittings in which differing attitudes toward a father are split up among a series of father-figures: Hamlet's dead father, Hamlet's remembered father, Hamlet's father as ghost, Hamlet's stepfather, Polonius, old Fortinbras, the player King, and so on. Oedipal attitudes are divided between the sinful Gertrude and the apparently virginal Ophelia, and Hamlet's oedipal problem is mirrored by the subplot around Laertes. In effect, the play transforms its oedipal content as a real person might, by splitting the problem and projecting different aspects of it onto different persons.

Once it is recognized that literary works embody psychological processes analogous to the sublimations and other defenses we see on couch, in clinic, or in everyday life around us, the process of response can be investigated; we can begin to see how the psychological process in the literary work engages the psychological processes of the reader.

To speak of being "absorbed" by a book or film is an inappropriate metaphor—the book does not absorb us; we absorb the book. It is we who "devour" books, who have a "taste" for science fiction, who are "insatiable" or "voracious" readers, who "take in" movies, who are "addicted" to murder mysteries or "sated" with academic novels.

As these figures of speech suggest, literary works are absorbed in a mode derived from the primitive experience of feeding, that stage in early infancy when we feel at one with the matrix that satisfies our hunger. Again, the sense of "losing oneself" in a book or being taken "out of oneself" are familiar metaphors suggesting a loss of self-consciousness or of a sense of one's own identity, which is ultimately derived from that oral at-oneness and which merges with the earliest source of gratification.

Probably the most exact adult model for this state of mind is hypnosis. The hypnotist sets up a subsystem within his subject's ego much the way a literary work sets up its process of transformation in the mind of its reader. One can think of a kind of "core" in the reader's ego which is regressed to primary process thinking and the fusions of earliest infancy. Surrounding this "core" is a "rind" of unregressed ego. The "core" contains the introjected process of transformation which is the literary work. Meanwhile, the "rind" sustains that introjection by such higher ego-activities as word formation, remembering what has occurred and anticipating what will come next, synthesizing characters and events, and, most importantly, analogizing from the reader's own experience to the people and episodes of the literary work (Holland, 1968, ch. 3).

If nothing else, this model suggests how much more complicated the problem of literary response is than the stimulus-response models often used to study it. The typical study of violence in films or television proceeds by showing some violent portion of a film and then testing its audience to see if they are more or less "violent" than they were before (see, for example, Berkowitz, 1964). This procedure assumes that a work is either "violent" or "not violent," when common sense would suggest that the stimulus must be examined in more detail. For instance, is the violence justified or not? If it is, defense mechanisms have been brought to bear, and one would expect responses to vary accordingly. This is one of the reasons that many studies of television and film stimuli have proved inconclusive—the works are not analyzed in sufficient detail.

However, that is not the only deficiency: in order to study literary response fully, one must also take into account the personality or character structure of the individual reader. His response filters and selects within both the fantasy content and its transformation.

This fantasy-defense model has been studied by giving subjects stories to read, then interviewing them in a rather unstructured way, but with at least part of the interview devoted to a fixed set of questions. One would expect to (and does) hear echoes of the unconscious fantasy content in the subject's free associations with the story or parts of it. One would also expect, but rather less confidently, to hear echoes of the unconscious defensive modifications of that fantasy material, and one does. Finally, one would expect different personalities to interpret fixed transformations embodied in the story differently.

Clinical psychologists have tested subjects using Rorschach, TAT, and other tests to elicit their prevailing types of fantasy and patterns of defense. From these results and from interviews about literary works, the researcher can obtain a

reasonably clear picture of the dynamics of a subject's personality. The researcher can then study the subject's reaction to a given combination of fantasy and defense in a story.

TWO SUBJECTS RESPOND TO A STORY

One story which seems to have a rather clear fantasy at its root is F. Scott Fitzgerald's "Winter Dreams" (1922). It tells of Dexter Green, who, by intelligence and determination, rises from his obscure lower-middle-class origins to become extremely successful, thereby satisfying the "winter dreams" he entertained when he stopped caddying at the end of the summer. The dream he does not satisfy, however, is to win Judy Jones, the all-American dream girl. "Inexpressibly lovely," "arrestingly beautiful," she keeps all the eligible young men of the city circling about her, although ultimately, "she was entertained only by the . . . direct exercise of her own charm." Dexter attempts to blot her out of his memory and becomes engaged to Irene, "Sturdily popular . . . intensely 'great.'" Judy, however, beckons him back, and he returns for a brief fling. The romance lasts only a month, and Dexter flees East to a Wall Street success. Years later, by chance, he hears of Judy as a faded young matron married to one Lud Simms, who drinks and "runs around." Dexter's informant tells him of this once-great beauty: "She has nice eyes," or, more damningly, "Most of the women like her." Dexter realizes his last dream is dead and, depleted, he weeps.

In an unconscious sense, it is fairly obvious that Judy Jones evokes in her readers some of the longing and idealizing once felt toward a mother. In part, her motherliness has an oral quality: her kisses "aroused in him not hunger demanding renewal but surfeit that would demand more surfeit . . . kisses that were like charity, creating want by holding back nothing at all." Yet Judy is, if not a withholding mother, an unpredictable, fickle one. "She had come . . . to nourish herself wholly from within." As for Dexter, "He loved her, and he would love her until the day he was too old for loving—but he could not have her. So he tasted the deep pain that is reserved only for the strong, just as he had tasted for a little while the deep happiness." The metaphor of taste suggests an oral mother, but Judy also represents an oedipal love, as when we are told that Dexter "had wanted Judy Jones ever since he was a proud, desirous little boy." But, of course, Dexter simply "could not have" such a love. Thus, the story ends with one of the standard oedipal fantasies about a mother: once she has been won, she is no longer the ideal, or, in terms of defense, once Judy is recognized as a mother, she can no longer be desired.

ONE WOULD EXPECT both oedipal fantasies and defensive strategy to emerge in readers' comments on the story. Sandra, the first subject to be analyzed here, attended a neighboring university, where she was a senior majoring in English. (Literature majors were selected in order to find readers who were not afraid to voice their opinions, both conventional and unconventional, of stories and poems; who were reasonably articulate in such matters; and who would not be taken aback by some of the questions.)

According to Dr. Andrew Corvus, the consulting psychologist who worked with her, Sandra was a "good hysteric," responding to the Rorschach primarily at a phallic or oedipal level with some "oral underlay." She was a very feminine,

delicate, almost maidenly girl, who tended to be rather blocked and rigid. She made each interview into a quiz, and it was some time before she was able to express herself freely or even look directly at the interviewer. Although she showed "significant repression and denial," according to Dr. Corvus' test results, she seemed generally satisfied with herself and her life. She was comfortable with her femininity, but rather in awe of male vigor, power, and protectiveness. She wanted to see more of these things, and, curiously, it was precisely the act of seeing that she regarded as a way of participating in or drawing on masculine strength, possibly because she herself was (in the appropriate idiom) very "easy on the eyes."

At the same time she tended to minimize male-female differences and to use a good deal of denial as a defense. She used, for example, the word "gray" in her Rorschach responses more than most people. The rather artful story she told to the blank TAT card showed how some of these patterns worked:

Emily opened her eyes. "Nothing," she said. "There's nothing there." She'd been blind since birth, and her parents had tried everything. Finally, they had brought her to Vienna. Dr. Herzinger would take her into his hands. The famed eye surgeon had worked miracles. Her case was a challenge. Emily remembered hearing him sigh all during the initial examination. "I'll be honest with you," he told the girl. "Chances are 80-20 against you." But, well able to afford the operation, her parents had consented. The girl herself built up no false hopes. "Nothing," she said. "Of course." She stared straight ahead at the white expanse. Then came her father's voice: "Emily—" he said. "The doctor wants you to try moving your eyes. You've been staring at his stomach for five minutes."

Her story showed several important themes: deficiencies in the girl which can be minimized through seeing, being close to benevolent males, and equalizing males and females. At the same time, Sandra tended to erect a barrier against a potentially dangerous fusing with those males, a shield often made up with words.

When Sandra talked about "Winter Dreams," she showed these same patterns: seeing and not seeing, a wish for dependency, but also an equalizing of powers between male and female. She had an astonishingly detailed memory of the story, which she tended to put in visual terms, describing Judy, for example, as "the *vision* and this, you know, extraordinary person in his life," "his constant vision." "He can never exactly be disillusioned," she said (misreading the story slightly), "because he's always got this same vision." Judy would never fade for Dexter "because somehow the first impression . . . was so strong." "He might not have cared [about her fading] because you always kind of have your first impression."

In effect, Dexter could look at Judy, but Sandra would not. Instead, her characteristic defense of denial came into play against "this kind of fatal woman" with her "mystery" or "unnamed quality." When asked if she had ever encountered anyone similar to Judy, she replied, "I don't believe I could ever meet anybody like that, see? I don't believe in her . . ." "I don't *believe* in this mysterious power that she's supposed to have." "I've read, you know, about these kind of women in stories . . . and here she's probably one of the most extraordinary— it would certainly be interesting if there were but I just—" and finally,

she just laughed. When asked about these stories, she shifted. "I suppose I tried to think right away of real life experience, somebody in real life experience where they *never* fail." Then she turned once more from life to fiction, and finally to a *lapsus memoriae*: "I'm almost sure I've read something else like that [ending], and I wish I could think of what it was. But— . . . I'll have to see if I can think of it."

The last visual metaphor also expressed her fantasy. "She [Judy Jones] had a mystery or whatever that very special quality is that would have set her so apart from other people that even just—well, . . . as you're told here, that maybe even one look could do it." At this point, she was asked, "What kind of woman do you see for Dexter?" After many hesitations and false starts, she decided, "Well, you know, she can be all the things that Irene is . . . with maybe just a little bit *more* mystery without having it be that almost destructive kind."

In short, she saw Judy as having a "dangerous mystery" and "you kind of see her just mowing over all these men," rendering them helplessly passive. She felt there was no way a man could actively win Judy: "It's almost like there would be nothing you could *do*: you would just have to *be* a certain way." For Judy, men were an "easy conquest." "It's as if the poor man never had any choice. She was sort of presented as the aggressor, and if she came up and said, 'You're it,' that was *it*, and you went along with it until you weren't it, and then you were kind of dropped." In this version, she saw men as passive; she admired Dexter because "he does have something more in him than average," and it seems that that "something" and that "it" have the unconscious meaning of phallic power.

In any case, Sandra's answer to Judy's power was an equalizing. "Somebody that loved her less than she loved him was what appealed to her," a man who "could intrigue her more than she intrigued him, maybe." Sandra admitted there could be "a certain kind of [pause] mystery," "but not to the point where it was such as unlimited *power* over the other person. So like maybe the *right* person for him is somebody that has an extraordinary quality about her, yes, but not to the point where it takes him over so completely that he's not, like, in control of himself anymore." She had earlier explained Dexter's impulsive quitting as a caddy as "not wanting to be on inferior terms with her." The word "inferior" is inevitably used to describe Irene, who clearly offers little more than "an addition to his own sort of successful life. She's in such an inferior position because she's so pale beside his *constant* vision, really, of Judy." As soon as Judy was caught in this inferior position, it was a disaster. "That's why the end seemed obvious to me: that it was inevitable you'd have to hear at some later time that finally she's met someone who really crushed all the life— it does remind me of something else, and when that ending came— I'm almost sure I've read something else like that." Sandra's phraseology and concern with the "end," the "ending," and being "crushed," seem to manifest the unconscious fears in her Rorschach and TAT: that a man or woman might crush the other in the "end."

Thus, in further spelling out the person who would be right for Dexter, she developed again the theme of equalization, applying it to her own life.

I guess we're talking about marriage partners . . . To find somebody with equally superior *something*, whatever it is. I can accept the idea of this mysterious force that she has. It's partly just an unnamed quality that some people have. I guess I'd like to see him and anybody else like him, that's got a

little bit something more than average, find a person who has mystery, maybe, a unique attractiveness *But* [and she paused] only to the point where it doesn't overpower the other person . . . which I suppose wouldn't be the case if each had his own unique qualities to begin with.

Those last words brought together all of Sandra's themes. Her Rorschach and TAT's presented two major issues: vision and the equalizing of powers between male and female. In the interview, she transformed these themes into rather mature and healthy attitudes toward herself, toward the opposite sex, and (even if there is a genital pun in her phrase) into "a whole theory of marriage." Fitzgerald's story, with *its* process of transformation, then interacted with her own continuing processes. First, Sandra drew from the story only those elements which were her own unconscious concerns: sight, the attractive feminine "mystery," and lovers overpowering each other. Second, she used the story's built-in defense processes—disguising the mother-content by symbolization and by the final plot reversal—but she added her own defensive patterns: seeking equality between man and woman and, in particular, denial. She refused to see Judy's powers and, in so doing, discovered that she could not believe in the story itself.

THE SECOND SUBJECT, Silas, contrasted markedly with Sandra. Whereas Sandra was the kind of neat, attractive girl whom the parental generation might well regard as a vanishing ideal, Silas was the type who sends American Legion posts into a frenzy. His hair was long and not overly clean. His clothes had achieved a kind of monochromatic patina—indeed, he proudly told the interviewer one day that he had scrounged all his clothes for free. He sprawled and slouched during the interviews, and his New England twang often turned into a snarl. His primary concerns were revolution, drugs, sex, and a sort of at-oneness with the cosmos.

Dr. Corvus diagnosed Silas as a "paranoid character." Silas would typically project something into the test materials and then deny his own projection. For the first cards in the Rorschach test, for example, he would speak of the images as "the arrangement of ink" or say, "It was designated that way." In general, he tended to see the cards as literal, not in an "as if" way. Many of his responses were hostile, such as images of projectiles or ripping and tearing apart. In Card IV, he saw a bat which was "not particularly out to get me."

In the TAT, he came out with the remarkable statement, "Proximity could breed murder" (Card 18GF), but his style and manner were manifested most graphically, perhaps, in his response to Card 13B, the picture of the solitary boy in the doorway. This card, ordinarily, elicits depressive material, and Silas quickly developed attitudes appropriate to a mother but applied them to the government. His writing was all in capitals:

POVERTY IN AMERICA. THANK YOU, DEPARTMENT OF HEALTH, EDUCATION, + WELFARE. WHAT ABOUT THE DEPARTMENT OF HELL, INTIMIDATION + WARFARE IN THE OTHER PART OF THE BUILDING?

*

*

*

YET HE LOOKS HUNGRY. WHICH IS A DRAG. WE ARE PART OF THE SAME BODY (AND I DON'T MEAN BODY POLITIC) + I OBJECT TO THIS BOY GOING HUNGRY WHEN THE RESOURCES ARE ADEQUATE TO FEED HIM. IF HE WANTS TO GO

HUNGRY AFTER THAT, IT'S PERMISSIBLE, OR SHD. BE. I AM NOT TALKING ABOUT "ACCULTURATING" HIM.

*

*

*

THE HOUSE IS NICE. IT SHOULD BE A GOOD PLACE TO LIVE IF YOU'RE NOT HUNGRY. OR MALTREATED BY YR. "PROTECTORS" (THE POLICE—I TAKE THE TERM TO INCLUDE ALL ORDERING INSTITUTIONS OF A SOCIETY, ALL THOSE WHOSE DECISIONS CAN BE IMPOSED ON YOU, INCLUDING COURTS, EMPLOYERS, ETC—ARE NOT SUFFICIENTLY TOLERANT WITH RESPECT TO THE POOR. WHOEVER THEY ARE.)

A PUBLICITY PICTURE, DESIGNED TO STIR CERTAIN EMOTIONS. IF I WERE MORE IMPLICATED IN THIS SOCIETY, PERHAPS MY REACTIONS MIGHT HAVE FIT MORE CLOSELY. ANGER, BUT NOT VIOLENCE.

Silas' response brings together a number of oral, particularly orally sadistic themes: his coupling of poverty and sadism; being "part of the same body" with the boy; his identification with the poor ("whoever they are"); the theme of the sadistic mother; and mistakes in setting the level of reality appropriate to the picture. Dr. Corvus decided that Silas must have felt immensely deprived in childhood—hence his oral sadism and his feeling that to be dependent was, ultimately, to be eaten.

It seemed that, beginning from a position that "to be dependent is to be threatened or eaten," he took a "flight to maturity." That is, he avoided the oral panic by turning to "higher" anal or oedipal themes, but his aggression colored these later stages so that he treated others as things, institutions, or abstract forces, and he himself seemed to feel secure only if he were a physical object.

At his highest level of response to "Winter Dreams," Silas showed the same fantasies toward an oedipal mother that other male subjects did: that Judy was an ideal, "the Grail," never to be won, and that Dexter's pursuit of her was mythic, "the old voyage from the earthly to the divine plane." At the same time, in precisely the oedipal manner described by Freud in 1912, Silas saw her as genitally promiscuous:

Silas: When he was starting to leave her for Irene Scheerer, she came back and socked it to him right away. Fitzgerald's handling of what actually was going on there, that orgasmic kiss that he got out there on the porch, really blew my mind. I mean, he stated what was happening, I think, but he insisted on substituting the word "kiss."

NNH: I was going to ask you that. Do you think she was— well, the idiom of my generation would be, "sleeping around"?

Silas: Yeah, I reckon as how she was. I mean who— Ah, where the hell is that? [*leafing through the text*] "They [her kisses] aroused in him not hunger demanding renewal but surfeit demanding more surfeit, creating want by holding back nothing at all." That doesn't sound like kissing to me!

Still more oedipally, in another segment of the interview, he talked of Judy Jones as the archetypal white woman and conjured up "the fear of the whites that all the black man wants is a Cadillac and a white woman." The image of virgin and slut combined in a rather odd statement of Silas': "She's losing hers [her virginity] all over the place!" In an almost classic symbolism, he said of her, "Very high rate

of turnover, to use a nice economic phrase. Low overhead, high turnover, etcetera. It's a profit-making business. I mean she's making a great deal inasmuch as she gets paid for her whoring, not in money, but in admiration and attention." In the same vein, he saw Judy as the active one vis-a-vis Dexter; on hearing of his engagement to Irene, she "lures him back to her place and makes it with him." After a month, "she finally decides she's done her bit—leaves."

Apparently Silas wished to see the mother-figure Judy as separate from children. Thus, "even during that phony scene where she breaks down, crying 'take me home. I don't want to go back to the idiotic dance—with those children,' you know, in a way, even though she's probably putting him on, there's certain things that she says in the course of this put-on that seem more honest than others." Still more pointedly, when discussing the scene where 11-year-old Judy charms Dexter and beats her nurse, Silas said she reminded him of a little girl of nine or ten he had seen who was "virtually a carbon copy of a 35-year-old upper-middle-class or upper-class woman. [laugh] And she was a child! I mean it was really scary! [As for Dexter] I don't understand why he is so taken in by her, you know. I would think he'd find it terrifying."

Thus, it takes, among other things, bravery to win a Judy Jones. For Silas, this explained Lud Simms' drinking and wenching.

Anybody who went through even what was left of the Judy Jones initiation test would be entitled to do a little drinkin' and runnin' around afterwards He's outmaneuvered Dexter and everyone else, you know, top of the heap, so he—Wow! "Gotta relax. Boy, do I need a drink and several hundred women!"

He seemed to be talking about an oedipal father, a powerful, sexual man who had survived the dangers represented by the oedipal mother. Silas had trouble, however, visualizing Dexter "making it" with Judy Jones. "I mean, if I try and put my own—try to put him into that place, either I'm still living in fantasy, or it's me that's there, and I'm leaving!"

In effect, Silas's attitudes toward the oedipal fantasies in the story are colored by his profoundly sadistic view of sex, as in his idiom, "She socked it to him" or his wish to get out of "that place." "What he [Dexter] needs is a very tough 17-year-old Mexican chick to lead him a time."

Silas linked sadistic and libidinal trends, not only at a genital but also at an oral level. Talk about Dexter's mother led him to say that Dexter was "caught up in the whole bag, you know, that everybody's in nowadays: I gotta own something. I gotta knife and fork? I gotta cut something. Just mad possessiveness." He went on about the "'Thing' fetishism of America" and described the story as about "economics junkies—people who need money injections regularly in order to be able to function or they have severe withdrawal symptoms, perhaps even including suicide."

Silas saw the treating of people as things, as objects of sexual or sadistic drives, whether oral, anal, or genital, as the major theme of the story. He found the story to be involved with "the whole business of more money, and the peculiar definition it gives the people," and "the pornographic fascination with things that money can buy." He saw the story as a pattern of "accumulation and loss, almost profit and loss," with Dexter's profit being his business success, "and then on the loss side, you've got this failure to move in on Judy Jones, and the fact that she

loses even her beauty; he loses his dreams, maybe even loses his virginity to her." Silas saw Judy as "some sort of plastic replica of a dollar bill" and Dexter's quest of her as his going after "the right thing," "one of the best *things* available to him." At the end, when Dexter loses his dream of Judy, "He's unable to imagine her any more even as being his property."

Although it was Silas who represented the characters as objects, he said that the story was, America was, and Fitzgerald was. "Judy," he said, "was doing the whole existential thing of turning him [Dexter] into an object, because only as an object could she retain her subjectivity [sic] and therefore be able to put up with him. If she were confronted with a real human being, apparently she would have just abandoned him." Similarly, Lud Simms was "the only thing she's got left . . . he's one of her more valuable possessions, a husband." He saw Dexter's love for Judy as the quest for "an attractive thing to get, probably *the* most attractive thing to get," and he could point to a great deal of this in American life.

Where you've got the principle of acquisitiveness virtually determining everything . . . the only alternative is whether the man turns the woman into an object or whether the woman turns the man into an object. . . . I think it's tied in with . . . capitalism as a way of structuring your life. So long as you still have the basic pattern given by profit and loss, hell, you know, the acquisition and the departure of gold, then you're going to tend to either be placed as an object by your beloved or obtain her as an object.

He was using anal imagery, but Silas' most striking projection of this people-as-property theme came in an oedipal fantasy:

You could even plug it into the fear of the whites that all the black man wants is a Cadillac and a white woman. Well, if you didn't make your white woman into the highest-priced objects in the showroom, maybe they wouldn't be so desirable to the blacks. Some of the blacks are beginning to realize that, you know, price tags ain't everything, and they don't want them any more. They think that the whites, all they want is a black woman, they've got almost as much, maybe even more, statistical backing for that sort of a statement.

Curiously, however, what he here calls the white man's opinion of the black man, according to an earlier statement, was being imposed on him. "I see it coming at me all the time out of the advertisements. I mean, get a hard on over the new car, not the girl who's standing beside it. She's just something you can get if you've got next year's model. She's next year's model, too. You get 'em both at the same time. And I think that's obscene."

Equally striking were the images Silas used for Dexter's final sense of depletion and loss. "Ultimately he loses even his fantasies, and he's left absolutely flat out, and he's lost . . . Utter desolation . . . He's almost destined to utter desolation in this story." He contrasted Dexter with his immigrant mother.

She learned to live where she was. He never did find out, kept going further and further East till he dropped in this ocean of nothingness—right where he started from, you know, trying to avoid it. . . . Hell, he may commit suicide in the next two or three pages. He may just fall back and say, "Ah, hey, wait, I'm on the thirtieth floor!" Write some sort of impassioned letter to Judy Simms, leave it

sealed and addressed on his desk and leap out. So then he lives [sic] on Wall Street permanently. He's soaked into the concrete. He becomes almost a fixture in Wall Street.

This sadistic fusion, the ultimate transformation into an object, was Silas' view of the story—and, to judge from two of his ambiguities, a way toward his own identity.

PATTERNS OF RESPONSE IN TERMS OF FANTASY-AND-DEFENSE

A pattern emerges from an overall look at Sandra's and Silas' comments. They were talking about a story which builds on fantasies about the oedipal mother. As predicted, some of these fantasy materials showed through in their descriptions of the story, particularly in their tendency to see Judy as an ideal. Each, however, filtered the fantasy material through the particular issues that unconsciously concerned him or her. Thus, Silas tended to approach Judy Jones as ideal and as slut (in the classic oedipal pattern), but he also approached her with the fear and aggression he would feel toward any mother-derivative. Sandra, too, saw Judy as an oral and oedipal mother-figure, but she rewrote the fantasy in her own highly visual terms. In effect, Silas and Sandra reached into the story to pull out the issues that mattered to them.

A still stronger deviation came from the way they brought their own defenses into play. For Sandra, it was important to equalize male and female, and she simply refused to believe there could be a Judy Jones with this mysterious power. Again the mode is visual: She would not see that seeing Judy Jones could overpower men. Silas, however, showed a different pattern. For him, to be close, to be dependent, was to be overwhelmed. Silas would avoid this primitive fear by flight to aggressions at higher developmental levels, a kind of flight to maturity. Here, his defensive maneuver took the form of turning the story's characters into objects which he could attack or, in the projected form of the defense, attacking someone else (the author, or society, or the "system") for attacking people by turning them into objects.

The important thing to notice is that *each reader applied his own defenses over and above those built into the story, and his own defenses outweighed all else in determining his affective response.*

PORNOGRAPHY AS FANTASY-AND-DEFENSE

When this general pattern of reader response is applied to the special case of pornography, an extraordinary paradox emerges. First, what are the unconscious fantasies at the core of pornography? There would seem to be none, for all are right out in the open. There are oedipal fantasies (the ubiquitous Maggie-and-Jiggs cartoons, for example) in which parents are made low and sexual. In general, older people in pornography license rather than inhibit the sexual activities of the young (as in de Sade). As for oral and anal fantasies, pornographic literature systematically explores all the orifices, but, again, the fantasies are not unconscious. Pornography has been defined as literature about genitals, and one does, of course, find an almost endless variety of explicit fantasies identified with the phallic phase of development, but, again, none are unconscious; all are relentlessly explicit. "As for man in this setting," writes Steven Marcus of "pornotopia," "he is really not part of nature . . . [and] actually not man. He is

an enormous erect penis, to which there happens to be attached a human figure" (1967, p. 275).

To discover the *unconscious* fantasies in pornography, one must look not at what is present, but at what is missing. The Kronhausens (1959), in drawing their well-known distinction between "erotic realism" and "hard-core pornography" have shown that the pornographer omits many of the plain facts of life. In a more literary vein, Professor Marcus (1967) has shown how language, incident, space, time, setting, characterization, and all the other variables of fiction are sacrificed to the one phallic mode of pornography.

If this is true, the unconscious fantasy in an otherwise totally explicit genre must be: There really is no need for defense. The fears that would ordinarily bring defense mechanisms into play simply do not exist. We look in vain for the usual anxieties at the several levels of literary fantasy. At an oedipal level, in pornography, there are no restraining parents, no successful rivals, no realistic others toward whom one might feel love, hate, jealousy, or fear. At a phallic level, no one fears castration, impotency, or being passively raped. At an anal level, there are no sadistically controlling parents, no fears of loss of love or parts of the body. At an oral level, gratifications are instant: no parents withhold; there is neither delay nor frustration to mobilize anger or the fear of anger. In short, in extreme forms of pornography, the unconscious fantasy is that there is no need for the ordinary ego interventions of delay, defense, and the like—one can simply gratify phallic aims infinitely.

This, then, is the paradox of pornography: *What appears to be a totally free style of writing is, in fact, massively defended.* Form acts to remove every possibility of anxiety and to confine the usual wide-ranging fantasies of literature to one type alone, the phallic.

This confinement to materials from one stage of development seems to solve one of the classic riddles about the genre: Why is there practically no pornography for normal women? Most literature for adults is not sex-specific—why should pornography be? In adult literature, a single work usually transforms unconscious fantasies from several levels of development. By contrast, many of the familiar children's classics draw on only one level of fantasy. If that level is prior to the phallic, if the story is, like *Peter Rabbit* or *Wind in the Willows*, primarily "oral" or "anal," it will appeal to both sexes. However, children's stories which are limited to later or "higher" levels of development, phallic or oedipal, appeal to either one sex or the other, works like *Heidi* or *The Little Mermaid*, for instance, as opposed to *Treasure Island* or *Peck's Bad Boy* (Peller, 1959). They, like pornography, are markedly confined to fantasies from the phallic stage of development, and, like pornography, are sex-specific.

RESPONSES TO PORNOGRAPHY

Once pornography is seen as a special kind of literature, one can move from particular issues (such as women's responses to pornography) to a general pattern of response. In general, readers of pornography, like other readers, do two things: they reach into the text for fantasy materials which particularly concern them and they apply their own defensive patterns over and above those built into the literary work. Pure pornography offers its readers the fantasy that there is nothing to fear in phallic pleasures. It offers phallic imagery virtually unmodified by

defense, while it sacrifices—massively defends against—fantasy materials from other stages of development.

If we consider an extreme form, a pornotopia, in which these lines are sharply drawn, the possible responses fall into a rather straightforward matrix. Readers either will or will not be sexually aroused by the conscious display of phallic gratifications. Some (e.g., *Playboy* readers) are aroused, and some (e.g., women) are not aroused by the phallic fantasies of pornography; both reactions are normal.

So long as the reader responds primarily to the fantasy of anxiety-free phallic pleasures, the results are simple. However, in responding to ordinary literature, the most important element is the defensive patterns the reader imposes; when a reader responds, not to the unconscious fantasy behind pornography, but to his own need to manage the fantasy, his affective response becomes something more complicated than simple sexual arousal or the lack thereof.

Child-rearing in our culture presumably leaves most adults with some anxieties associated with phallic activities. The raw phallic fantasies of pornography can mobilize anxiety and with it defensive maneuvers. If these mechanisms come mildly into play, one would expect responses ranging from sublimation and intellectualization (using pornography as the occasion for some social, moral, or intellectual activity) to a more severe moralistic repression (such as censorship). If, however, the reader brings to pornography a severe pathology (e.g., schizophrenia or perversion), a psychological pattern in which “to love is to hate,” defenses begin to deal with psychotic panic, instead of mild or signal anxiety, and the defense itself will tend to be not neurotic, but a psychotic coupling of violence and anger to phallic desires.

Thus, we can set up a matrix of possible responses: I. (a) simple sexual arousal or (b) the lack of it; II. defensive responses of (a) a mild, neurotic kind or (b) of a psychotic, “character disorder” type.

Such a matrix clarified the issues involved in censorship, in particular the issue of children toward whom much of the concern about pornography is directed. Anxiety provoked by phallic stimuli should elicit strong defensive tactics among latency boys. The latency child, struggling to firm up the prohibitions of earlier infancy, is likely to respond to pornographic stimuli by II-a or II-b, the relatively mild or severe application of defensive maneuvers. As for adolescents, however, whose defenses are already loosened in normal development, a type I response—simple stimulation (or the lack of it)—is much more likely. This is simply to say that the average young man of high-school or college age buys his *Playboy*, masturbates, and thinks little more about the matter. Occasionally, one meets a type II-b response in which the individual is thrown into a panic by his own sexual desires or the stimuli around him. Short skirts and a windy street corner could very well bring out the same pathology.

In short, a fantasy-defense model of literary response “places” the legal control of pornography quite exactly. Its effect is to add social management to the individual’s personal repertoire of defense toward the phallic fantasies in pornography. Social suppression simply supplements the individual’s own denial or repression. Recent expressions such as “community standards” or “redeeming social importance” correspond exactly to psychological defenses such as projection or sublimation. At best, legal aids can, at times, stave off severely

pathological reactions in children or child-like adults. However, these aids are confined to pornography, to explicitly stated phallic fantasy material; they do not help with real-life stimulation or with writings about violence, and their help is short-term, while their long-term effect may be weakening.

Milton, in one of his more Freud-like utterances, wrote:

Assuredly we bring not innocence into the world, we bring impurity much rather: that which purifies us is trial, and trial is by what is contrary. That virtue therefore which is but a youngling in the contemplation of evil, and knows not the utmost that vice promises to her followers, and rejects it, is but a blank virtue, not a pure. (1644, p. 290).

Such Puritan language may seem strange to us, but Milton is stating a psychological truth widely known and accepted today: defenses and adaptations only occur through at least the brief experience of lack of defense and lack of adaptation. A crutch is a crutch, and if outer social forces supplement or replace an individual's inner defenses, they may prevent his developing his own strengths by "trial and . . . by what is contrary."

This, then, may be the ultimate paradox of pornography. Because of its peculiar pattern of total defense in all areas but one and total lack of defense in that one, and because readers add their own defensive patterns to the literary work's, pornography may develop the very strengths it is public policy to encourage, while censorship, to the extent it is effective, serves in the long run as a weakener of those strengths.

CONCLUSIONS

This preliminary research has shown that affective responses to literature (including pornography) are determined at least as much by what the reader brings to the text as what the text brings to the reader. Sandra and Silas, for instance, changed an innocuous Fitzgerald story into their quite different psychological patterns. Had the story been more charged with overt sex or violence, presumably the need for their defenses would have been greater still, and their responses would have diverged still more sharply.

As a corollary to this general principle—and an exhaustive search of the literature shows the same thing—there is *no* extant scientific evidence that any reading or other literary experience makes any permanent change in basic character structure. One does meet people who say such-and-such a book had a "decisive" effect on them, but a few minutes' conversation will show that what they mean is that the book somehow articulated or even resolved issues and concerns they brought to it. The general rule holds: *in affective response to literature, what the reader brings is at least as important as what the text imposes.*

In the specific case of pornography, then, the effect will be determined by the reader in combination with the material. Some readers will become sexually aroused, but any miniskirt might do the same thing. Readers may bring pathological or nonpathological defenses to bear on pornography, but, again, they would bring the same defenses to bear on situations of sexual stimulation in real life. There is, in short, no way to isolate a pathology associated with a literary text alone. There is, therefore, no social or therapeutic basis for interfering with the freedom to read or, more exactly, the freedom to do one's own defending against anxiety-arousing fantasies.

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Erotic Materials

A Commodity Theory Analysis of Availability and Desirability

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The purpose of the present essay is to analyze one specific dimension of the pornography control issue, namely, the probable reactions of individuals who desire information which is not freely available.

The central theme, that unavailability enhances desirability, will be developed in three sections. The first section outlines a set of psychological propositions, entitled "commodity theory," which state relationships between different aspects of unavailability and desirability. The second section gives a few illustrations of the evidence for commodity theory, and the final section lists some implications for the "control" of erotic materials.

COMMODITY THEORY

The commodity theory, a psychological one, is concerned with the distribution of erotic materials and the effects of communications which are distributed in different ways. That is, it deals with how people respond under various conditions when they are exposed to different kinds of social and nonsocial stimuli. A commodity is defined as anything which (a) has some usefulness for the person who possesses it and (b) can be conveyed from person to person. Hence, a communication, a message, a film, or a picture is a commodity.

One of the major premises of the theory is that a commodity will be valued to the extent that it is unavailable. The basis of the theory is that something which cannot be obtained or which can be obtained only through great effort will be valued more than something which can be freely obtained (Brock, 1968; Fromkin, in press).

There are seven basic propositions to a commodity theory. Proposition A states that a communication will increase in effectiveness as the number of actual recipients declines relative to the perceived number of possible recipients. In other

words, if a person believes that he is one of many who could receive the communication but only one of a few who are actually receiving it, he will value the communication more. Thus, scarcity is likely to become more relevant to the recipient of a communication as the number of actual recipients declines from the total number of those who are interested in receiving the message. This reasoning is not solely limited to communication; if an individual has been afforded an experience which is withheld from some other interested parties, the value of the experience will increase proportionately as the pool of potentially interested persons increases.

Proposition *B* states that a communication will increase in effectiveness in proportion to the scarcity of possible sources for the same message. If the subject perceives that he is receiving a communication from an unusual source, that communication (other things being equal) should be more effective and more interesting to him than if the subject perceives that there are many sources for the same message.

Proposition *C* states that a communication will increase in effectiveness in proportion to the degree of coercion upon the communicator needed to bring about disclosure. The greater the force that must be exerted on the communicator (threat, bribe, or punishment), the greater will be the effectiveness of the disclosed message.

Proposition *D* is that a communication will increase in effectiveness the greater the perceived effort involved for the communicator either to conceal information or to transmit it. A communicator who wished to conceal information might take precautions to prevent disclosure. A message received from one who had taken these precautions should be more desirable than a message from a communicator whose protective steps have been less elaborate. A communicator who continues his message in spite of threats, punishment, harassment, and so forth, will be especially effective and his message will be particularly desirable (coded messages sent during wartime, for example). In general, where a message is transmitted *at a cost to the communicator*, it will be especially effective, provided cost does not imply greater distribution and hence greater availability.

Proposition *E* is that a communication will increase in effectiveness the greater the magnitude of the recipient's effort to obtain or understand the information. Material which is hard to get will be more sought after than information which is easily available.

Proposition *F* has to do with restriction. Communications which are restricted or confidential should be especially valued. There are two kinds of restrictions: against communicating the information and against further transmission. A message which can be seen easily and which can be transmitted freely to anyone would be the least effective, other things being equal.

The final proposition of the theory is simply that a message will increase in effectiveness and desirability the greater the delay by the communicator. Something or some person which requires waiting will, other things being equal, be more highly valued than someone or something to which access is immediate.

EVIDENCE FOR THE THEORY

Experimental social psychologists have carried out a substantial number of experiments which, in general, support the propositions of commodity theory.

This paper will outline four of these experiments to indicate the kind of proof that is discussed in more detail by Brock (1968) and Fromkin (in press).

An unavailable incentive

Kelman's (1953) experiment supported the first proposition, namely that a message will be more attractive when it is scarce. School children were offered rewards for writing an essay, and the author measured attitude change in the direction of favoring the position the experimenter had requested. The reward offered the children was a movie pass. To one group (the Few-Recipients group), the experimenter said "I know you would all like to see the movie; I wish I could give passes to all of you, but unfortunately I only have five for your whole class. So only five of the people who write essays in favor of jungle stories will be able to see the movie." To the other group (the Many-Recipients group), the experimenter said, "I have enough passes for everyone in the class and I am sure that everyone can get one. If everyone here just tries his best to write good essays in which he favors jungle stories, then the whole class will get passes. The movie will be shown right here in school during school hours and your whole class can go together." The results supported the hypothesis. There was more favorable attitude change where only a few children could get the prize than where it was readily available to everyone. This finding was obtained for both those who did and those who did not comply by writing the essay. This study shows that offering a hard-to-come-by incentive for advocating a position increased the value of that position more than did offering an available incentive.

An interrupted movie

Michel and Masters (1966) concluded that, in our culture, unattainable outcomes may be more valued than those which are attainable, and that the unavailability of an outcome enhances its perceived desirability. This conclusion was based on an experiment in which children viewed a film which was interrupted near the climax on the pretext of a damaged fuse. The probability that the film could be resumed was either complete, half and half, or nonexistent. The investigators measured the film value before and after it was interrupted. The fuse, of course, was fixed and all the children saw the end of the film; afterward, they rated the film again. The hypothesis that the nonavailability of the reward increases its value was supported. Subjects who were given a zero probability for seeing the remainder of the film increased their evaluation of it more than those in the other groups. This increase was maintained even after the entire film was shown.

A restricted experience

In Yoder's (1967) study, subjects were led to believe that they were being selected to observe continuing research projects at Ohio State University. They were told that the project to which they would be assigned would depend on several factors: their score on an educational interest test; the ranking of the research sites; the number of observers who could be handled at each site; and the number of subjects who ranked each research observation site as their first choice. The main variable of interest was restriction on subsequent transmission of information about the research observation. Half the subjects read that the research

project was a restricted one and were required to sign a secrecy oath. The other subjects read that some projects were restricted, but that theirs was not one of these. After the subjects had been assigned to a research project and had learned whether it was restricted or not, they were asked to evaluate it: how much they thought they would like it and how willing they would be to switch to another project. The idea that restricted experience will be more attractive than a non-restricted one was borne out by the results. Subjects were less willing to switch from a project which was restricted, and they said that their participation in the project would be more valuable if it was restricted.

Yoder also varied the number of people who could observe the research project. He found that where only a few people were allowed to watch, evaluation of the project was increased. This supports the finding by Kelman (1953) that the fewer the number of persons who can enjoy an experience, the more that experience tends to be sought after and valued.

A scarce experience

A final illustrative experiment is the study by Fromkin (in press) which tested the hypothesis that preference for scarce as opposed to plentiful experiences will become more pronounced as feelings of undistinctiveness increase, independent of the expected novelty of the experience. In his study, subjects received feedback which led them to think of themselves as differing in uniqueness. After obtaining this feedback, subjects were informed that they would be able to spend time in one of four "psychedelic" chambers. The chambers were described as either *available* or *unavailable* and as producing a novel or a familiar feeling. The hypothesis was supported, because subjects preferred to have experiences that were unavailable to others independent of whether the feelings that would be produced by these experiences were novel or familiar. The tendency to prefer unavailability was increased to the extent that a person's feeling of distinctiveness from other people had been attacked. Fromkin's is the first study to give any indication about individual differences in the preference for scarce, restricted, unavailable experiences. His study suggests that one factor which might determine preference for an unavailable experience may be a personal feeling of sameness or extreme homogeneity with other people.

These four examples of experimental studies are typical of the evidence for commodity theory. As noted, a complete summary of the evidence can be found in Brock (1968) and Fromkin (in press). These publications summarize approximately 20 additional experiments, in which the desirability of an experience, an object, or a communication is enhanced by increasing variables which convey heightened unavailability.

IMPLICATIONS FOR THE "CONTROL" OF EROTIC MATERIAL

Proposition A stated that the effectiveness or desirability of a communication will increase as the perceived number of co-recipients, relative to the total number of potential recipients, declines. One method of limiting recipients for erotic material is to restrict the material to adults (i.e., to persons 18 years old and over, 21 years old and over, etc.), but this pattern of restriction should make the message or communication more sought after by those who are restricted. Many film advertisements devote more space to the age restriction than to film content:

restriction, itself, has become a means of connoting content. For example, a theater near 42nd St. (in New York City) recently showed a film whose title was *Adults Only*. Similar titles (e.g., *Banned*) are not infrequent. It is as if producers of erotic materials are themselves aware of the psychological value of restriction and prohibition.

Proposition *B* states that the fewer the number of sources of communication or informational material, the greater the value that will be afforded to the material. The appeal of expressions such as "The world's only" is a manifestation of this element of the theory. If there is, for example, only one theater in town which is showing a particular film, the film might be more desirable, other things being equal, than if many theaters are exhibiting the same film. The closing of bookstores, theaters, entire areas of cities, and so forth, will reduce sources of erotic materials, and thereby increase their value and desirability.

Propositions *C* and *D* have to do with coercion upon the communicator and the effort he entails either to conceal material or to transmit it. The implications for the distribution of erotic or pornographic materials can easily be seen when the communicator must take special steps to convey material to a potential seller or when great pressure is put upon the communicator (for example, when owners of bookstores are arrested, punished, and so forth). In general, communicators who must take unusual precautions to reach their audiences will find that their material is more desirable. A communicator—magazine editor, theater owner, bookstore owner—who is systematically "martyred" by the police may be perceived as delivering an especially desirable message. The public is sensitized to the desirability of the "objectionable" material to the extent that the media portray and emphasize censorship, police repression, court injunctions, and so on.

Proposition *E* of the theory is that a recipient who must put out special effort to receive a particular communication will value that communication more than a person for whom this has not been necessary. (This particular proposition is well supported by experimental evidence.) The location of stores selling pornographic or erotic materials, the great cost of the materials, or, more pertinently, the fact that the potential purchaser of pornographic materials may incur arrests or fines for possession of the materials—all of these are factors which can increase the recipient's perception of his own effort in obtaining pornographic materials and hence the desirability of the materials themselves. (However, Rogers (1966) reports negligible harassment of users.)

The actual differential effort involved might be quite slight. For example, the potential recipient of erotic materials might be required to sign a statement that he is over 21 years of age. This is a minimal effort, but it might make materials more desirable than equivalent materials for which no such statement is requested. Another psychological effort may be the embarrassment which occurs in our society where possession or purchases of pornographic materials does not enjoy universal acceptance. Incurring and overcoming this embarrassment in order to obtain books or pictures is another kind of effort which may make the materials more desirable. These efforts, when endured, will make erotic materials more desirable than they would be if such psychological costs were unnecessary.

Proposition *F* of the theory has to do with secrecy and restriction. One feature of the world of pornography is that promotion for erotic materials theoretically cannot be transmitted freely to anyone; restrictions apply not only to the distribution of the erotic materials themselves, but to the advertisements for such

materials as well. Such restrictions on transmission might make the materials more attractive than they would be if there was (a) open communication about erotic materials, (b) open advertising, or (c) open availability of the materials. It should be noted again that all of these commodity effects (restriction, unavailability, recipient effort and so forth) are taken advantage of by the purveyors. The fact that a film is restricted, that a statement has to be signed, that one must join a particular club, that further information cannot be given, the continued withholding of information about the contents of erotic materials—all are factors which can heighten interest in the material.

Proposition G has to do with delay. A film or book which is delayed in court or censored or restricted in some fashion will be more desirable because of the restrictive actions. Becker and Brock (1966) performed an experiment in which the subject's score on a test was withheld from him. (There was, in addition, a control group in which scores were not withheld.) The primary result of the experiment was that the withheld evaluation was more effective, when finally transmitted, than that which was not withheld. When such confidentiality or secrecy surrounds a communication, that communication, according to the theory, will be invested with greater interest and desirability than when the cloak of secrecy is removed.

Fromkin (in press) provides a clue as to who will be most affected by constraints and controls on erotic materials. The author suggests that persons who do not feel sufficiently distinctive and whose self-identity is amorphous and problematic will be especially susceptible to scarcity. Young people are especially likely to be resolving identity conflicts and to be concerned about this uniqueness. Fromkin's research has shown that such individuals will be greatly affected by unavailability connotations. In other words, surrounding erotic materials with controls which betoken a "commodity" in the present sense will have the greatest effect upon younger persons.

Commodity theory portrays the psychology of the distribution of messages in terms of who will receive and who is sending the message, coercion on the communicator, effort by the communicator, effort by the recipient, restriction on transmission, and delay in transmission. Commodity theory suggests that efforts to restrict or censor have the psychological effect of increasing the desirability of the material. Increasing the difficulty of obtaining erotic materials, harassing and punishing pornographers and purveyors of pornography, setting minimum age limits for the purchase of these materials, and so on, may have the unwanted effect of increasing interest in the materials, rendering them more desirable, and producing a greater impact on the recipients, than if none of these measures were utilized.

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Preliminary Empirical Observations

Moral Reasoning about Sexual Dilemmas

The Development of an Interview
and Scoring System

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INTRODUCTION

Previous sex research has been concerned with the content of sexual attitudes and behavior rather than with the structure or process of reasoning about the morality of sexual relationships. Cognitive developmental theory underlines the importance of representational processes in the social development of the individual and indicates that cognitive structure, or the manner in which the individual organizes experience, is a major determinant of behavior. The concept of cognitive stages which constitute distinctive modes of thinking about or solving the same problem at different ages is central to the cognitive developmental position. These stages form an invariant developmental sequence and are hierarchical in that each succeeding stage is characterized by an increasingly differentiated and integrated thought organization.

Kohlberg (1969), in studying the development of moral judgment both in longitudinal and cross-cultural research, found six stages of moral reasoning, each derived from the analysis of responses to ten hypothetical moral dilemmas. Each stage is characterized by a distinct method of conceptualizing moral issues. These six stages comprise three levels:

I. Preconventional level

At this level the child is responsive to cultural rules and labels of good and bad, right or wrong, but interprets these labels in terms of either the physical or the

hedonistic consequences of action (punishment, reward, exchange of favors) or in terms of the physical power of those who enunciate the rules and labels. The level is divided into the following two stages:

Stage 1: *The punishment and obedience orientation.* The physical consequences of action determine its goodness or badness regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning deference to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority (the latter being Stage 4).

Stage 2: *The instrumental relativist orientation.* Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms like those of the market place. Elements of fairness, of reciprocity and equal sharing are present, but they are always interpreted in a physical pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of loyalty, gratitude, or justice.

II. Conventional level

At this level, maintaining the expectations of the individual's family, group, or nation is perceived as valuable in its own right, regardless of immediate and obvious consequences. The attitude is not only one of *conformity* to personal expectations and social order, but of loyalty to it, of actively *maintaining*, supporting, and justifying the order and of identifying with the persons or group involved in it. At this level, there are the following two stages:

Stage 3: *The interpersonal concordance or "good boy-nice girl" orientation.* Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention—"he means well" becomes important for the first time. One earns approval by being "nice."

Stage 4: *The "law and order" orientation.* There is orientation toward authority, fixed rules, and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority, and maintaining the given social order for its own sake.

III. Post-conventional, autonomous, or principled level

At this level, there is a clear effort to define moral values and principles which have validity and application apart from the authority of the groups or persons holding these principles and apart from the individual's own identification with these groups. This level again has two stages:

Stage 5: *The social-contract legalistic orientation* generally with utilitarian overtones. Right action tends to be defined in terms of general individual rights and in terms of standards which have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, the right is a matter of personal "values" and "opinion." The result is an emphasis upon the "legal point of view," but with an emphasis upon the possibility

of changing law in terms of rational considerations of social utility (rather than freezing it in terms of Stage 4 "law and order"). Outside the legal realm, free agreement and contract is the binding element of obligation. This is the "official" morality of the American government and Constitution.

Stage 6: *The universal ethical principle orientation*. Right is defined by the decision of conscience in accord with self-chosen *ethical principles* appealing to logical comprehensiveness, universality, and consistency. These principles are abstract and ethical (the Golden Rule, the categorical imperative); they are not concrete moral rules like the Ten Commandments. At heart, these are universal principles of *justice*, of the *reciprocity* and *equality* of the human beings as *individual persons*.

These six stages of moral reasoning have been found to constitute an invariant, culturally universal, developmental sequence.

An extension of the study of moral reasoning to include sexual dilemmas should add to our understanding of both moral development in general and sexual development in particular. By filling in the previously neglected cognitive dimension of sexual behavior, this aspect of social development can be related to more general parameters of social and moral growth. At the same time, a look at this central area of moral concern in adolescence should lead to greater understanding of such major issues in developmental process as the relationship between affect and cognition and the transition from conventional to principled morality.

The project reported here constitutes the first step in the study of moral reasoning about sex and includes the development of (a) a set of dilemmas which elicit moral judgments about sexual relationship and (b) a scoring system by which these judgments can be validly discriminated according to stage of moral development.

METHOD

Three story situations were developed, each focusing on a different area of moral concern in sexual relationships. The first concerned the ethics of premarital sex. The second examined sex in the context of a marital relationship, posing the dilemma of a husband whose wife refuses to have sexual intercourse with him. The third story dealt with a high school girl's pregnancy, questioning the nature of the boy's and the girl's responsibility to one another and to the unborn child. The dilemmas and the probing questions which formed the interview may be found in Appendix A.

Subjects

The subjects for this study were 50 high school juniors from a lower- to upper-middle-class suburban high school. The sample was equally divided between boys and girls and also between the higher and lower academic programs of the school. After obtaining the principal's approval, the project was described to the social studies teachers at an informal meeting. All of the teachers expressed interest in the study and willingness to allow students to be taken from their

classes for interviewing. On the basis of scheduling convenience, two of the teachers were contacted, each of whom had both an upper and lower curriculum class, and subjects were drawn from these four classes.

The students were told that this was a study of moral reasoning and the interview was described as presenting for resolution six hypothetical moral dilemmas, three of which concerned moral issues in sexual relationships. One of the standard Kohlberg (1969) dilemmas (situation III) was read in class. Students were then asked to indicate on a card whether or not they would be willing to participate. In the higher of the two curriculum programs, almost all of the students volunteered, while the figure was closer to 50% for students in the lower curriculum program. This difference seems to reflect the generally higher level of interest and motivation among the higher curriculum students and, in addition, the difference in the ethnic composition of the two groups.

Scoring the interviews

The interviews were scored by the global or issue rating method. In global rating, every moral judgment is defined by its position on one of the six stages and its position on a system of moral issues (e.g., life, law, socio-moral norms). The issues are identified in the story protocol, and a stage rating is made first on each issue and then on the story as a whole. This is done by means of the issue manual and by a story or situation rating guide defining each stage on each issue in each story. The unit of issue scoring is several sentences or ideas dealing with an issue, such as "sexual values and standards." See Appendix B.

The global rating score for the story as a whole forms the basic unit for the analysis of results in this study. Individual subjects' responses to each of the six stories were assigned a stage score according to the global rating manual for that story. The rating assigns either a pure stage or a mixture of a major and a minor stage for each story. To arrive at a global rating on moral judgment for all stories, "three points were assigned to each story. Where a mixed orientation was found, two points were assigned to the major stage and one to the minor stage. Points for each stage were added across situations, and a profile of each subject was drawn from the percentage of statements given at each stage. This formed the basis for assigning a modal stage rating, thus classifying the subject in terms of the stage or stages most used."

In addition, this profile of percentage usage of each stage yielded a moral maturity score (MMS) derived from the sum of the products of the percentages in a profile multiplied by the ordinal value or number of the stage. The maximum possible MMS is 600 (100% Stage 6), the minimum 100 (100% Stage 1).

Scoring reliability

Responses to each of the six stories were rated by two separate scorers. Reliability was assessed by percentage agreement between the two raters on the assignment of major and minor codes. The percentage agreement figures are presented in Table 1.

Blatt and Kohlberg (in press) reported percentage agreement figures for five of the standard dilemmas, which, for major stage agreement, ranged from 78% to

Table 1

INTERJUDGE AGREEMENT, GLOBAL RATING METHOD

Percentage agreement on major and minor code of response to each story

	Standard stories			Modal* standard	Sex stories			Modal sex**
	III	IV	I		A	B	C	
I. Major Stage Agreement	80	83	85	83	82	66	55	80
a. perfect agreement	64	63	67	74	64	44	31	51
b. difference in minor code	16	20	18	9	18	22	24	29
II. One Stage Disagreement	20	15	15	17	15	22	45	20
a. major-minor disagreement	18	13	13	6	10	20	25	15
b. major code one stage off	02	02	02	11	5	2	20	5
III. Two Stage Disagreement		2			3	11		

*Modal stage rating for the 3 standard stories (III, IV, I).

**Modal stage rating for the 3 sex stories (A, B, C).

40% with four of the five figures in the high 60's and 70's. The present reliability figures seemed adequate, particularly since the analysis of results relied heavily on the modal stage ratings for which percent agreement is in the 80's.

RESULTS

The distribution of modal stage scores on the standard and sex stories are presented for girls in Table 2 and for boys in Table 3. In each table, the distribution of scores is presented separately for each curriculum and then for the total group. (There were some subjects who could not be assigned modal scores because their responses did not meet the criterion of at least 50% usage of one stage. However, these subjects are included in the analysis of moral maturity scores.) Tables 2 and 3 also contain the mean Moral Maturity Scores (MMS) for all groups on each set of stories.

Considering the sample as a whole, the level of moral reasoning was higher on the standard dilemmas than on the sexual dilemmas. The mean MMS for the standard stories was 345, compared with 315 on the sex stories.

When the boys and girls were compared, there was a lower MMS on the sex stories for both groups, with a greater discrepancy among the boys. The same downward shift in level of reasoning was reflected in the modal stage scores, and again was more pronounced in the boys' scores.

A comparison of the distribution of scores for the two curriculum groups suggests that the patterns of change were different for each group. However, the comparatively small sample renders any statements suggestive at this point. The mean MMS for curriculum I students on the standard stories was 364; for curriculum II, 308. On the sex stories, the curriculum I students' mean MMS was 320, as compared with 302 on curriculum II. These scores indicate that curriculum I students demonstrated a higher level of reasoning on both sets of stories than did curriculum II students. This corroborates previous findings which

Table 2

PERCENTAGE DISTRIBUTION OF MODAL SCORES – GIRLS

N=24

	Standard Stories			Sex Stories		
	Curric I*	Curric II	Total	Curric I	Curric II	Total
Major Stage 2	10	9	9	20	18	17
2	10	9	9	20	9	13
2(3)					9	4
Major Stage 3	40	63	56	50	55	56
3	20	36	26	30	46	44
3(2)				10		4
3(4)	20	27	30	10		4
3(5)					9	4
Major Stage 4	40	18	26	20	27	21
4	30	9	17	20	18	17
4(3)	10	9	9		9	4
Major Stage 5	10	9	8	10		4
5	10		4	10		4
5(3)		9	4			
N**	10	11	23			
Mean MMS	352	332	340	318	318	318

*Curriculum I is the higher academic program, Curriculum II the lower.

**Two subjects could not be assigned to either curriculum program.

One subject could not be assigned a modal score.

correlated the level of moral reasoning with IQ and social class differences. However, more germane to the study of moral reasoning about sex is the observation that the decrement found in level of reasoning on the sex stories appeared to be predominantly a curriculum I phenomenon. The decrement consisted primarily of a decrease in the use of Stage 4 reasoning and an increase in the use of the two lower stages.

In the association between level of reasoning on the standard dilemmas and level of reasoning on the sex dilemmas, the correlation between standard MMS and sexual MMS was .405 for the girls and .482 for the boys. These correlation coefficients were comparable to those found by Lockwood for association between level of reasoning on political compared with standard moral dilemmas (Lockwood, 1970). The percent agreement on modal stage for the two groups of stories is presented in Table 4.

When the total sample is considered, it is seen that 50% of the subjects used the same major stage level of reasoning when resolving both sets of dilemmas. In Table 4, boys show a somewhat higher level of agreement than do girls, but also a greater discrepancy between stages of reasoning on the two groups of stories where a discrepancy exists. Looking at the discrepancy scores, there is a

Table 3

PERCENTAGE DISTRIBUTION OF MODAL SCORES — BOYS

N=24

	Standard Stories			Sex Stories		
	Curric I	Curric II	Total sample	Curric I	Curric II	Total sample
Major Stage 2	8	50	21	31	33	33
2		17	5	23	16-1/2	21
2(3)		33	11	8	16-1/2	11
2(4)	8		5			
Major Stage 3	15	33	22	30	50	37
3	7-1/2	16-1/2	11	7-1/2	33	16
3(2)				15	17	16
3(4)	7-1/2	16-1/2	11	7-1/2		5
3(5)						
Major Stage 4	62	17	47	23	17	21
4	31	17	26	23	17	16
4(3)	8		5			5
4(5)	23		16			
Major Stage 5	15		11	15		11
5	15		11	15		11
N=	13	6	19			
Mean MMS	377	285	351	323	287	314

predominant pattern of lower level of reasoning on the sex stories as compared with the standard stories. When resolving the sex dilemmas, 47% of the girls and 50% of the boys reasoned at a lower level than when judging the standard dilemmas. Expressed differently, of those subjects who showed any change in level of reasoning on the two sets of stories, 79% of the girls and 80% of the boys changed in the direction of lower level of reasoning for sex dilemmas than for standard.

Returning to the content-process distinction made at the outset, from the interviews it was possible to extract the content of attitudes expressed and construct an attitude scale on which these attitudes could be rated. (See Appendix C for a copy of the sex attitude scale.) For each of the sex dilemmas then, it was possible to compare the level of reasoning used with the nature of the attitudes expressed. It was expected that subjects who reasoned at the conventional levels (Stage 3 and especially Stage 4) would be more conservative in their attitudes toward sex than either the preconventional or the principled subjects. Table 5 illustrates that this held for the sample as a whole and for each sex separately, with the girls being somewhat more conservative in general, as would be expected in this country. An interesting exception is the highly conservative opinion about extramarital sex among Stage 2 girls, but one has only to

Table 4

ASSOCIATION BETWEEN STANDARD AND SEX STORIES BY MODAL STAGE

		Percentage agreement on major and minor codes for standard and sex	
		Girls	Boys
I.	Major Stage Agreement	43	56
	a. perfect agreement	39	37
	b. difference in minor code		
	1. sex higher		
	2. sex lower	4	19
II.	One Stage Disagreement	57	25
	a. major-minor disagreement		
	1. sex higher	13	12-1/2
	2. sex lower	30	12-1/2
	b. major code 1 stage off		
	1. sex higher		
	2. sex lower	13	
III.	Two Stage Disagreement		13
	1. sex higher		
	2. sex lower		13
IV.	Three Stage Disagreement		6
	1. sex higher		
	2. sex lower		6

consider the particular story situation from which these attitudes were derived to realize that it is clearly in feminine self-interest to oppose extramarital sex in this situation.

DISCUSSION AND CONCLUSIONS

Perhaps the first thing to emphasize in discussing the results of this study is that it was possible to do it. The school authorities and teachers expressed not only a willingness to cooperate but also a positive interest in this approach to research on sex. The students, when given the choice of answering only the standard moral dilemmas or both the standard and sexual stories, almost without exception volunteered to do both. In the interviews, the students were frank and open in responding to the dilemmas, and many found the experience interesting and personally valuable.

The set of dilemmas comprising the interview appears to be satisfactory for elucidating moral reasoning about sexual issues. It has been demonstrated that these judgments can be reliably discriminated according to stage of reasoning. The coding guides elaborate the nature of reasoning which characterizes each stage on each issue in each situation.

Turning now to the issue of validity, the correlation between Moral Maturity Scores on the standard and sexual dilemmas indicates that both sets of stories are

Table 5

ASSOCIATION BETWEEN SEX ATTITUDES AND LEVEL OF REASONING
ON STORIES ELICITING THAT ATTITUDE

Modal stage	<i>Total Sample</i>		
	Premarital Sex (A)	Extramarital Sex (B)	Abortion (C)
2	1.7	3.6	1.9
3	2.1	4.2	2.1
4	3	4.3	2.8
5	1.4	2.8	2

Modal Stage	<i>Boys vs. Girls</i>					
	Premarital Sex (A)		Extramarital Sex (B)		Abortion (C)	
	B	G	B	G	B	G
2	1.1	2.3	2.2	5	1	2.8
3	1.6	2.6	4.4	4.1	1.8	2.4
4	2	4	4.6	4	2.2	3.4
5	1.3	1.5	2.7	3	2	2
Mean	1.5	2.6	3.5	4.0	1.9	2.7

tapping a common source. In addition, expected relationships were confirmed between level of reasoning and curriculum standing and between reasoning and attitudes.

The major finding of the present study is that while the level of moral reasoning on sexual issues was comparable to that on the standard Kohlberg dilemmas for about half the sample, it was lower for 80% of the remainder. This finding contrasts with Lockwood's results which did not show such a difference when comparing level of reasoning on the same standard dilemmas with level of reasoning on newly developed political dilemmas. Thus, the finding seems to be particular to the sexual dilemmas and indicates that this constitutes a problem area which bears further investigation. This discrepancy also constitutes a possible focus for sex or moral education.

Further research should be directed toward an explanation of the discrepancy between sexual and general moral reasoning in terms of (a) whether this is a reflection of a particular cultural or social condition, (b) whether it speaks more generally to the relationship between affect and cognition, or (c) whether it illuminates the nature of the transition from conventional to principled morality. The first possibility suggests that the culture predisposes the individual toward a lower-level resolution of dilemmas involving sex, conceivably by exposure only to low-level arguments in that area, or by rewarding low-level reasoning. To the extent that factors such as these have an effect, reasoning about sex would lag behind reasoning in other areas. The second line of analysis suggests that the affective involvement of the adolescent with sex depresses his ability to reason at a level comparable to that shown on more abstract issues. The third suggestion relies on the observation that the greatest decrement involves the usage of Stage 4. The replacement of Stage 4 thinking with lower-stage thinking may indicate a regression which is part of the Stage 4 to 5 transition process, following the

rejection of conventional morality and preceding the attainment of principled thinking. That this regression should manifest itself in the sexual area may be indicative of the fact that this is an important area of confrontation between the individual and the culture and may be where he begins to question the conventional definition of right and wrong.

The three alternative lines of explanation outlined above are not mutually exclusive, and conceivably could all be contributing to the discrepancy observed between general level of moral reasoning and the level of reasoning about sex. However, regardless of the theoretical explanation, certain educational ramifications are clear. This study has demonstrated that thinking about sex can be conceptualized from a structural developmental point of view where the level of moral reasoning attained influences attitudes and possibly behavior. One goal of sex education then would be to attempt to spur development and to raise the level of moral reasoning about sexual relationships. This would mean, first of all, removing the curtain thrown over sexual discussion and providing an educational method of dealing with adolescent interest in sexual issues. Blatt and Kohlberg (in press) were able to raise the level of general moral reasoning through classroom discussion of moral dilemmas which presented reasoning one stage above the individual's own level. Following this model, sex education should not be prescriptive or concerned with teaching attitudes, but rather should be designed to foster cognitive development in this area. Since each developmental stage presents a more satisfactory resolution than the preceding one, by perceiving and taking into account problems not dealt with at the earlier stage, individuals will comprehend and prefer resolutions at one stage higher than their own (Rest, Turiel & Kohlberg, 1969). The goal of education then should be to generate classroom discussions in a problem-solving format designed to induce discrepancies with current level of reasoning and foster progression to higher stages of thinking.

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APPENDIX A

STORY A

A high school girl's parents are away for the weekend and she's alone in the house. Unexpectedly, on Friday evening, her boyfriend comes over. They spend the evening together in the house and after a while they start necking and petting.

1. Is this right or wrong? Why? Are there any circumstances that would make it right (wrong)?
2. What if they had sexual intercourse? Is that right or wrong? Why?
3. (*If applicable:*) Why do you think petting is OK but sexual intercourse is wrong?
4. Are there any circumstances that would make sexual intercourse right (wrong)? (*If not elicited spontaneously:*) (a) Does the way they feel about each other make a difference? Why? (b) What if they are in love? What do you think love means and what is its relation to sex? (c) Suppose the couple was engaged, what difference would that make? (d) What about birth control? If they have a safe and foolproof method, would that make it all right for them to have intercourse? Why? (e) If they have sexual intercourse are they obligated to use birth control?
5. Suppose the girl is less willing than the boy to have sexual intercourse. The girl thinks sex before marriage is OK for boys but not for girls. What reasons does she have for thinking that? What is your thinking about this?
6. The girl's parents return and find out that the couple had sexual intercourse—what should the parents do? Why? (a) (*If says parents should talk to girl:*) What should parents say? What would that do? (b) (*If says parents should punish:*) What is the reason for punishing? What effect would punishment have? Should boy be punished, too?
7. Do you think these issues about sex have anything to do with morality and immorality? (a) What does the word moral mean? What is its relation to sex? (b) Can you tell me something that you think is immoral? Why? Immoral in sex? Why? (c) Is this immoral for all people everywhere? Why? (d) You think that _____ (*use example given in 7b*) is immoral in sex. It's immoral in our society. I wonder if you think it would be immoral to do it in a society that is very different, where it is accepted. Like in Sweden it is accepted to have premarital relations. I wonder if you think it would be immoral to do _____ in a society where it is accepted?

8. Where do you think your ideas about what's right and wrong in sex come from? Does what you think about what's right and wrong in sex have something to do with your religion? Why? Suppose it's someone who does/doesn't have religious beliefs? Would it be wrong for them? Why? What are your religious beliefs?

9. There is a lot of talk these days about the new morality and the sexual revolution. What do you think about this?

STORY B

A boy and girl fall in love in high school and get married right after graduation. They have never had sexual relations before marriage. After they are married, the girl finds she doesn't like having sexual intercourse, it just makes her feel bad and she decides not to have intercourse with her husband.

1. Was it right or wrong for the wife to do that? Why? Why not? (a) Would you say that it is a duty for a wife to sleep with her husband? Why? Why not? (b) They talk it over at great length and no matter what the husband says, the wife won't change her mind. What would be the best thing for the husband to do? Why? (c) Does the husband have any obligations to the wife? Why?

2. He finally decides that the only way to save the marriage is to threaten to separate from her. He thinks if she does have relations, after a while she will get used to it and like it. Should he do that? Why?

3. Should the husband get divorced in a case like that? Why?

4. Under what conditions might divorce be the best solution? Should the law allow divorce only under these circumstances?

5. The husband doesn't get divorced. But he meets another girl and they have sexual relations. Was he wrong to have relations with another woman in this case? Why?

6. Why is it (usually) wrong for a husband to have relations with someone besides his wife? Is it the same for the wife?

7. Would it be better for the husband to get a divorce than to do that? Why?

8. Do you consider sexual intercourse in marriage right but not outside of marriage? Why would that be?

9. Priests and nuns are not allowed to marry or have sexual relations. One of the reasons the church made this rule was because they thought purity or chastity was a virtue that made people better. What do you think about that?

STORY C

A boy and a girl have a very close relationship during their senior year of high school. Separated for the summer, they grow apart and return with very mixed feelings about each other. One evening, feeling again their former closeness and

attraction, they go further and further and have sexual intercourse. But afterwards the doubts about the relationship return. A few weeks later the girl finds that she is pregnant.

1. What would be the right thing for them to do? Why?
2. Who is responsible for making this decision? Why? What if they disagree about the right thing to do?
3. She knows that her parents could arrange an abortion. Would it be right or wrong for her to arrange an abortion? Why?
4. She considered having the baby and placing it for adoption as an alternative to abortion. Would that be the right thing to do? Why?
5. The girl decided that she wants to get married and have the baby. Is it the boy's responsibility to marry her? Why? (*If no:*) What is his responsibility to her?
6. They decide that abortion is the best solution. Why is ending the life of an unborn baby different from ending any other human life? What about a child seriously defective at birth—would it be right for the doctor to let it die? Why?
7. Are there any conditions that might make abortions right (and wrong)? What and why? (a) If they were married and just didn't want the baby? (b) Would it make any difference if abortion was legal—as in Sweden and Puerto Rico? (c) Should abortions be legalized? (d) If they decide to have an abortion, should a doctor do it? What if he did and was caught? Should he be punished? Why?
8. These stories raised issues about right and wrong and sex. What issues do you think are important? Are there any that aren't covered by these stories?

APPENDIX B

STORY A: GLOBAL RATING GUIDE

Stage 2

Oriented to hedonistic satisfaction of wants and needs. Sex is like any other activity the self might either enjoy or reject. Instrumental attitude toward partner limited by recognition of not hurting other in a concrete way or coercing him to act against his will. Little or no notion of relational responsibility generated by engaging in the sexual act; does not invoke standards or generalized expectations shared with the partner, with the family of orientation, or with the community.

1. Issue K2 – Sex – Premarital

Pro: Sex is fun, satisfies needs, pleasurable. As long as they want to it's OK. No consideration of consequences.

Ex.: "Nothing wrong because I think people can do whatever they want."
(Without inclusion of the notion of by consent or without hurting others.)

Con: Practical concern about pregnancy and other consequences. Emphasis on trouble to A if B gets pregnant or trouble to both partners in terms of discomfort, inconvenience, etc.

Ex.: "It would be wrong if they had sexual intercourse without any thought about pregnancy because of the inconvenience—a child could cause a lot of disturbance—especially to kids of high school age."

Ex.: "No, you will get a reputation that will prevent you from making the right friends and moving in the circles that you want" (in contrast with the Stage 3 concerns over disapproval where friends are seen as ends rather than means).

2. Issue C5 – Premarital affectional relations – Love and sex

Definition of love: Love equals sexual pleasure. Love is contingent on need satisfaction. Love is the exchange of satisfactions between partners. We 'love' those who have instrumental value for us.

Love as reason for sex: Concept of love is not critical in defining the rightness or wrongness of sex. Sex is more pleasurable with love. Instrumental use of love.

Ex.: "The way they feel makes no difference. You can do what you want."

Ex.: "It would be nice if you loved each other before you went to bed because if anything happened at least you know that everything would work out OK—he'd marry you, etc."

3. Issue J – Honesty and trust

Not used by Stage 2.

4. Issue B – Personal conscience

Definition of morality: Usually gives no definition—“don’t know.” Morality may be described as “doing your own thing.” Can describe norms but expresses no commitment to them. Morality is more or less equivalent to prudence.

Obligation: It’s up to the person to decide in terms of his needs; what’s right for them is right and what others do is irrelevant and of no interest.

Ex.: “Sexually it doesn’t really bother me what other people do. I don’t really care. Let them do what they want and I’ll do what I want.”

Relativism: Naive relativism. Some people think it’s right, some don’t. More of a relativism of wants and needs than of standards or rules. No real priorities; all needs are equally valid. Right is what is right for me.

Ex.: “Different people have different ideas. Depends on who it is.”

Own attitudes: Parents, religion, law, and customs not considered when stating origins of own beliefs. But recognizes and tries to circumvent consequences of violations.

Responsibility: One is responsible for satisfying one’s own needs and for avoiding bad consequences for self. No sense of prolonged responsibility beyond the sex act.

Double standard: Accepted in the sense that everyone is responsible for himself. Uses double standard to deny responsibility if it is useful to do so. May deny double standard and say everyone should be able to do what they want.

Ex.: “Boys don’t get talked about like girls do and they have nothing to worry about because they can’t get pregnant.”

5. Issue E – Civil liberties

Everyone has the right to what he wants or needs. Doesn’t believe in legal-societal constraint of social freedom but does not express any of the qualifications or positive notions of civil rights of Stage 5.

6. Issue G1 – Punitive justice – By parents

One should avoid parental detection. It is none of the parents’ business. Instrumental view of punishment—parents might punish to serve their own interests. It’s up to them, if they want to.

Ex.: “What can they do? It’s already done. There’s nothing they can do, except the boy may be scared to come to the house.”

Ex.: “It’s the kids’ life, I don’t even think the parents should talk to them.”

7. Issue D1 – Authority relations between parent and child

Parental power is something unpleasant to avoid if possible or else to consider as a consequence when making decisions.

Stage 3

Oriented to stereotypic role expectations for sexual behavior, toward being a good person of whom others would approve or a loving person who sees sex as an

expression of love. Uses conventional definitions of right and wrong with the goal of upholding group standards and maintaining group approval.

1. Issue K2 – Sex – Premartial

Pro: Sex is good, healthy, beautiful under conditions of affection. Shows you care – communication.

Ex.: “It’s OK as long as you do it as an act of love rather than an act of sex – with emotional tie.”

Ex.: “It goes back to whether there is true love or not. If true love is involved I wouldn’t say it’s wrong.”

Con: Avoid sex because of social disapproval or because of feeling cheap, ashamed, afterwards. Disapproval is by real people who you want to please rather than generalized disapproval (4) or self-interested fear of disapproval (2). Virginity is social expectation. Stereotyped good girl image.

Ex.: “If the girl got pregnant her parents would be most upset and even her friends might shy away from her.”

Ex.: “It’s still the moral behind it. I mean you can get away with it but still you know, you’re not like, clean anymore.”

2. Issue C5 – Premarital affectional relations – Love and sex

Definition of love: Love is having special feelings of attachment, can’t be without the other person and want to do things for him. Want to be with the other person all the time.

Ex.: “It’s someone you like, like to be with no matter what you do. Some kids that you go out with you don’t want to go certain places cause they might not fit in. But if you really like someone you just don’t care. You think they fit in and everything.”

Love as reason for sex: Can use sex to express love. Sex is only right when it is a way of showing that you care.

Ex.: “Sex is part of showing you love him.”

Ex.: “Sex shouldn’t be just hedonistic, for bodily pleasure. Should be for a special relationship.”

Ex.: “I think sex in high school students, if you are the type of, say the guy has been going with the girl and intends to marry her, even if he doesn’t, if they look at it maturely, and like he doesn’t say ‘I might just screw so many girls this year,’ if they believe in it, I mean if they do it and they feel that it is natural . . . I mean it’s right, it’s not wrong, it isn’t bad, it isn’t dirty, well and good.”

Ex.: “Sex is something beautiful, a form of communication that should not just be used to ‘do it.’”

3. Issue J – Honesty and trust

Not used by Stage 3.

4. Issue B – Personal conscience

Obligation: It’s up to the person to decide in terms of feelings; can only decide what’s right for the self, but would think less of person who doesn’t follow self’s standards.

Ex.: "If they really wanted it, I don't believe in sexual intercourse before marriage. I think that maybe they can live without it. My view might change when I get to college, I really don't know. At least, I hope it doesn't. I don't know, like my view is that if two people want to then it's OK for them but yet I wouldn't."

Relativism: Doesn't bring up relativism but accepts it in a matter of fact way. Always important to consider convention, no matter what it is because other people think it is important.

Own attitudes: Not heavily influenced by religious rules, though expresses some effects of religion and especially parents. Conscious of the importance of societal conventions and tries to conform to them.

Responsibility: People should be concerned about the welfare of others, but limits indefinite. Concern for reputation of partner as well as self, for not hurting unborn baby, being fair, etc. Shouldn't hurt anyone else.

Double standard: Harder for boy to control himself so not so bad for him to have sex, or he can't be disapproved of or cheapened as much. More or less accepts double standard. Girls should be virgins when they marry; not part of girl's role to be interested in sex. Boys allowed more freedom, premarital sex appropriate for them. Worse for the girl because it's harder for boy to control himself. A girl will suffer much more.

Right and wrong: Not categorical, doesn't really blame others for sexual behavior but might think less of them. It is right to conform to expectations but it's OK for others if they wish.

5. Issue E – Civil liberties

Doesn't have definite views of limits of community constraint of sexual behavior in terms of rights.

6. Issue G1 – Punitive justice – By parents

Parents should be understanding and discuss. Try to point out possible ostracism and disapproval by others. Punishment is to make better people.

Ex.: "I think they should try to be understanding. I mean if they're really hurt I think that they'd probably let her really know. Maybe try to make her feel badly and try to make her see that it was a mistake. But, I don't really think that punishing would do any good."

Ex.: "I don't think they should lose trust in her, and never let her go away for the weekend again. Perhaps the girl felt it was right and if she did, the parents should want to know why."

Ex.: "They shouldn't do anything. They'll ruin the girl, she'll just be very embarrassed and she'll be very upset. But, they probably will start giving her lectures on morals and you've been going with him long enough. I want you to find someone else."

7. Issue D1 – Authority relations between parent and child

Doesn't question parental authority in this area but not salient. Concern for parents' feelings. Parents shouldn't be hurt.

Ex.: "The parents are probably very upset if they really tried to bring her up well but I guess they just are gonna realize, you know, that the morals have changed so much from when they were young."

Stage 4

Oriented towards the issue of responsibility; to be a responsible member of society by following its rules or to be responsible in one's sexual relationships in the sense of being in a position to accept the consequences of such a relationship. Stage 4 responders are spontaneously against premarital sex in this story, either because they categorically uphold social or religious rules prohibiting premarital sex or because they regard high school students as too immature to take the responsibility of this type of relationship. May condone premarital sex where the individuals are old enough to assume this responsibility.

1. Issue K2 – Sex – Premarital

Pro: Sex is seen as an appropriate and natural part of a mature, responsible relationship. In this context petting is viewed conventionally; it might be OK, or it could be dangerous either in the sense of leading to intercourse or in the sense of causing guilt.

Premarital intercourse is OK if the individuals are old enough and mature enough to take responsibility for the social as well as practical consequences.

Ex.: "If they were older and really know what they were getting into—if they really know what they were getting into (not just a passionate thing) then all right. If you are willing to accept the consequences but in high school you are not really ready for it."

Con: Categorical orientation that premarital sex is always wrong because it is against religious standards, legal norms, or social mores. One cannot make exceptions to rules; if one starts making exceptions, it threatens the social order which is upheld by regarding marriage as the social institution which legitimizes sex.

Ex.: "Would be wrong for our society—depends on standards girl was brought up to have – wrong because how will they fit into society."

Ex.: "I just can't believe in it. I think it's wrong because it's for after marriage and according to my religion, I have to believe it. It wouldn't bother me if other people did it if that's the way they feel."

Ex.: Thinks abstinence shows discipline and ability to wait for marriage when sex will be more meaningful and satisfying.

Ex.: "If both partners were sure there would be no regrets later, that's great. If there's going to be guilt feelings later, then it's wrong."

2. Issue C5 – Premarital affectional relations – Love and sex

Differentiation of love and obligation or responsibility is first made at Stage 4. Sexual standards are not determined by the presence or absence of love. Feelings do not affect the rightness or wrongness of sexual behavior. Love is seen as tied to marriage which institutionalizes it within the social order and legitimizes sex in the sense of fixing the obligations.

Ex.: "Important thing is whether they were sneaking or whether they had permission to use her house. The way they feel makes no difference."

3. *Issue J – Honesty and trust*

Not used by Stage 4.

4. *Issue B – Personal conscience*

Obligation: An individual is obliged to live by the rules of his society. Morality is defined by society and is binding on the individual.

Relativism: Acknowledged but not really understood. In another society things may be different but the individual is still bound by his conscience, by the way he was brought up.

Ex.: "Society has a right to set any standards it wants to and because of our fast moving society it is wrong because it throws things out of proportion." A lot of problems arise that society can't cope with.

Ex.: In another society where it would be accepted, nothing wrong with it.

Stage 5

Oriented toward mutual and contractual obligations and responsibility between two people in deciding the rightness or wrongness of sex. Accepts the relativism of specific institutions or beliefs but recognizes the basic principle of mutual consent and trust which must serve as the decision-making prerogative. The relevance of law to sexual conduct lies in its function to protect the right of responsible, rational consent; but law and authority must not legislate the particulars of sexual conduct between two consenting adults which must be a mutual decision.

1. *Issue K2 – Sex – Premarital*

Pro: See Issue J

Con: See Issue J

2. *Issue C5 – Premarital affectional relations – Love and sex*

Love is irrelevant to the morality of sexual behavior. It will influence the nature of the relationship but not the rightness or wrongness of the sex itself.

3. *Issue J – Honesty and trust*

Honesty and trust define the morality of premarital sex.

Pro: Sex is OK if the couple are honest with each other, if they know each other's motives so that the contract between them is understood by both and forms the basis for trust.

Con: Sex is wrong if one individual uses another, i.e., is dishonest and untrustworthy.

4. *Issue B – Personal conscience*

Obligation: Sexual relations are governed by the basic principles of mutual consent, integrity, and trust, which govern other relationships between human beings. Obligations are mutual and contractual.

Relativism: The principles above apply universally despite the relativism of specific institutions or beliefs.

Own attitudes: Derived independently from consideration of the principles which govern moral human interaction. Attitudes about sex are part of interpersonal ethic.

Responsibility: Mutual and must be assumed by both to fulfill understanding with each other. Equal responsibility to act honestly.

Double standard: Rejected as violating basic principle of mutual consent. Considered irrational.

Definition of morality: Morality of sex is morality of interpersonal relations based upon acceptance of the principles of mutual consent, integrity, and trust.

Right and wrong: Determined interpersonally rather than situationally. Sex creates obligations between two people to deal honestly with themselves and each other. Right and wrong can only be judged in context of effects on others.

5. *Issue E – Civil liberties*

Law and authority must not interfere with two consenting adults. Laws must not violate moral principles or leave more important rights unprotected. But laws should protect violations of the right of responsible, rational consent. Law relevant when mutuality not guaranteed.

6. *Issue G1 – Punitive justice – By parents*

Not relevant.

7. *Issue D1 – Authority relations between parent and child*

Not relevant.

STORY A: SCORE SHEET

_____ *Issues A1, 2, 3, 4 and K1 – Premarital Sex Standards – Intercourse*

Issue A represents general socio-moral norms; Issue K, specifically sexual values and standards. In this story it is usually difficult to distinguish the two, so usually a single issue score is assigned. Issue A is involved when sexual moral judgment is simply a reflex of orientation to general socio-moral norms. When the subject indicates attitudes specific to sexual as opposed to other norms, and where he invokes specific positive values to sex (“Sex can be beautiful”) or specific positive values to sexual restraint (“Purity is beautiful”), Issue K is involved.

Issue K, Sex Values, shades off, or overlaps into Issue C, Love Values. Ideas are scored K, when love relations are viewed as instrumental to sex as an ultimate (“If you want beautiful sex, you have to have a love relationship”). Ideas are scored C when sex is viewed as instrumental to love (“You cheapen love (or marriage) relations if you have sex”).

_____ *Issues A and K – Premarital Standards – Petting, etc.*

————— *Issue B – Relations of Sex Standards to Personal Conscience and Psychological Attitudes*

Issues A and K deal with the subject's general stereotypical orientation to sex norms. Issue B deals with his thinking about sex norms when conflict of opinion or of motives is introduced. The considerations in B exist following levels (as defined in the "System of Aspects").

(Level I—judgment that an act is right or wrong without overt awareness of conflict—Issue A, not B.)

(Level II—generalized judgment that all acts of a given sort are wrong—Issue A, not B.)

————— Issue B, Level III: Judgment of obligation when confronted with situational conflict, desire not to do the normative thing, or conflict between what subject thinks is right and what actor thinks is right.

B6. Element A – Prudence, punishment and guilt as basis for resolving conflict; where no conflict, comes under A.

B7. Mode C – Judgments of duty in conflict.

B8. Mode D – Judgments of responsibility.

B9. Mode E – Judgments of blame and approbation.

————— Issue B, Level IV: Ethical theory judgments – Relations of standards to personal moral beliefs, to religious, social and philosophical underpinnings.

B1. Definition of morality and of moral principles.

B2. Definition of the moral man and of conscience.

B3. Relation of morality to law.

B4. Relation of morality to religion.

B5. Relativism of value and issues of consensus.

(In general, responses about the double standard come under Issue B, Level III, though they are also relevant to A1.)

————— *Issue C – Love and Welfare*

This usually deals with subject's concepts of what a love relationship is or should be, why a love relationship is desirable and how sex or its regulation and inhibition should be used to serve a love relationship.

————— *Issue D – Authority*

Thinking concerning the parents comes primarily under this issue. Some concerns about parental response in this story, particularly by Stage 3, strictly come under Issue C, i.e., love and welfare relations between parent and child. Since the primary parent issue in this story is authority, however (and since there is too little material for a valid rating on subject's attitude toward parents on Issue C), material on parents is subsumed under D.

————— *Issue E – Civil Rights*

E2. Orientation to the law and the community's right to restrict sexual freedom of individuals. Concepts of the basis of the individual's right to sexual freedom. Consideration of community restriction of the sexual freedom of one person to protect the sexual rights or welfare of others.

E1. Consideration of the extent to which the individual should not coerce the other person in the relationship.

Issue F – Justice and Issue J – Truth

Essentially Issue F, justice, covers all aspects of concern for the relationship with the sexual partner not covered by Issue C, love and Issue E, freedom. It involves living up to prior contractual commitment and trust, concerns about treating the other as an end in himself (respect for personality) and issues of reciprocity and equality between partners. Concerns about nondeception and truth-telling, Issue J, are usually involved in these concerns. Objections to the use of force or fraud in sexual matters come also under E1 as restrictions on violating the other's will or freedom. In this justice issue, the emphasis is upon positive action to maintain a relationship of trust and respect.

Issue G – Punitive Justice

G1. Punitive justice by parents.

STORY B: GLOBAL RATING GUIDE

Stage 2

Marriage is an economic arrangement, an exchange of satisfactions, which continues as long as the exchange is viable. Views marriage interpersonally; individual needs can be satisfied in this situational arrangement but the institution has no function other than need satisfaction.

1. Issues A1 and K1

Sex is a commodity; satisfying sexual needs is one of the purposes of a marriage.

Ex.: "If you can't have a happy sexual relationship, I don't think it's going to be very much fun being married."

2. Issues A1 and K2

Extramarital sex and divorce are equally acceptable solutions to this dilemma; you do what you want.

Extramarital sex is OK if that's the way one's needs can be satisfied, whether because of wife's frigidity or because of boredom.

3. Issue B, Level III

Obligation and responsibility: Very concrete definition of responsibility—to keep reciprocal exchange going. If the wife refuses to satisfy husband's sexual needs, then he has no obligation to her and he is free to seek satisfaction as he pleases.

Ex.: "She should do it because he pays for everything and has to work—she owes something to him."

Ex.: "Because there's not much giving from the woman. Like the man has to pay for everything and he has to earn a living and he has to do most of the work and everything and I think it's one important thing that the woman should give him. So I think she should just put up with it."

Ex.: Love is seen as satisfying needs, also as enhancing the pleasure of sex, but not in terms of creating obligations.

Ex.: Laissez-faire conception of liberties; everyone should do what he wants, as long as it isn't physically hurting someone else. Threats are acceptable if they get you what you want.

Ex.: "For a man to live with a woman, he is only human. Sex is part of being married and if you don't get it, tensions are going to start building up. They are going to be very flustered, they are going to end up jumping down each other's back."

Stage 3

Oriented to interpersonal relationships and expectations and to maintaining approval and love. Here we find the stereotypic notions of the good wife and good husband and conventional ideas about marriage and marital obligations. Moral obligations arise from the norms of a good marital relationship as endorsed by the community or society.

1. Issues A1 and K1

Sex in marriage is a part of love; it is necessary to keep the marriage going; it is a way of communicating love. Sex in marriage is the consummation of love, something beautiful, meaningful.

Ex.: "Sex in marriage is a physical union showing the emotions between two people, the caring between two people."

Ex.: "It is wrong for the wife to refuse because it will break up the marriage. Love has a lot to do with sexual relationships."

2. Issues A1 and K2

Pro: Extramarital sex can be seen as the solution to this dilemma if it will keep the husband happy and the marriage going without hurting the wife, if it will save the marriage and thus make them both happier.

Ex.: "Maybe in the long run it's saving their marriage and making them both happier."

Con: Adultery makes good relationships impossible, hurts peoples' feelings and therefore is not an acceptable solution.

Ex.: "I think they should be divorced. Because it's not going to be happy for either of them, because he'll feel cheated and she'll feel guilty . . . if they stayed with each other it would just make them feel bad."

Ex.: "If it really makes her feel badly, then she shouldn't make her husband live with her and stay with her just because they are married. I mean that would cause him to be unhappy."

Ex.: "Wrong because he is already married to one and he's supposed to love the first woman, and if he didn't love her, he shouldn't have married her."

Ex.: "He wasn't being satisfied in his own marriage so he had to look for it somewhere else and he needed something to keep going—for his marriage to survive."

3. *Issue B, Level III*

The love which led to the marriage creates an obligation for understanding and helping each other in the face of difficulties. One should be faithful to the commitment and to the love from which it arose and act for the happiness of the other to which one's own satisfactions are tied. Problems should be solved by love and understanding and by mutual action. Responsibility for one another is accepted and interpreted as an obligation to act in good faith so as to prevent suffering and unhappiness.

Ex.: "If she loved him, she should want to. It's kind of mean, because she's hurting him."

Ex.: "Usually a married man will have relationships on the side because he has had a bad marriage. But I mean if this guy has no reason and he just wants to play around, then he is really no good as a husband."

Ex.: "The wife is supposed to be devoted, very devoted to her husband, and she's supposed to do everything and if she just goes out and runs around, then it doesn't look too good. She isn't much of a person really."

4. *Issue C*

Love is the ultimate reason for and value in marriage; love is seen as much more inclusive than sex which is only one of its manifestations. Love takes precedence over sexual needs—a distinction is made between the two, and love is seen as having priority over sex. If you really love someone you would want to be with them no matter what. Romantic, idealized notions of love and sacrifice are typical of Stage 3. Pure feeling is opposed to physical sex.

Ex.: "If they really love each other, then that shouldn't make any difference. If he loved her, he married her because he loved her and wanted to be with her, not because he wanted to have sexual relations with her. Threats are wrong because if he threatened he's making it sound like—he's making it seem like he just married her for sex and not because he loves her as a person. . .if they fall out of love, then divorce."

Ex.: "If he loved her enough to want to live with her, then I think he should definitely stay with her. I'm caught up with the idea of people being faithful to one another. It brings unity within a home."

Stage 4

Basic orientation is to the marriage contract interpreted in terms of responsibility to one another and commitment to the institution of marriage. Obligations are defined with respect to the social and legal rules of marriage as an institution embedded in the social order. Individual needs must be met within the framework provided by society or else left unsatisfied. Responsibility replaces

love as the reason for action and as the criterion for judging right and wrong. Sees marriage as institutionalizing social norms.

1. *Issues A1 and K1*

Sexual values and norms are subordinated to marriage roles of affection and welfare (Issue C). Sex is seen as part of a fixed set of marriage rights and duties, a legitimate part of marriage according to law, society, and religion, and as having a socially useful function as well as an interpersonal one.

2. *Issues A1 and K2*

Adultery violates the marital vows and the legal and social rules of the institution of marriage. It causes guilt because of infidelity and deception.

Ex.: "It is not right for society—for the simple reason of the age-old custom. I would condemn it. I think they have their marriage vows and even though they want to both dissolve the vows and have sexual intercourse with somebody else and they both know about it, I still think that they have a responsibility to their vows originally."

Ex.: "It is illegal so it's wrong under law. It was wrong in the sense that if you want to break up a marriage, you should do it legally. You shouldn't sneak around. If he feels strongly about this girl he's in love with, he should get a divorce and remarry."

3. *Issue B, Level III*

Individuals in a marriage must honor their vows or break them legally. Wife is obligated to satisfy husband's sexual needs.

Ex.: "It is sort of denying him a certain right in marriage."

Ex.: "It's legal. It's within the pact you make."

Ex.: "I think marriage, when you agree to get married, there's some responsibility to it and he can't devote all the time to his wife when he's seeing the other girl. And I think he should've been divorced in the first place. And he's wrong. (Why?) I just think, well, the centuries, the tradition of marriage. There's just something to it . . . Maybe it is almost kind of sacred. I think it's something that you should, once you get into it, there's a lot of responsibility to it, and you have to give a lot of yourself and I think in the end if you give more than you take, then you'll get back what you deserve, that you put into it."

Ex.: "I think love and marriage is a very important thing and . . . you should be very true about it. You shouldn't try and deceive yourself into saying, 'Well, I'll try it now and if it doesn't work I'll get a divorce and I will marry somebody else and keep trying.' I think it should be special. If nothing is special, I don't see the point in life."

Ex.: "I think she has an obligation to him in this case. She has an obligation to her husband, to the society she is living in, and to the whole world. . . It is his responsibility to make her have it."

4. *Issue C*

Love is interpreted in terms of responsibility to another person.

Ex.: "Love is when you fully accept responsibility of another person and you want to be with that person and help that person."

Stage 5

Stage 5 sees marriage as a contract between two people. The strength of the contract derives from the consent of the individuals. The specifics of the contract are up to the individuals involved. The morality of marriage and of interpersonal contracts in general centers for Stage 5 around the issue of trust and of honesty, in fulfilling one's contractual obligations.

1. Issues K1 and A1

May see the wife as having a positive obligation to have sexual relations with her husband based on the implicit or explicit contract to that effect. It becomes in this sense a violation of trust (see Issue J).

Ex.: "It's wrong because they may have said some things or had some assumptions before they got married."

2. Issue K2

A couple can set up their marriage contract any way they like, as long as it's open and mutually agreed upon. Adultery is seen as wrong if it constitutes a violation of trust, rather than of a fixed vow.

Ex.: "I don't think it's wrong. I think it really depends on the relationship between the two people and what they have agreed on. Whatever they decide between each other is really what should happen. Maybe they decide they should both not sleep with anyone else. Maybe they decide that it's OK and it's healthy for them to sleep with someone else. Maybe they just want to and there's a reason. In India, it's a crime for a woman to commit adultery but not for a man. I don't think that's fair."

Ex.: "It's wrong because this is violating some kind of trust although traditionally this woman not sleeping with her husband is also violating the trust that when you marry somebody you're going to sleep with them. But unless the husband has spoken to his wife about the consequences of her actions, unless she realized it and accepted it as part of it, I think it's wrong if he has to lie to her in any way about it."

Ex.: "I think it depends upon whether his wife knows about it or not. They might have gotten married feeling that it doesn't matter that they have sex relations with other people. If this is the case then it is all right. If they get married and she felt that he will be true to me and the only one who he has sex relations with and he does then I think it was wrong for him to go out with someone else. Because he is deceiving her."

3. Issue C

Norms for a marriage relationship are based upon a more universalistic contract. Libertarian principles of relationship based upon absence of deception.

4. Issue B, Level III

Individuals are responsible to fulfill their contractual obligations to one another.

5. Issue B, Level IV

Social relativism recognized and overcome by universal application of principles of moral relationships. (In entering into marriage you've contractually committed yourself to working through problems.)

STORY B: SCORE SHEET

_____ *Issues A1 and K1 – Marital Sex Standards and Values, and Notions of Laws About Them*

Under these issues comes the subject's conception of accepted or desirable norms of sexual behavior in marriage which center around general social rules and considerations or around sexual values and rights. Where these regulations derive from, or are means to, the maintenance of marital love or marriage as a family institution, they come under Issue C.

Issue K1 – Concerns marital sexual behavior as instrumental to natural sexual needs or natural desires for children, or marital sex as the only moral, "pure," or legitimate form of sex.

Issue A1 – Represents the legal-institutional definition of sexual obligations or regulations in marriage, while K represents the more interpersonal or specifically sexual. Under A also come rules of marriage and divorce where these do not derive from a consideration of marriage relations of affection and welfare or the positive functions of marriage and parenthood.

_____ *Issues A1 and K2 – Extra-Marital Sex Standards*

Same considerations as for marital sex (above). Where extramarital restrictions derive from the positive core values of love, marriage, and family relationships, they come under Issue C.

Issue A1 – Considerations deriving from law, community disapproval, or simple proscriptive rules of marriage.

Issue K2 – Thoughts about the satisfactory or unsatisfactory quality of sexual relationships.

_____ *Issue B – Conceptions of Fixity of Marital, Sexual, and Other Norms and Values in the Face of Conflicting Psychological or Value Considerations*

_____ Issue B, Level III:

B6. Fear, prudence and guilt as deciders of conflict.

B7. Duty – Conceptions of obligations to have appropriate marital sex and love in the face of psychological and other conflict.

B8. Responsibility – limitation of responsibility for the sexual satisfaction and for the emotional and physical welfare of the partner in the face of conflict.

B9. Praise and blame and accountability.

Issue B, Level IV:

B1. Definitions of the moral.

B2. Relations of legal to the moral.

B3. Relations of moral to religion.

B4. Relativism of value.

Issue C1 – Marriage Roles of Affection and Welfare

Concepts, norms and values of marriage as a positive interpersonal relationship with positive functions. Derivations of sexual norms as means to, or expressions of, love and affection—from other notions of a “good marital relationship” based on emotional concordance or from notion of fixed personal commitments to the other.

If love and marriage are almost exclusively defined by other primary values, i.e., sex (K) or justice, (B) (G), then a secondary (parentheses) score is given on this issue, e.g., at Stage 2 or 5 as well as a circled issue score on the primary value – Contrariwise if sex norms are almost exclusively derived from the marital relationship, sex scores are centered in parentheses.

Issue D – Authority and Democracy – Power Relations between Husband and Wife

Issue D – Considerations of power relations between husband and wife when these do not derive from considerations of fundamental human rights to freedom (E) or equality of worth and claims of persons (F).

STORY C: GLOBAL RATING GUIDE

Stage 2

Applies an instrumental hedonistic orientation to this situation and resolves the dilemma by seeing only one point of view (either male or female) and then opting for whatever solution best satisfies the needs of that individual. Since everyone does what he wants, nobody is responsible for what another does; the boy sees himself as not responsible for the girl since she chose to have sexual intercourse. In the absence of any notion of relational responsibility, the decision becomes the girl's and revolves around whether or not she wants to have the baby. There is little or no empathy with the unborn child; it is not considered to be a life but rather as the private property of the girl who thus can do with it as she chooses. Bad consequences are to be avoided by everyone in the most expedient way possible (e.g., the boy should marry the girl if this is seen as a preferable alternative to child support). Modal choice is generally for abortion because it is the simplest (least inconvenient) solution (e.g., the baby would ruin her life).

1. Issues A1 and H

Issues A1 and H are not applied—relevance to this situation denied by regarding the unborn child as property to be disposed of as they wish rather than as a life.

Ex.: “It's not really killing. The fetus is not really live. It's like killing something that was never there.”

2. Issue B, Level III

Since everyone does what he wants sexually, one is not responsible for the consequences others suffer as a result of one's sexual acts. Since the girl agreed to intercourse, the boy has no responsibility to marry her. One is responsible to oneself and to one's own life and acts to maximize the desirable for oneself and to minimize undesirable consequences.

Ex.: "It's not the boy's responsibility to marry; it takes two to tango."

Ex.: "It's not his responsibility to marry her. She should have talked to him before they had intercourse about marriage and if he said no, then she'd know he didn't love her and that she was like a private whore."

Ex.: "You have to take your own life into consideration. Your own life is more important than anyone else."

Ex.: "I wouldn't get married if I didn't want to because getting married, I mean if you get married to someone you didn't want to get married to, you're pretty much stuck for the rest of your life."

Ex.: "No, (not his responsibility to marry her) not if he doesn't love her because she agreed to making sexual intercourse when it was done, so therefore she's just as much at fault as he is."

Ex.: "Boy doesn't have to marry her if no love. She can sue him for support—maybe they hadn't thought of the consequences."

3. Issue C

Issue C not applied—affection and welfare is translated into needs and needs are assessed individually rather than relationally.

Ex.: "If she wants the baby, OK, if not, then abort."

Ex.: "The only reason it would be wrong for her to have an abortion is if she wants to have the kid. As long as it's not born, I don't feel it's going to harm anything."

Ex.: "If she does actually go through having the child and all and then she doesn't keep it, I think it's kind of a waste."

Ex.: "(Adopt?) Yes, if they want the child to live."

4. Issue G

No punishment for the doctor, because no application of Issues A and H to this situation.

Stage 3

Oriented around the affection and welfare issues; those between the boy and girl, and between the parent and child, and strives toward that resolution seen as being in everyone's best interests. Empathizes with everyone in the situation and tries, through taking the various roles, to arrive at a solution in which as few as possible will be hurt or suffer. For the child, the resolution is often better dead than unhappy (whether in an orphanage or in an unhappy family). Responsibility is shared but responsibility is seen in terms of finding a solution in which nobody will suffer or be unhappy, not in terms of taking the consequences for one's actions. People should act on the basis of their own feelings and beliefs (always

considered to be well-intentioned). Abortion is OK if that's the way you feel, if it's your morals (for doctor too). Conventional stereotypes are applied unquestioningly – having children should be beautiful, unwanted children suffer in this world, etc. Very conscious of the social disapproval which attends pregnancy out of wedlock, illegitimate children, abortion in marriage, etc. This is an important factor in determining choice of action. Orientation is toward the urgency of making a decision. Actively applies conventional stereotyped labels in finding a solution to what is seen as a social disaster. Modal choice is abortion to avoid unhappiness for all.

1. Issue A

Killing is bad, but so is suffering and unhappiness. Legal aspects of killing not salient. The badness of killing is mitigated if no one is hurt by it. This issue is avoided by defining human life as beginning at birth. Killing also may be sanctioned as preferable to a life of suffering and misery—as the lesser evil where life worth and happiness tend to be equated.

Ex.: “Whether it's legal or not—it's just how the people feel about it. Just because the country says it's wrong or the law says it's wrong that doesn't really say whether it's right or wrong.”

Ex.: “You're killing life—I just don't like killing, don't like to hear about people dying—I feel sorry.”

2. Issue H

The value of life rests on one's affectional ties with others. Where these ties are absent as with an unborn child or cannot be realized as with an unwanted child, then life has no value. The value of life is equated with the possibility of a happy life—it is better for the fetus to die than to be unhappy and/or bring unhappiness on everyone.

Ex.: (deformed child aborted?) “Yes, think of him in the future, unable to get the joys out of life.”

Ex.: “It's an unborn baby, that's the whole point. If a kid isn't born I can't see how anybody could say he's alive. Even little kids, babies when they're just born, the only reason they're alive is because someone knows them, their parents know them. And so the only people that they really hurt if they die are their parents. But if this kid isn't born yet, then their parents don't—nobody knows them. They're not hurting anybody.”

3. Issue K

Because there was love at the time, the sex is not condemned.

Ex.: “Abortion is OK because at the time of sexual intercourse they thought they loved each other.”

4. Issue C

Decisions about both abortion and marriage are made on the basis of affection and welfare considerations. Welfare of the child and that of the couple are seen as interwoven (e.g., all would suffer in a bad marriage). Welfare considerations and how to minimize unhappiness in this situation are predominant and take precedence over all other issues.

Ex.: "Once she's in that position, it would just ruin too many people's lives to have the child. First of all, it would be giving the child almost a zero chance, coming into the world without a father and with such a young mother and unwed and the family would probably completely reject her. The boy would probably not want to have anything to do with her. And it would just ruin her life and everyone else around her."

Ex.: "Abortion is the thing to do because marriage without love would hurt the child, it would hurt all three of them, whereas this thing would only hurt two of them."

Ex.: (abortion?) "Yes. Baby would be better off. She might hate the kid, resent being tied down."

Ex.: "Abortion would save the child a lot of trouble—no real parents."

Ex.: "If she does not love this man or boy, then she should have an abortion for the sake of the child."

Ex.: "They should have the baby and give it up to adopt for others who want one. Why deprive others."

5. *Issue B, Level III*

The boy has responsibility to the girl in this situation, but this responsibility is to act for the welfare of all concerned. It is an interpersonal responsibility rather vaguely elaborated and with no categorical solutions.

Ex.: "If the boy really loves you he will face up to what he has done and he will want to marry you. If you force him it is not good, you are in for nothing but trouble. It is not going to work."

6. *Issue G*

Doctor's motives are good. Punishment should be abrogated or modified. Legal considerations are subordinated to welfare concerns throughout.

Ex.: "The doctor should speak with authorities of the law and perhaps he'd be able to get, like, you know, special permission."

Stage 4

Oriented toward the issues of responsibility and obligation. Responsibility is defined within a societal rather than an interpersonal context, and in terms of upholding rules and taking the socially prescribed consequences for one's own actions. Individual needs are subordinated to societal considerations, and what is right as defined by society serves as the guide for moral action. Since pregnancy out of wedlock is in itself a violation of social rules, the attitude centers around accepting the consequences and taking responsibility for the life created, with or without punitive overtones. Modal choice is to have the baby and thus fulfill your responsibility to the life created and uphold society's rules against killing.

1. *Issue A*

Call-things-by-their-right-name attitude. Killing is wrong (legally, and according to the Ten Commandments).

Ex.: "Abortion is wrong. Well, right for her, but wrong for the baby. It's definitely killing."

Ex.: "It's just taking a life and I don't believe in taking anybody's life. (Threat to mother's health?) It's still killing that life."

Ex.: "Wrong because she would be destroying another life. . .and as cold as it may seem, it is better that she die of natural causes if she does die. . .It goes back to a religious thing in the commandments. . .Like thou shalt not kill, and I don't think it is right in any situation."

2. Issue H

Life is valuable beyond its pleasure (child has a right to live, even if in an orphanage). Value of life may be held categorically as in religious terms, or it may be subjected to societal values—lesser of two evils as in sacrificing the child to save the mother as she has greater social responsibilities (e.g., to other children, etc.).

Ex.: "Abortion is taking a life that has every right to be born. Unborn baby has just as much right to live as anyone else and I don't think anyone has the right to decide whether it should or not."

Ex.: "It is senselessly creating a life and it is senselessly destroying it and I don't see how you can play around with that."

Ex.: (Abortion OK if threat to mother's health?) "If mother dies in process of giving birth, then what would happen to the other children that she had to take care of?"

3. Issue K

Abortion and birth control should not be used to facilitate premarital intercourse, or to eliminate the responsibility for its consequences.

4. Issue B, Level III

Individuals must accept and live up to their responsibility for what they have done. Obligation overrides happiness as basis for action. This responsibility is equally incumbent on both the girl and the boy. The innocent baby shouldn't suffer. They should pay the consequences, pay for their mistake. It's not just like mercy killing because in this case the individuals undertook the responsibility to create the life.

Ex.: "It is his responsibility to marry her, to suffer together. They might be happy."

Ex.: "He is obligated to marry her because he has to live up to his commitment. If he felt strong enough to have intercourse and do it through his emotions, he should live up to his act."

Ex.: "I think it is the boy's responsibility because he was one-half of the resulting pregnancy and it's just as much his fault as hers."

Ex.: "Because she got herself pregnant she should take the consequences and have the baby. It's not the baby's fault. He's innocent."

Ex.: "If pregnant, it's your fault and you've got to go through with it. If the boy didn't marry her, he'd feel guilty."

Ex.: "What she is going through is just what he should be going through. They should share the guilt. It's his responsibility as much if not more than hers."

5. Issue C

Welfare issues are clearly subordinated here to responsibility issues. However, though one is obligated to fulfill one's responsibility, affection and welfare considerations may dictate how this should be carried out.

Ex.: "He should (marry her) but if he doesn't love her, I don't think it will do either of them any good. He should because it's his fault as much as hers and he should, you know, take care of her. But if they don't love each other, I don't think they should get married. It wouldn't work."

Ex.: "That kind of marriage destroys the personalities. They have made a mistake and two mistakes don't make a right."

6. Issue G

Abortions are illegal. The doctor is committing a crime and he should be punished.

Ex.: "Abortions are illegal. So if it's against the legal system, if it's against society, he should be punished. He's committing a crime."

STORY C: SCORE SHEET

_____ *Issue A1—Orientation to rules and laws about killing*

_____ *Issue H—Value of life*

(secondary score this issue if dominated by A1, secondary score A1 if dominated by H)

_____ *Issue K1—Orientation to rules and values about sexual chastity*

_____ *Issue C1—Orientation to Boy-Girl Affectional-Welfare Role*

C1—Orientation to Parent-Child Affectional-Welfare Role

_____ *Issue B—Conscience*

B, Level III—Responsibility, Obligation, Praise, and Blame

_____ *Issue G—Punishment*

_____ *Issue E—Civil Liberties*

APPENDIX C

SEX ATTITUDE SCALE

Circle most characteristic choice when more than one applies.

Premarital Standards

1. OK any time.
2. OK if partners "love" each other.
3. OK if plan to marry.
4. Wrong under any circumstances—sexual intercourse is for after marriage.

Parental Punishment of Sexual Activity

1. Don't punish—not wrong.
2. None of parents' business—won't do any good.
3. Don't punish—try to be understanding, helpful.
4. Punish.

Extramarital Sex Standards

1. OK under any circumstances.
2. OK if not in secret—must be agreed on.
3. OK if no sex in marriage.
4. OK if separated.
5. Always wrong.

Divorce

1. OK under any circumstances.
2. OK if partners have problems—can't get along.
3. OK only in extreme circumstances, mentally torturing each other.
4. Divorce is wrong solution.

Abortion

1. Always OK if baby not wanted under any circumstances.
2. OK only if not married.
3. OK only for medical/psychiatric reasons—threat to mother or child.
4. Always wrong.

Responsibility of Boy to Marry

1. No responsibility.
2. Should give baby a name but no commitment to marriage.
3. Only marry if love each other.

Laws About Pornography

1. No laws.
2. Laws restricting people according to age.
3. Laws for all—definite restrictions on certain content.

What Religion? _____

How religious? Very ___ So-so ___ No ___

Exposure to Pornography and Juvenile Delinquency

The Relationship as Indicated by Juvenile Court Records

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THE PROBLEM

Several police officials, juvenile court judges, psychologists, and psychiatrists have asserted that there is a relationship between exposure to or experience with pornography and juvenile delinquency, particularly delinquent acts of a sexual nature. More precisely, these experts note that pornography is frequently the prime motivating factor in the sexual maladjustment of the juvenile offender and in the subsequent commission of his delinquent acts. Such assertions, however, are ordinarily based on professional experience rather than on empirical data collected specifically to test this hypothesis.

Inspector Harry Fox, Commanding Officer of the Philadelphia Police Department's Juvenile Aid Division, for example, testified before the Granahan Committee that:

My men and I have questioned hundreds of . . . the juveniles involved, and we believe . . . that this material acts as an aphrodesiac resulting in rapes, seductions, sodomy, indecent assaults, and indecent exposure. (Clor, 1969, p. 40)

Dr. Benjamin Karpman, a psychiatrist, suggested that a young boy reaching adolescence is "hungry for information about sex." Without more appropriate and legitimate sources of such information, however, he ultimately looks for it in the gutter, where "he comes across pornographic materials and literature that draws him into all sorts of gang life, which discharges itself as juvenile delinquency" (Senate Subcommittee Interim Report, 1956, p. 12).

Dr. Nicholas Frignito, Chief Neuropsychiatrist of the Philadelphia Municipal Court, has stated that his Court

has case histories in which arousal from smutty books led to criminal behavior from vicious assaults to homicide. Some of these children did not transgress sexually until they read suggestive stories and viewed lewd pictures in licentious magazines. In several instances the children were very young, varying in age from 9 to 14 years. The filthy ideas implanted in their immature minds impelled them to crime. (House Subcommittee Hearings, 1967, p. 86)

This study was designed to collect empirical data in order to assess the relationship between exposure to or experience with pornography and juvenile delinquency by examining the records of a selected sample of delinquents brought to the attention of the Neuropsychiatric Division of a large urban municipal court in the eastern United States during the calendar year 1968. It is basically exploratory in nature; no hypotheses are derived and presented. Instead, the procedures used to collect data on a relatively large sample will be described, and the data will be presented and briefly and interpretively commented upon.

METHODOLOGY

The Neuropsychiatric Division of the court under study handles approximately 40 delinquency cases per week, all of which are referred to the Division by the Juvenile Section of the Court. In the course of one year, then, a total of about 2,000 delinquency cases are handled by the Division staff.

It should be noted that individual cases are referred to the Neuropsychiatric Division for a variety of reasons and by a number of agencies. Generally, however, three basic considerations govern the decision to refer a particular case for examination and evaluation. These are:

1. *The characteristics of the offense.* All serious offenses, such as homicide or those involving sex and drugs, are referred to the Division. In addition, the Division staff frequently examines adolescent girls charged with incorrigibility on the basis of their sexual promiscuity.

2. *The characteristics of the offender.* Recidivists and those manifesting "intellectual limitations" and "behavioral incongruities" (discrepancies between I. Q. and achievement or social class background and behavior) are most likely to be referred to the Division for diagnosis and evaluation.

3. *The referral agent.* Any judge or probation officer may, for any reason, request the diagnostic and evaluation services of the Division for any case. In addition, the family of the delinquent may also request treatment or evaluation by the Division staff.

An attempt was made to select a representative sample of approximately 500 cases (about one-fourth of the total). This was considered both reasonable and feasible, given the time and financial limitations. Rather than select a simple random sample of the Division's cases, however, the cases were sampled on a temporal basis.

Using random numbers, 19 weeks during the calendar year 1968 were selected. During these 19 weeks, the Neuropsychiatric Division treated a total of 873 individuals.

The names of all clients seen by the Neuropsychiatric Division during the 19 weeks were obtained from the "day book," an appointment book containing a list of all persons seen by the neuropsychiatric staff each day. These individuals were then located in the "card file," which contains such basic information as age, sex, psychiatric diagnosis, and an identification number. The identification number is used to obtain the individual's file from the record room. Of the 873 individuals listed in the "day book" for these 19 weeks, 266 were lost from the sample at the "card file" point. Of these 266 cases, 144 were excluded from further analysis because they were not juveniles. The Neuropsychiatric Division handles some adult criminals and a relatively large number of cases from the Domestic Relations Division of the Family Court, as well as juveniles accused of committing delinquent acts. The other 122 cases, for a variety of reasons, could not be found in the "card file." These reasons, however, were of a clerical nature and were unrelated to the study variables. Thus, the remaining sample of juvenile cases with identification numbers was 607.

The actual record or file of these cases was housed in one of two places—either the record room in the Juvenile Court or the record room at the Youth Study Center, the detention center for juveniles awaiting court action. Of the 607 cases, 239 were located in the Youth Study Center and 368 at the Juvenile Court. The records of each of the 607 cases were requested from the appropriate record room.

Although 219 of the 239 case files housed in the Youth Study Center were delivered, only 217 of the 368 case records in the Juvenile Court were available. This was due to the fact that some of the files were being used by probation officers, some were in court, and some had been requested by other court officials. The files were requested on more than one occasion, but approximately 40% were never received. Thus, at the level of actual examination of the case records, the sample was reduced to 436 cases. The 40% of the case records which were not available from the record room of the Juvenile Court posed some problem for the representativeness of the final sample. However, there is no reason to believe that the unavailable cases were in any way "special" because of the fact that the files were currently being used. The Juvenile Court files employed in this study contain information not only on the subject, but also on his entire family. As such, it is just as likely, and numerically more likely, that the activity of the file was due to other family members. Thus these 151 cases should not be considered as "special" (as more serious offenders, for example) because of the unavailability of the file.

The 60% of the cases that were available from the Juvenile Court record room were almost identical, in terms of the distribution of several variables, to the total number of cases which were located in the Youth Study Center. The distribution of the sample cases among various types of offenses was not significantly different from the distribution of all cases during calendar year 1967. Thus it seems that little or no bias was introduced by the unavailability of cases from the Juvenile Court record room.

The file of each of the final sample of 436 cases was examined in detail and the pertinent information recorded on a coding sheet. The information was obtained from a variety of sources in the file, including (a) the report of psychologists and psychiatrists; (b) the cover sheet, which included basic information such as age, sex, and race; (c) the probation officers' reports, which included information on delinquent history, family background, education, occupation, and so forth; (d) the official version of the offense for which the juvenile was given a neuropsychiatric examination; (e) the official version of all previous offenses; and (f) other miscellaneous reports and background material.

The two principal pieces of information of interest for this study were the nature of the offenses which brought the individual to the attention of the Court and the mention of the existence or nonexistence of experience with pornography in the individual's case record. All of the materials in this file were examined in detail for information on these two variables. This information was recorded on a separate coding sheet along with various kinds of background information such as age, sex, race, and intelligence. The nature of the instant offense, as well as all previous offenses, were coded in terms of several classification schemes, the most important of which was whether it was a specific sex offense, an offense which implied an indirect connection with sex, or an offense with no sex implications.

FINDINGS

The sample may be briefly characterized as follows: the median age was 15.8 years; 84% were males; 75% were black; and the median I. Q. was 86.5, with a range from 45 to 125. The psychiatric diagnosis of the cases were distributed as follows: adjustment reaction to adolescence, 65%; adjustment reaction to childhood, 9%; passive-aggressive, 15%; and other, 10%. The distribution of offenses in the Uniform Crime Reports classification system was: 53% Part I offenses, 21% Part II offenses, and 25% status offenses (offenses for which an adult cannot be arrested or charged).

Of the offenses committed by these 436 juveniles, 92% were classified as having no sex implication, 4% were classified as implying some sexual activity (primarily in cases such as incorrigibles or runaways where the reason for complaints stemmed from sexual promiscuity), and 4% were classified as sex-specific offenses.

The central variable of concern in the study was the presence or absence of exposure to pornography on the part of these delinquents. *There was absolutely no mention of pornography or erotica in any of the materials contained in the case records of any of these 436 juveniles.* It is clear that the neuropsychiatric staff did not systematically enquire into this area. But it also seems that pornography is neither salient nor important enough to appear spontaneously in a probing examination of the background and circumstances of juvenile offenses.

This finding is, to say the least, surprising, particularly since testimony before various Congressional Committees had led the researchers to believe that there would be at least some mention of pornography in the records of these juvenile delinquents.

Although these data render it impossible to describe the empirical relationship between use of pornography and the commission of sex offenses by juvenile delinquents, the fact that there were no cases wherein pornography was

mentioned does suggest that this relationship is not likely to be a very strong one. It further suggests that the problem of pornography may not be as widespread or as serious as has sometimes been claimed.

The fact that there was not one instance in which experience with pornography was mentioned in the total case records of this sample of 436 juvenile offenders would be consistent with the argument that there is no relationship between use of pornography and sex crimes among juveniles, and would further suggest that the use of pornography is not a very salient issue among either juveniles or the police and the courts at a practical level.

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College Students' Attitudes on Pornography

A Pilot Study

DAVID MANNING WHITE

LEWIS D. BARNETT

Boston University

DURING THE SUMMER OF 1969 a single interviewer interviewed 300 college students enrolled in summer school at five universities: Boston University, Brooklyn College, Brown University, Harvard University, and New York University. This sample included students who regularly attend over 50 colleges and universities throughout the United States. Only a handful of students refused to be interviewed.

The data from the interviews are presented in Tables 1 through 10.

These data indicate that: College students are first exposed to pornography in childhood and adolescence; their most frequent source of early exposure was friends; few voluntarily expose themselves frequently to pornography; they experienced few or no effects from such exposure; no one response to pornography is dominant; there is little agreement regarding a definition of pornography; there is little agreement as to whether various verbally defined explicit sexual stimuli are pornographic; and—by far—the most frequently proposed restriction on access to pornography is an age restriction.

Table 1

DEFINITION OF PORNOGRAPHY

Response	Number
Nothing is pornographic	75
Sexually exciting material	68
Things which cheapen or degrade sex	47
Abnormal or offensive sex	78
Sex for profit	17
Sex in mass media	9
Legal definitions	6
Total number of college students	300

Table 2

EXAMPLES OF WHAT IS PORNOGRAPHIC

Response	Number
Stag films	45
Books	54
Magazines	56
Pictures	9
Movies	42
Advertisements	7
Cards (French picture)	5
Broadway show	1
Total number of college students	219

Of the 300 college students asked to define pornography (Table 1), only the 225 who felt that pornography does exist were asked to give an example.

Table 3

RATINGS OF VARIOUS ITEMS ON SCALE OF PORNOGRAPHICNESS (BY PERSONS FAMILIAR WITH ITEMS LISTED)

Item	Not very pornographic (1 & 2 on 7 point scale)		Somewhat pornographic (3, 4, & 5 on 7 point scale)		Very pornographic (6 & 7 on 7 point scale)	
	Number	Percent	Number	Percent	Number	Percent
<i>Playboy</i> Centerfold	172	63	88	32	14	05
<i>Screw</i> (newspaper)	47	54	17	19	24	27
A nude lady taking a shower (film)	200	77	58	22	3	01
Intercourse in movies	121	50	85	35	39	15
Intercourse on stage	97	40	76	31	70	30
Intercourse described in books	146	62	65	27	26	11
Masturbation in movies	92	39	87	36	61	25
Masturbation on stage	79	33	76	32	84	35
Masturbation described in books	128	53	81	34	28	12
Homosexuality in movies	137	55	78	32	31	13
Homosexuality on stage	135	54	81	32	33	13
Homosexuality described in books	166	69	56	23	19	08
Use of four-letter words on TV	216	81	35	13	16	06
Sadomasochism in movies	101	41	88	36	55	23

Table 4

AGE AT WHICH FIRST EXPOSED TO PORNOGRAPHY
IN ANY FORM

<i>Age</i>	<i>Number</i>	<i>Cumulative percent</i>
Eight and below	38	13
Nine or ten	67	36
Eleven or twelve	103	71
Thirteen or fourteen	49	88
Fifteen or sixteen	26	97
Above sixteen	9	100

Table 5

SOURCE OF FIRST EXPOSURE TO PORNOGRAPHY

<i>Source</i>	<i>Number</i>	<i>Percent</i>
Friend	139	55
Found	55	22
Brother	24	10
Bought	26	10
Other	10	04

Table 6

HOW OFTEN VOLUNTARILY EXPOSED TO PORNOGRAPHY

<i>Frequency</i>	<i>Number</i>	<i>Percent</i>
Never	16	12
Rarely	94	69
Often	27	20

Table 7

REPORTED EFFECTS OF EXPOSURE TO PORNOGRAPHY

<i>Effect</i>	<i>Number</i>	<i>Percent</i>
None	98	34
Little	99	35
Good (including liberalized)	54	19
Bad (including guilt)	28	10
Uncertain	6	02

Table 8

REACTION TO PORNOGRAPHY

<i>Reaction</i>	<i>Number</i>	<i>Percent</i>
Excitation	33	12
Attraction (positive)	20	07
Interest (curiosity)	31	11
Humor	39	14
Surprise	13	05
None	33	12
Boredom	5	02
Feel it's stupid	11	04
Sadness (pity)	5	02
Embarrassment	8	03
Disgust (repulsion) (negative)	77	28

Table 9

PROPOSED RESTRICTIONS ON PORNOGRAPHY

<i>Restrictions</i>	<i>Number</i>	<i>Percent</i>
None	118	39
Age	128	43
Voluntary	30	10
Prohibit involuntary exposure	13	04
Censorship	8	03
Prohibit mailing	6	02

Table 10

AGE AT WHICH RESTRICTIONS ON PORNOGRAPHY SHOULD BE IMPOSED

<i>Age</i>	<i>Number</i>	<i>Cumulative percent</i>
21	3	03
20	0	03
19	1	05
18	14	20
17	1	21
16	20	42
15	13	56
14	11	68
13	12	80
12	17	99
11	0	99
10	1	100

Westchester College Students' Views on Pornography

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PROCEDURE

Self-administered questionnaires² regarding experience with and reactions to pornography were filled out during the academic year 1969-70 by 625 students in the following eight colleges in Westchester County, New York: Sarah Lawrence College, State University of New York at Purchase, Westchester Community College, Iona College, King's College, Briarcliff College, Pace College, and Good Counsel College. The eight represent a wide variety of types of colleges.

The results of the questionnaire are presented in Tables 1 through 9.

CONCLUSIONS

From the responses to the questionnaire, it can be concluded that:

1. Pornography is ill-defined by these young people. They are essentially uncertain as to just what pornography is.
2. In a number of cases, the first exposure to pornography was at an early age and occurred in the home and many times through the family, including not only brother or sister, but also father or mother.
3. Exposure to pornography has reportedly had little influence on their attitudes.

¹This study was completed under a grant from the Commission on Obscenity and Pornography. The authors were assisted by the Misses Kathleen Dougherty, Valerie Farkas, Susan Hurley, Dorothy Klemm, Carole Lamour, Gerry May, Terry Santino, Angela Sordi, and Joanne Marina, Good Counsel College.

²The questionnaire was adapted from an interview schedule developed by Dr. David Manning White.

4. There is little moral concern about pornography; what objections there are principally have to do with embarrassment or shock, or absence of meaning or purpose in presentation.

5. There are obvious differences in response by men and women. Men were more open and willing to admit exposure to pornography and reactions to it. Women were more apt to be embarrassed and to feel degraded by exposure, leading to the observation that women are still the repositories for the social mores of our times.

6. The students were in favor of control of or restriction of access to pornography by the young.

Table 1
RESPONDENTS BY INSTITUTION

	M	F	Total
Westchester Community College	95	124	219
State University of New York at Purchase	19	70	89
Good Counsel College	---	149	149
Iona College	37	---	37
Pace College	30	18	48
Sarah Lawrence College	13	30	43
Briarcliff College	7	25	32
King's College	4	4	8
Totals	205	420	625

Table 2
RESPONDENTS BY RELIGION, AGE, AND LEVEL OF EDUCATION

Religion	M	F	Total
Roman Catholic	63%	67%	65%
Protestant	17%	12%	14%
Hebrew	12%	16%	15%
Other	2%	4%	3%
None	4%	2%	3%

Age	M	F	Total
17 years	3%	4%	3%
18 years	20%	30%	27%
19 years	28%	29%	29%
20 years	13%	12%	13%
21 years	7%	6%	6%
22 years	6%	1%	3%
23-29 years	21%	8%	12%
30-39 years	---	5%	3%
40-49 years	---	5%	4%
50-59 years	---	1%	1%
Median age	20 years	19 years	19 years

Level of Education	M	F	Total
College freshman	49%	40%	43%
College sophomore	35%	30%	31%
College junior	8%	12%	11%
College senior	4%	5%	4%
College graduate	4%	11%	9%

Table 3

Could you give me a definition of what you consider to be pornography in literature, films, and other forms of communication?

	M	F	Total
Filth, animal-level sex, degraded	17%	20%	19%
Nudity, the sex act, sexual excitement	8%	23%	18%
Exploitation of sex	19%	17%	18%
Bad taste, not artistic, what minors should not see	9%	6%	7%
No plot, meaning, purpose	4%	3%	3%
No moral or social value	----	3%	2%
Only in the mind	4%	---	1%
No	7%	4%	5%
Nothing is	4%	1%	2%
No answer, blank	28%	24%	25%

Table 4

At what age were you exposed to pornography in any form?

	M	F	Total
Never, not exposed	3%	4%	3%
Preschool	4%	3%	3%
Grammar school (ages 6-12)	45%	24%	30%
High school (ages 13-18)	28%	43%	38%
19 and over	1%	6%	5%
Don't remember	5%	4%	5%
No answer	10%	15%	13%
Median age (in years)	13	15	14

Table 5

What was the form and source of the pornography?

Form	M	F	Total
Magazines	32%	24%	26%
Books	21%	29%	26%
Films	10%	17%	15%
Pictures	14%	12%	13%
Comics, cartoons, pamphlets	4%	1%	2%
People, language, conversation	2%	1%	1%
Subway walls, billboards, ads	----	1%	1%
Don't remember	1%	1%	1%
No answer	13%	11%	12%
Source			
Friend, older person	12%	5%	7%
Store, newsstand	2%	3%	3%
Relative	2%	3%	2%
Found on street; Times Square	2%	1%	2%
Kids, classmates	2%	1%	1%
Home, private home, party, babysitting	----	1%	1%
School	1%	----	----
Office, business	----	1%	----

Table 6

How often do you believe you have been voluntarily exposed to any form of pornography?

	M	F	Total
Never	7%	12%	10%
Once or twice	2%	9%	7%
A few times, occasionally	28%	33%	30%
Often, many times	32%	15%	20%
Constantly (TV, newspapers)	3%	5%	5%
Not enough	1%	---	---
When I want to be	3%	1%	2%
Don't know	4%	1%	2%
No answer	18%	23%	21%

Table 7

How much influence do you think this exposure has had on your attitudes toward sex?

	M	F	Total
None	41%	43%	42%
Little	26%	25%	25%
Some	4%	2%	3%
A lot	19%	8%	12%
No answer	8%	15%	13%

Table 8

What is your reaction to pornography at the moment you are exposed to it?

	M	F	Total
Embarrassment, shock, rejection, disgust	19%	52%	41%
Enjoy it, interested, curious, want to participate, hot, wow!	28%	16%	20%
No reaction	14%	10%	12%
Humorous, bored	10%	4%	6%
Don't know; varies	5%	3%	5%
No such thing; it's life	2%	---	1%
No answer	19%	13%	16%

Table 9

Should pornography be restricted in any way? How?

	M	F	Total
Yes	47%	61%	56%
By age, maturity*	51%	57%	56%
By law, government*	1%	9%	7%
Through mails, street sales*	3%	6%	5%
Ban hard core*	12%	1%	4%
Control movie makers, theaters*	2%	2%	2%
No	42%	23%	30%
It's up to individual**	17%	28%	23%
People will get it anyway**	4%	7%	6%
No answer	10%	15%	13%

* Expressed as percentage of "yes" replies.

** Expressed as percentage of "no" replies.

Effects of Mass Media on the Sexual Behavior of Adolescent Females

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THE PROBLEM

In recent years, there has been increased speculation and some empirical evidence regarding individual and group differences in sexual response to various types of erotic stimuli. Kinsey, for example, found males to be more spontaneously and frequently aroused by visual stimuli than were females (when the observer had no specific knowledge of or relationship with the person or activity being observed). Female sexual arousal, on the other hand, more often varied with the degree to which certain erotic stimuli evoked feelings and fantasies of emotional involvement and "romantic love." In essence, "romantic love" appeared to be the strongest conscious motivating factor in female sexual behavior.

The purpose of this exploratory study is (a) to identify the various popular media which function as catalysts for evoking or reinforcing the "love theme" and associated erotic feelings among adolescent females, and (b) to examine the ways and degree to which these stimuli affected their sexual behavior.

METHOD

The data dealing with adolescent female erotic response were gathered from two sources: (a) the Webster School for pregnant junior and senior high school girls, and (b) a girl's two-year junior college. Both institutions are in the District of Columbia.

The 487 girls enrolled in the Project¹ at the Webster School ranged in age from 13 to 18 years, were generally from large, lower-middle-class Negro families (many

¹The major purpose of the Webster School Project was to provide pregnant school-age girls with an opportunity to continue their junior or senior high school education until they could return to regular school (a period of four months, including 6 to 8 weeks post partum). In addition to the educational program, an interdisciplinary team of a psychologist (the author), social workers, a nurse, a nutritionist, and a doctor worked with the girls and their families and ministered to their needs in the areas of emotional, social, and medical health and welfare.

coming from broken homes), and were about average in intelligence. Test findings and interviews revealed that many of these girls were rather immature or unrealistic in their understanding of love and sexual behavior, and many apparently possessed a rather negative self-image in terms of their attractiveness as female figures.

The junior college girls were white and were generally from upper-middle-class suburban homes. They also tended to be of average intelligence. Only a small percentage of these girls expected to continue their education beyond the two years of junior college. Rather, most looked forward to marriage and a family in the immediate future.²

During the 3-year operation of the Webster School Project, information was gathered on the types of erotic stimuli which appeared to be associated in some way with the sexual behavior and subsequent pregnancies of the girls. Most of this information was gathered informally through a series of interviews, an extensive testing program,³ and 18 weekly group sessions with the psychologist.

Information about the junior college girls was gathered and collected from the results of a short questionnaire administered to a small sample of 91 sophomore volunteers enrolled in a psychology course in Personality and Social Adjustment being taught by the author. The questionnaire asked the students to evaluate the erotic characteristics of books, magazines, records, television, and style of dress.

THE FINDINGS

With regard to reading matter, 31% of the college girls indicated that they had not read any book in the past 4 years that they considered pornographic. The book most often mentioned as having been read and being pornographic (by 44% of the girls) was *Candy*. Nineteen other titles were mentioned by only one girl. Nine titles were mentioned by two or three girls, and eight titles were mentioned by at least six of the girls.

A perusal of the titles in Table 1 indicates that these girls did not expose themselves to marginal or "pulp" erotica, but found some of the more widely circulated books to be sexually provocative.

The Webster School girls, in contrast, did practically no reading of erotic books. In fact, most of the girls in the seventh and eighth grades were far below their grade level in reading skills and found the reading of *any* kind of book to be a tedious activity. Although the students in the 9th, 10th, 11th, and 12th grades produced better scores, the class reading averages were below their grade level. General motivation for reading was poor.

Of the college girls sampled, 30% reported reading no magazines they considered pornographic. *Playboy* was mentioned by 33%, and "confession" and "romance" magazines were mentioned by slightly less than 50% of these girls as being pornographic. *Playboy* and the "confession" and "romance" type

²In contrast to the experience of all the girls in the Webster School Project, only 38% of the junior college girls indicated having experienced sexual intercourse either prior to or during their attendance at college.

³The testing program in which the girls participated during the week following their enrollment generally included a social-sex attitude inventory (designed to elicit information on dating patterns, sex attitudes, marriage, ego strengths, and child rearing), a sentence completion inventory, and intelligence and achievement tests.

Table I

TITLES OF BOOKS READ AND CONSIDERED PORNOGRAPHIC
BY FOUR OR MORE OF 91 JUNIOR COLLEGE GIRLS

<i>Titles</i>	<i>Number</i>
<i>Candy</i>	40
<i>Harrod Experiment</i>	13
<i>Fanny Hill</i>	9
<i>The Carpetbaggers</i>	8
<i>Adventurers</i>	7
<i>Myra Breckinridge</i>	6
<i>Valley of the Dolls</i>	6
<i>Lady Chatterley's Lover</i>	6
<i>Exhibitionist</i>	4
<i>Tropic of Cancer</i>	4

magazines accounted for 95% of the titles reported by the girls as having been read and being pornographic. Thus, these girls limited their magazine reading to those widely circulated magazines found on most newsstands; they did feel, however, that some of these were sexually provocative. In contrast to the almost total absence of book reading among the Webster girls, most of them did report reading about the sex scandals and romances contained in the popular "confession" magazines often found in their homes. They indicated particular interest in the magazine articles and pictures concerning unusual births and premature babies.

Musical recordings present quite a different picture from the one presented by reading matter. *All* of the Webster School girls reported listening and dancing to rock and roll music, either with other girls or with boys. Since they rarely went to parties or went out in cars, one must conclude that most of the music was heard at home—either in the girls' or the boys' homes. The girls claimed that the rhythms and the lyrics frequently evoked romantic feelings which were sexually exciting, and that this arousal sometimes gave rise to sex play and love making.

Among the junior college girls, only 14% reported that *no* records had stimulated erotic feelings. Thus, both groups of girls exposed themselves a great deal to music which they found erotically stimulating—and the theme of this music was romantic love.

However, the *type* of music differed somewhat between the two groups. The Webster group preferred "rock and roll," whereas the junior college students mentioned titles of ballads and other of the slow "pop" songs in addition to acid rock, soul music, and jazz. Virtually all of the rock and blues songs appear to contain sexual overtones either in the lyrics, the orchestration, the style of presentation, or the rhythms; and the lyrical themes tend to reinforce the romantic image by appealing to the woman's need or desire to love.

By virtue of its seemingly universal appeal to adolescent females, one must recognize the significance of recorded music as an integral part of the social fabric of the adolescent subculture.

When it comes to the question of television in the experience of adolescent females, certain striking differences between the two groups become apparent. Many of the Webster School girls, in reporting the conditions and circumstances under which their first sexual intercourse took place, indicated that it occurred in

front of a television set. Often, the girls found themselves alone with the boy either in their own or in the boy's home. Since the girls generally had difficulty in maintaining meaningful or satisfactory conversation with the boys, television served as a welcome substitute. Another common substitute for social conversation among heterosexual adolescent pairs is handholding and caressing. The romantic scenes portrayed on the television screen evoked feelings of love with its associated erotic component; this facilitated caressing, and sometimes culminated in sexual intercourse.

Among the junior college girls, however, 64% indicated that there were *no* television shows which stimulated their erotic feelings, 13% reported that "Tom Jones" served as such a stimulant, and 9% indicated that movies (romantic, love stories, foreign films) tended to arouse them sexually. In fact, when later asked which media they found to be most provocative, only one of the college girls indicated television.

In comparing the several mass media, 60% of the college girls stated that movies were most provocative or sexually stimulating. Among the Webster School girls, however, movies appeared to play a much smaller role. Only occasionally were these girls taken out to the movies (the boys could not afford it more often), and they were only rarely exposed to the nudity and sex play portrayed in some foreign films.

When the media are ranked for each group according to how provocative or sexually stimulating they found them, the contrast between the groups becomes evident (see Table 2).

Table 2

Media	Webster girls	College girls*
Movies	3	1
Books	4	2
Records	2	3
Television	1	4

*Interestingly, when the college girls were asked which of the media they would suppress for being provocative, 42% of the girls said they would suppress movies and 25% stated they would suppress books. Both findings are consistent with the response to the earlier question about which media were considered the most sexually stimulating.

When asked what kind of behavior or feelings were stimulated by these media, the college girls generally indicated feelings of affection, romance, and sentimentality, a strong desire to be with their boyfriends, and a definite "sexual reaction."

Contrary to some popular belief, the Webster girls exhibited no interest whatsoever in looking at pictures of nude males or in hearing dirty stories. Many were actually repelled or disgusted by them.

When the college girls were asked whether men in tight bathing trunks aroused erotic feelings or behavior which otherwise might not be present, the overwhelming response was "no." In fact, 57% said there was no particular type of clothing or manner of dress which would stimulate erotic feelings which were not otherwise present.

Finally, consider the college girls' responses to the question: "Would sex education eliminate pornographic interest?" More than half of the girls answered in the affirmative ("yes" or "probably"). The Webster School experience also provides corroborating evidence in this regard, since practically all of the girls indicated that their special sex education program (provided in the program for pregnant girls) was beneficial in helping them to understand themselves and their love relations and in aiding them to develop more socially acceptable patterns of behavior.

SUMMARY AND CONCLUSIONS

These data tend to lend substantial support to the hypothesis that in the social life of most adolescent girls, love and sex are closely associated in thought and action. In essence, the findings indicate that sexual arousal in the adolescent female is accomplished primarily through the awakening of "love" feelings and fantasies.

It is clear from these data that since teenage girls are rarely exposed to hardcore pornography (in its usual sense), the effects of exposure to pornography cannot be considered a causal or even significant contributory factor in their sexual behavior.

Rather, the relationship between the mass media and the sexual arousal of the adolescent female must be viewed as the function of a third variable—the awakening of fantasies and feelings associated with "love." Apparently, recorded music and television programs with a romantic content were the strongest catalysts and reinforcing agents for the younger, pregnant girls, while movies and books were most significant for the college girls.

Even though the ordering of importance may differ somewhat among the two groups, it is clear that recorded music, particularly, appears to have great appeal to a large segment of the adolescent female population. In response to music, similar effects (the evocation of sentiments of love and affection with their concomitant sexual component) were reported among *all* girls attending Webster School (including those not in the Project), among the Webster girls' peer groups outside of the school, and among the junior college sophomores. Thus, it can be said that, irrespective of differences in the population in age, ethnic membership, socioeconomic class, dating patterns, sexual experience, and a host of other variables, music, by playing on the girls' emotions to arouse love and affection, frequently serves as a catalyst for love and thereby a stimulus for sexual arousal in the adolescent female.

In conclusion, we might state that the romantic content of movies, television, and pop music apparently have a universal appeal to girls, inasmuch as the reactions of the junior college girls were found to be more similar to than different from the reactions evoked among lower-middle-class pregnant teenage girls. Clearly, the pregnant girls did not become pregnant as a result of exposure to obscene and pornographic materials. Rather, the stimuli which typically "turned them on" and which they labeled as erotically arousing were the ordinary forms of mass media to which practically all members of our culture are frequently exposed.

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