

AN ABSTRACT OF THE THESIS OF

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HUMAN SEXUALITY COURSE UPON STUDENT SEX
KNOWLEDGE AND ATTITUDES TOWARD SELECTED
SEXUAL TOPICS

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(Dr. Gerald Becker)

The purpose of this research was to determine the effects of a college human sexuality course upon sex knowledge, attitudes toward sexual behaviors of non-significant others, and attitudes toward the sexual behaviors of self and spouse. In addition, the study sought to investigate the relationship between knowledge gain and attitude change, and the relationship between attitude changes involving the sexual behaviors of non-significant others and attitude changes toward the sexual behavior of self and spouse.

The primary source of data was a knowledge and attitude instrument developed by the author. The "Premarital Sexual Permissiveness Scale" by Reiss also was used. The participants in the research completed the instruments at the beginning and end of spring term 1972.

The experimental group consisted of 167 students of all academic classes enrolled in the course "Human Sexuality." The control group was made up of 89 students who had signed up for

the course but been denied admission because of limitations on enrollment.

The basic data analyses were made with one-way analysis of variance, analysis of covariance, and t-tests. Chi square, Pearson product-moment correlation, and a multivariate analysis technique involving an extension of Hotellings T^2 also were used. In the data analyses experimental males, experimental females, and control males, and control females were considered separately.

The following conclusions were drawn from the results of this study:

1. Males and females differed significantly on several demographic variables, many sexual experience variables, and all of the pretest attitude measures, but did not differ significantly on the pretest measure of knowledge.
2. Peripheral attitude change was related to one demographic and two sexual history variables for experimental females and two variables for experimental males.
3. Knowledge gain was related to one demographic and one sexual history variable for experimental females and was unrelated to any variables for experimental males.
4. Experimental males and females showed significantly greater knowledge gain than control males and females.
5. Experimental males and females became significantly more liberal on attitudes toward sexual behaviors of non-significant others than control males and females.
6. Significant liberalization in attitudes toward behaviors of non-significant others was observed in experimental males and females for some topics, e. g. homosexual relations, mutual masturbation, and oral-genital contacts, but not for others, e. g. premarital intercourse and cohabitation.

7. Experimental females more often than experimental males exhibited significant changes in attitudes toward a variety of sexual behaviors involving non significant others.

8. Experimental males and females did not change significantly more than control males and females from pretest to posttest on the "Premarital Sexual Permissiveness Scale."

9. Significant pretest differences between experimental males and females and between control males and females on the "Premarital Sexual Permissiveness Scale" remained upon posttesting.

10. As measured by the summary scores the experimental males and females did not change significantly more than control males and females from pretest to posttest on attitudes toward sexual behaviors of self and spouse.

11. On specific areas of sexual behavior involving the self or spouse, e.g. nudity and mutual masturbation, the experimental males and females became significantly more liberal than the control males and females.

12. Experimental females exhibited more significant changes in attitudes toward sexual behaviors of self and spouse than did experimental males.

13. There was no correlation between knowledge change and any measure of attitude change.

14. The correlation between change on central attitudes involving the self and spouse and peripheral attitudes involving non significant others was positive and significantly different from zero correlation, but not large enough to predict change in one type of attitude from observations of change in the other type.

A Study to Determine the Effects of a College Human
Sexuality Course upon Student Sex Knowledge and
Attitudes Toward Selected Sexual Topics

by

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I. INTRODUCTION

The Need for Human Sexuality Education in
Colleges and Universities

American society today is permeated, if not saturated, by allusions to, references to, statements about, images of, and concerns with sexuality. The causes of this situation and resulting problems are not easily separated. Nevertheless, an obvious outgrowth of this situation is an increasing awareness on the part of professionals in biology, medicine, public health, sociology, psychology, ethics, religion, education, and recreation of the need for human sexuality education. Observations of society and research by these professionals strongly suggest that human sexuality education is needed to help our society, and individuals within the society, solve, alleviate, or at least cope with some important societal and individual problems.

Venereal disease, out-of-wedlock births, unwanted pregnancies among married women, abortion, pornography, and drug abuse are among the societal problems upon which many professionals hope

human sexuality education can have a beneficial effect. All of these problems, with the exception of unwanted pregnancies among married women, are well known. The problem of unwanted pregnancies among married women has received extensive study only recently, and the research has shown it to be a very significant problem, far larger than anticipated (Ryder and Westoff, 1973).

The reasons for anticipating that human sexuality education can help alleviate each of these problems, except that of drug abuse, are fairly obvious. It is only recently that the relationship of drug abuse to sexual problems has been recognized (Fisher, 1967; Philip, 1967; Lief, 1969) and studied (Lester, 1973), and it still has received little study and publicity. In spite of evidence (Schwartz, 1972; Teen-age . . . , 1972) that human sexuality education can help alleviate these problems there is no reason to believe that human sexuality education will ever eliminate them. Even if it were impossible to justify human sexuality education in terms of alleviating societal problems there still would be a rationale for providing it to help individuals within the society manage their sexuality in healthy ways. Indeed, this rationale may be the most cogent and receives support even from those who doubt that human sexuality education can have any substantial impact on the societal problems (e.g. Simon and Gagnon, 1967; Reiss, 1968; Cornacchia, 1971; Gordon, 1974).

Simon and Gagnon have written: "The more viable assumption behind an interest in sex education is that it should work to make sex a more rewarding part of people's lives" (1967, p. 74). This position has been echoed by Reiss: "Sex education will not necessarily reduce to nothing our venereal disease and premarital pregnancy rates, but it can, if taught in accord with accepted educational principles, make the sexual choices of our children less psychologically costly ... [by allowing them to] choose in a more calm and less compulsive fashion" (1968, p. 56).

There are many psychological factors within individuals and trends within American society which encourage or facilitate compulsive, anxious, and unrewarding sexual behavior. Some of these personal motives have always been present and remain relatively unchanged; others have always been present but are now exacerbated by trends in our society. Some of the trends may be viewed as integral parts of the "sexual revolution" or "sexual renaissance"; others are relatively independent of the sexual revolution but interact in such a way that their effects are difficult to separate from those of the sexual revolution. In any case, there are many personal motives and societal trends which contribute to sexual problems in both adults and young people, and most of these motives

and trends are especially powerful in directing the behavior and attitudes of adolescents and young adults. Whether or not the college years are viewed as an extension of adolescence or as a separate stage of development (Bernard, 1967), all of the motives of importance to adolescents are still of importance to significant proportions of college students.

A basic motive of all people is the need to love and be loved. The part this need plays in female sexual behavior has long been recognized. Recently, however, Riesman has perceived an increasing preoccupation with this need among both sexes, and a resulting change in the meaning or motivation behind the sexual activity of young males:

It seems to me that young people are increasingly preoccupied with their capacity to love as well as to be loved. And I have the impression that sexual relations themselves when they do occur come about less frequently from a desire on the part of the boys to present trophies to their own male vanity than to secure themselves against the anxiety that they may not be truly and deeply loved, or capable of love (Riesman, 1959, p. 213).

Closely related to the need to love and be loved is the "need for intimacy" (Mitchell, 1972, p. 447). Mitchell describes the need for intimacy as developing in preadolescence and becoming central in adolescence. He writes:

The emotional conflicts generated in adolescence 'demand' a close companion, and most adolescents finds [sic] it extremely difficult to make it through their daily existence without having someone in whom they can confide and articulate their most pressing problems (Mitchell, 1972, p. 448).

Writing specifically about college students Bernard has described a new preoccupation among them with "the need for extremely intense interaction with a person of the other sex" (1967, p. 16).

She expands on this idea as follows:

They seem to have to think themselves through against one another. They have to share themselves with one another. They need to explore themselves and the other in order to define themselves. Studies of communication in marriage report that the early years are by far the most talk-filled (Bernard, 1967, p. 16).

Although Bernard does not evaluate the relationship of physical and emotional intimacy she does observe that "it is this kind of need rather than any overpowering sexual drive that often leads young people into one another's arms--and bed" (1967, p. 16). Mitchell,

on the other hand, views the sexual involvement resulting from the need for intimacy as both a natural extension of psychological intimacy and "a basic avenue for creating bonds of psychological intimacy" (1972, p. 449) for those adolescents who have difficulty establishing it in other ways.

Like the need for intimacy, the "desire for passion" or "intensity" (Mitchell, 1972, p. 455) may be more easily experienced through sexual behavior than through other avenues (1972, p. 456). Mitchell observes that "the most intense acknowledgment (validation) of adolescent inner subjectivity comes through passion" (1972, p. 456). He also observes that the sexual passion achieved in sexual behavior is valuable because it involves: "1) the intense experiencing of self; 2) an intense experiencing of another self; and, 3) the experience of having someone else acknowledge the self" (1972, p. 456).

One of the products of the desire for passion is a proneness toward experimenting with new experiences. Other motives which encourage experimentation are curiosity and the need to develop a sense of competence in handling the environment (Mitchell, 1972). Competence in the sexual realm can only be gained by experimentation (Mitchell, 1972). The relationship between experimentation and the competence motive to the sexual behavior of college age students has been noted by several commentators (Rule, 1964; Bell and Chaskes, 1970; Arnstein, 1971). Rule observed that:

...many college students consciously seek critical life experiences that they believe will test out and confirm their adulthood. The college years are a period of reaching for sexual maturity, for a personal identity which includes sexuality (1964, p. 56).

Commenting upon both the political and sexual behavior of young people, Bell and Chaskes noted that the "modus vivendi has been to experience, to confront, to participate" (1970, p. 81). One form of sexual experimentation which has been increasing in recent years is cohabitation. Although largely growth producing (Macklin, 1974), this practice has also led many couples to identify sexual problems which used to be recognized only after marriage (Bauer and Stein, 1973). Another observer has noted that the "openness to new experience" (Arnstein, 1971, p. 29) has led recently to experimentations with bisexuality. Although this kind of sexual experimentation may also be growth producing, it also "may be quite confusing because the gratifications received may be different and not easy to choose between" (Arnstein, 1971, p. 29).

Among the psychological motives encouraging sexual behavior discussed thus far it is likely that the need to love and be loved is the only one widely recognized by laymen. Another widely recognized motive is the need for a sense of belonging. This need may facilitate sexual behavior in two ways. In the first place, the need encourages young people to get together. If conditions when together are such

as to foster a sense of security and intimacy then sexual behavior is more likely (Mitchell, 1972). In the second place, participation in sexual behaviors may be a criteria for inclusion or full status in a group. Females who do not engage in intimate sexual behavior may find themselves with few dates and may be treated as an oddball by some other females (Ginott, 1969). Males may be ridiculed for not exploiting females and for not always making the effort towards intercourse (Hicks and Taylor, 1973). This type of peer pressure is apt to be more important today than in the past because of the increasing degree to which the society is segregated by age and because of the inability of family and society to proscribe sexual behavior and prescribe moral values.

Paralleling and interacting with the need for belonging is the tendency toward "identification and imitation" (Mitchell, 1972, p. 457) of socially valued behavior. Sexual desirability and success are highly valued in our society, and all forms of sexuality are widely presented in the media. According to Mitchell sexually inactive 15 year olds identifying with the amount of sex presented in the media may develop "a borderline feeling of incompleteness" (1972, p. 457). Other authors (Baver and Stein, 1973; Bauman, 1969) discussing college students have used other terms:

...many celibate young males and females who do not yet wish to be sexually involved and who would not have

felt sexually involved and who would not have felt sexually inadequate in an earlier generation now experience anxiety and doubts about their choice (Bauer and Stein, 1973, p. 825).

Some students are completely taken in by a belief in the extent of the sexual revolution and may be convinced that their contemporaries are leading active sexual lives. . . They may fear that their lack of sexual experiences makes them somehow weak or effeminate (Bauman, 1969, p. 438).

The effects on personal sexual attitudes of identification with more liberal sexual attitudes and behavior have been described by other authors:

To perceive more prescribed sexual behavior than is actually prescribed will result in a redefinition of one's own personal standard towards the liberal direction. . . the person is under psychological pressure to change in direction relative to the extent that his personal role is felt to be deviant (Balswick and Anderson, 1969, p. 778).

According to Bauer and Stein (1973) identification with the popular public image of the younger generation as being casual in dress and sex also creates pressures on some students. Bauer and Stein also note that such pressure may contribute to a "failure to function at all" (1973, p. 824).

At the same time the media has been giving increasing coverage to apparent and/or real trends liberalizing sexual attitudes and behavior, the media also has become more open about and tolerant of homosexuality. In 1959 Riesman observed that this increasing

tolerance and discussion was being accompanied by a new fear for many young people, i. e. , the fear that they might be homosexual (Riesman, 1959). Since Riesman's observations other professionals have discussed "homosexual crises" (Wright, 1965 p. 93), "homosexual panic" (Bauman, 1969, p. 439; Coons, 1970, p. 536), and "pseudo homosexuality" (Holverstott, 1966, p. 20) occurring often in young people. These terms sometimes refer to fears of being homosexual based upon limited homosexual experience and/or homosexual fantasies. Very often these terms refer to fears based simply on a lack of heterosexual experience. Apparently, many young people identify their lack of heterosexual sexual experience in a sex-oriented society as being not simply "weak or effeminate" (Bauman, 1969, p. 438) but clearly homosexual. More recent observations (Arnstein, 1971; Munter, 1973) indicate that concerns about homosexuality may be declining somewhat. Arnstein has written that "college students are not as worried about homosexuality as they once were, but that is a long way from saying that their concern is negligible" (1971, p. 24). Perhaps fewer students are identifying the simple lack of heterosexual experience as indicating homosexuality.

The list of psychological factors operating within each adolescent to encourage sexual behavior could be expanded by a discussion of the desire for dominance, the desire for submissiveness, a tendency

to be rebellious and develop a negative identity (Mitchell, 1972), and other factors. All of these psychological factors encouraging sexual behavior are essentially normal and natural facets of the search for personal and sexual identity and maturity. Nevertheless, the expression of these motives through sexual behavior often produces problems for the individual. These problems arise because the sexual behavior does not satisfy the underlying psychological motive, or because the behavior conflicts with basic personal or societal attitudes or values, or because the individual misinterprets the meaning of his behavior, or because of some unanticipated outcome, e. g. pregnancy or venereal disease or loss of respect for partner. Of crucial importance in determining the outcome of much adolescent sexual behavior is the attitude of society toward adolescent sexual activity. In our society the adolescent receives a double message. On the one hand society says that adolescent sexual behavior is immoral or unhealthy or bad. As Gadpaille has noted:

Some cultures and some child rearing practices--ours included--force adolescents to break tabus and defy prohibitions in order to exhibit normal sexuality. They thus incur automatic definition as being sick or bad by the defining authorities. Adolescents may be forced into genuine abnormality by the inaccessibility of normal, guilt-free sexual channels and outlets (Gadpaille, 1970, p. 483).

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On the other hand, our society holds up sexual competence as an ideal and does little or nothing to counteract the personal psychological

factors and societal trends which encourage sexual activity.

The number of societal trends which encourage sexual behavior are even more numerous than the psychological motives operating within the individual. One of these trends has been referred to already, i.e. the increasing candor of the media. The effects of this trend's interaction with the psychological motive of identification was noted. The interaction of most other societal trends cannot be so clearly linked to a particular psychological motive.

One of the new developments which represents a significant change from the past is the abandonment of chaperonage. As Ginott (1969) has pointed out, in some societies it is taken for granted that youth will yield to temptation. In these societies male youth is suspected and female youth is chaperoned. In contrast, our society provides male youth with an automobile and female youth with great freedom (Ginott, 1969). Often coupled with the lack of physical chaperonage is the lack of the invisible chaperonage provided by religious or moral convictions. With these two forms of chaperonage missing, "boys are...not protected from having to make advances to girls by the latter's obvious unavailability" (Riesman, 1959, p. 213). Thus, greater pressure is put upon the male to make sexual advances, youth are often left on their own before they have developed mature standards (Down, 1967), and there is "maximum temptation, and minimum supervision" (Ginott, 1969, p. 163).

Along with the freedom from the fear of "detection" there also is now freedom from the fear of "conception." As long as the female had reason to fear the possibility of pregnancy the absence of chaperonage was not as great a pressure to engage in sexual intercourse as it has become. However, the development of effective, widely available contraceptives has made it impossible for a girl to "use fear of pregnancy as an excuse for chastity" (Ginott, 1969, p. 164).

With the removal of detection and conception from the trio of major negative deterrents to sexual intercourse only the fear of "infection" is left. Evidence indicates, however, that the fear of infection has never been viewed as a compelling reason for avoiding sexual intercourse (Robinson and King, 1969). The relatively mild deterrent effect of the fear of venereal disease has been even further weakened by the widespread myth that gonorrhea is no worse than the common cold, and by the widespread knowledge that syphilis and gonorrhea can be effectively treated by penicillin.

Since there is no longer the fear of detection, conception, or infection, three of the major excuses for not engaging in sexual intercourse have been removed. The effect has been to greatly increase the pressures to give in to temptations and persuasions. Coupled with the loss of negative restraints has been an increase in positive pressures. But, to attribute all of the positive pressures of today's

society to the sexual revolution is an oversimplification. The sexual revolution has occurred hand-in-hand with other changes or trends in society. The interaction between these trends is often substantial, and various observers may ascribe the effects of one trend to another.

One of the most significant co-mingling trends has been the changing role of men and women. The traditional sex role definitions are summarized in the following paragraphs:

The ability to perform the sexual act has been a criterion for man's evaluation of himself from time immemorial. Virility used to be conceived of as a unilateral expression of male sexuality... [now it] may also be that sexual prowess represents an alternative to economic success in validating manhood. Any deficiencies in this realm, therefore, are much more ego-threatening to men than to women. Sexual adequacy affects the relationship of men not only to women but also to other men. Sexual contacts may be important for standing in the peer group.

In general, it can be said that masculinity is more important to men than femininity is to women, and that sexual performance is more inextricably linked to feelings of masculine self-worth than even motherhood is to women... If a man is not masculine, not a 'real man', he is nothing. But a woman can be unfeminine, and still be a person. There is a neuter category for women, but not for men (Hacker, 1957, p. 231).

Hacker's comments on the meaning of sex to males are still valid today. Indeed, they may be even more accurate. But, the comments on female sexuality and the comparisons with male sexuality are increasingly inaccurate. The difference between the

old and new situations is summarized by Madison:

Traditionally, the late adolescent challenge of sex-role identity has not been as sharp for girls because sexual potency has not been a clear-cut social expectation or defining criterion for femaleness--nor has sexual adequacy been a central part of the girl's self-image. Dating and generally being popular have usually been sufficient...changing sexual mores, however, have introduced a new criterion for femininity for the gradually increasing number of girls who now engage in sexual intercourse as part of normal dating relations; some discover that they do not achieve orgasm and are as concerned as the male has been about potency (Madison, 1971, p. 111).

Other observers have noted the same situation. Brenton (1972) observed that college females are concerned not only about not achieving orgasm but also about their orgasms not being strong enough. Riesman (1959) and Bernard (1966) have observed that females are under pressure to accede to intercourse to avoid being labeled frigid. Bernard also has observed that "the current sexual renaissance reflects an era which encourages--compels or coerces, some might say--women to equal if not outdo men in their enjoyment of the male sex act" (Bernard, 1966, p. 80).

The increasing importance of sexual competence to females has been so great as to be almost impossible to overlook. Less obvious has been the growing importance to males of sexual competence (Riesman, 1959; Halleck, 1967; Birenbaum, 1970). Birenbaum views sexuality as becoming the only avenue available to both males

and females for expressing their own autonomy in a society where the nature of its work, political, and religious systems prevent their use as a means of achieving social esteem and a sense of accomplishment and community (Birenbaum, 1970). A different explanation is offered by Riesman (1959). He observes that the increasing freedom allowed educated men in the expression of themselves means they may express their "feminine" qualities more openly and do things they once would have rejected. A "curious consequence" of this is "that they cannot clearly and unequivocally define themselves as men by their roles" (Riesman, 1959, p. 213). Sexual activity is substituted for role performance. Women are under analogous pressures because of the increasing parallel freedoms granted them (Riesman, 1959).

This increasing emphasis on female sexual freedom, experimentation and gratification also has meant added pressures on the male (Bernard, 1966; Williams, 1969; Hauser, 1970; Burrus, 1974). With the increasing acceptance and importance of female sexual satisfaction the male is more likely to be found wanting by either his own evaluation or his partner's evaluation. A common result of this unfavorable evaluation is impotence. An increase in impotence has been noted among young, even teenage, unmarried males (Hauser, 1970; Parade's . . . , 1972; Burrus, 1974). Many observers attribute this increase to the new aggressiveness in females (Hauser, 1970;

Parade's . . . , 1972; Burrus, 1974). Ironically, this new aggressiveness also has made increasing numbers of men feel that they are "being used" and are "not being desired for themselves" (Parade's . . . , 1972, p. 5). The new emphasis on female sexual performance also likely contributes to the fact that "many males in our culture remain virginal because of their irrational fear of rejection or fear of failure in their performance in the sexual area" (Ard, 1970, p. 86).

Another aspect of our society has long contributed to the number of impotent men, and is now contributing to the "cult of orgasm" (Melton, 1967, p. 11) affecting both men and women -- society's emphasis on performance (Halleck, 1967). As Williams has pointed out, our society, and also most of the families within the society, emphasizes building one's self-esteem and identity upon "achievement, performance, grades, shining in group activities" (Williams, 1969, p. 191). It is not unreasonable that this orientation should permeate the sexual sphere as well as all the others. How it has permeated the sexual lives of some college students has been noted by Halleck: "An emphasis on orgasm pervades all age groups in our society. Among university students the search for the ultimate orgasm has become almost a competitive matter" (1967, p. 685).

Integrally related to the increasing emphasis upon female sexuality has been the decline of the double standard (Birenbaum,

1970). The decline of the double standard also has played a part in the development of a new sexual idealism. Although good and healthy in many ways this sexual idealism also creates some new strains. A common form for this idealism to take is an agreement by both members of a dyad that it is acceptable for each party to have intimate relationships with others. But, when one of the parties does in fact have an affair with someone else it is apt to produce a good deal of hurt in the "faithful" partner. In some situations the relationship may be broken and the emotional turmoil may be as great or greater than that occurring in a divorce (Teen-age sex... , 1972).

Because the double standard has declined, but not fallen, additional stresses have been created. According to Hicks and Taylor the double standard "continues to flourish ... on the campus" (1973, p. 46), and this situation creates a lack of trust between the sexes.

Also a mixed blessing has been the increasing tolerance of homosexuals. On the one hand this tolerance has made life much easier for those students who are homosexual, particularly those able to admit it publicly. On the other hand, the new tolerance and the growth of the Gay Liberation Movement have offered "broadened sexual options" (Bauer and Stein, 1973, p. 834) that mean greater pressures on all young people. These pressures are felt most keenly

by the homosexuals who are not ready or willing to "come out" (Munier, 1973, p. 54).

Two additional trends not directly related to the sexual revolution, which contribute to the stresses and pressures in the area of sexuality, are the trend among both males and females of achieving physical and/or emotional maturity at a younger age (Kinch, 1967; Goldstein, Haerberle, and McBride, 1971), and the trend towards postponing marriage until after the completion of collegiate or even advanced degrees (McCary, 1967). The accelerated physical development means that many youth encounter strong sexual urges before they are psychologically and socially mature enough to handle them with uniform success. The product of earlier maturation and delayed marriage is greater pressure to engage in premarital sexual activity.

The number of individual psychological motives and societal trends affecting sexual attitudes and behaviors suggests that there should be many opportunities for the development of a host of unfortunate situations: e.g. myths, misconceptions, confused attitudes, self-defeating attitudes, guilt feelings, confused sexual behaviors, and self-defeating sexual behaviors. Evidence supporting this suspicion may be found in the many descriptions of sexual problems affecting college students (Kirkendall, 1963; Braaten and Darling, 1965; Wright, 1965; Arnstein, 1971; Fromhart, 1971; Thompson, 1971; Brenton, 1972; Parade's . . . , 1972; Teen-age

sex . . . , 1972; Bauer and Stein, 1973). Logic also suggests that human sexuality education prior to the college years could alleviate or prevent the development of many of these problems, and reduce the need for collegiate human sexuality education. Evidence to support this assumption is not currently available. On the other hand, there is a great deal of evidence (in addition to that involving the sexual problems of college students and others in the society) which suggest that the human sexuality education given youth in the past has been inadequate. There also is considerable evidence suggesting that the human sexuality education provided by parents and schools is likely to remain inadequate. Justification for the preceding statement comes from a variety of empirical and experimental data.

One source of data about the poor quality of the human sexuality education given students comes from observations and studies of the knowledge possessed by college students. This evidence is particularly noteworthy because it is this group of youth which should be most knowledgeable and possess the fewest myths and misconceptions. Over thirty years ago one educator made the following observations on the sex knowledge of his junior college students:

They are inevitably affected by America's preoccupation with sex, and yet their lack of adequate information and of intelligent attitudes is often pathetically apparent. . . The result is confusion and sometimes tragedy (Bowman, 1942, p. 159).

Numerous observers since Bowman have made essentially the same observations about students in a variety of college settings (Perkins, 1959; Prescott, 1968; Bowman, 1970; Siddal, 1971; Brenton, 1972; Hicks and Taylor, 1973). Also numerous are the actual studies of student knowledge which validate these observations (Hamilton, 1948; Keller, 1959; Kilander, 1959; Angrist, 1966; Fuller, 1967; McCreary-Juhasz, 1967; Buckner, 1969; Juhasz, 1969; Madison, 1971; Benell, 1973; Warren and St. Pierre, 1973).

Other data corroborating the statement that the human sexuality education given students has been inadequate come from informal and systematic examinations of student attitudes toward the education they have received from parents (Freeman and Freeman, 1966; Couch, 1967; Bennett, Taylor, and Ford, 1969; Gudridge, 1969) and from schools (Freeman and Freeman, 1966; Bennett, Taylor, and Ford, 1969). The study by Gudridge is most damning because it was based on the evaluations of 18,000 elementary and high school students.

Still other data supporting the conclusion that youth receive inadequate human sexuality education from parents come from empirical studies of the human sexuality education parents give their offspring. The best summary of the literature in this area is that of Shipman:

The general pattern is for some 70% of the mothers to do reasonably well in handling the questions of small

children and for some 60% in preparing their daughters for the menarche, but they accomplish little else. This study, like those of previous years, confirms the absence of general sex training by parents. An examination of questionnaire data in all of the studies since the Davis study in 1929 fails to reveal any appreciable improvement in the quality of parental sex education in spite of the current suppositions about increasing societal sophistication in this area (Shipman, 1968, p. 3).

Although Shipman's summary of the data available in 1968 is unquestionably accurate, the situation may have changed somewhat since then. In a 1972 interview Carlfred Broderick commented that:

...parents are going to have a unique role in their children's sex education. I am impressed at how many programs increasingly involve the parents.... Unquestionably sex education is better today than it was five years ago. Not so much because the schools have improved their programs, which they have, but because every parent in America has had to face the question of what he is doing for his own children. I think more individual parents are trying to do a better job because of the controversy (Lief, 1972, p. 26).

Notwithstanding this hopeful view, there is little reason to believe that parents will ever be completely adequate as sex educators for their children. At least 70% of the physician-educators and marriage counselors questioned by one investigator disagreed with the suggestion that if parents assumed their proper responsibility for human sexuality education there would be no need for education on the

topic in public schools (Coombs, 1971). The physician-educators and marriage counselors queried by Coombs were not asked to explain the reasons for this belief, but they overwhelmingly agreed that "Most parents have deep emotional resistance toward discussing sex with their children" (Coombs, 1971, p. 273). Other observers have noted that parents feel too "embarrassed" (Holmes, Nicol, and Stubbs, 1968, p. 40) to discuss sex with their children. Wiechmann notes six additional articles published between 1964 and 1968 in which the authors "reason or imply that many parents are unapproachable about sexual facts" (1968, p. 101). One reason for this reluctance of parents to discuss sex freely with their children is that many parents have learned emotional attitudes in their own childhood or adolescence which make such discussion difficult (Wake, 1966). Also, discussions of sexuality arouse ambivalence and anxiety in parents (Simon and Gagnon, 1967; Gudridge, 1969). Parents are forced to recognize the sexual drives of their children (Simon and Gagnon, 1967; Gudridge, 1969). Parents are also faced with having "to present a sense of their own sexuality to their children" (Simon and Gagnon, 1967, p. 75), and they fear that their children will move from general questions to personal ones involving their parents' own sexual behavior (Wake, 1966). Many parents are hesitant to discuss sex because they cannot explain why they feel sexual intercourse between a married couple is acceptable or even beautiful while

the same behavior between an unmarried couple equally in love is unacceptable (Koontz, 1969). An inability to explain the changing meanings of masculinity and femininity, and the changing relationship between the sexes, together with ambivalent feelings about these changes, discourages other parents from discussing sex with their children (W. Smith, 1968).

Not only do parents have difficulty discussing sexuality with their children, but they apparently encounter more difficulty as their children reach adolescence:

...45% of the females estimated that their childhood inquiries on sexual subjects were answered casually and truthfully by mothers, while only 20% of them indicated that similar inquiries during puberty and adolescence were answered fully by mothers. Males indicated a similar drop in adequate sex communication with fathers from 15% to 4%; and with their mothers from 21% to 10%. The significance of this drop is enhanced when we consider that sexual curiosity and sexual anxieties reach their peak in adolescence (Shipman, 1968, p. 5).

The barriers to open communication which inhibit parents have counterparts in youth. Many youth feel reluctant to approach their parents because they have already perceived their parents' ambivalencies and negative attitudes through a myriad of common everyday events or through the manner in which the parents handled their first sexual questions (Couch, 1967; Gudridge, 1969; Koontz, 1969). Fehrle (1970) has outlined ten nonverbal ways in which parents

convey their own attitudes about sexuality and instill them in their children. Many young people also feel ambivalent about or reluctant to face the sexuality of their parents (Simon and Gagnon, 1967; Madison, 1971).

Avoidance of conflict may be another reason why adolescents do not approach their parents on sexual topics. Once females have reached college age the results of two studies suggest that they avoid discussing sexual behavior and attitudes with their mothers to avoid conflict resulting from their different standards (Bell and Burkle, 1961; Freeman and Freeman, 1966).

The situation of parents finding it more difficult to talk about sex with their children as their children grow older is paralleled by the situation of children as they get older finding it more difficult to talk about sex with their parents (Dubbe, 1965). Significantly, at the same time as Dubbe's adolescent subjects were finding it more difficult to talk about sexual matters they were finding it easier to talk about a host of other topics (1965).

These barriers in children and parents may be broken down over time, but this will take many years of human sexuality education being offered throughout the country, and they will likely never be destroyed completely. This conclusion is based upon the recognition that many of these barriers derive from very central attitudes and values, attitudes and values which are resistant to change (Newcomb, Turner,

and Converse, 1965; Rokeach, 1968). It is the many emotional and psychological barriers to communication between parents and offspring, far more than the substantial parental ignorance in the area of sexuality (Wake, 1966; Smith, 1968; Wiechmann, 1968), which suggest that the need for human sexuality education in the schools and colleges will remain.

The reasons youth fail to receive adequate human sexuality education from the schools are as numerous as the reasons they fail to receive adequate education from parents. In the same way that many parents give their offspring no human sexuality education, many schools do not offer their students education in this area. Although many studies have shown that increasing numbers of schools and school districts are offering some form of education in this area (Richardson, 1931; Kenkel, 1957; Dager, Harper and Whitehurst, 1962; Bayer and Nye, 1964; Ferinden, 1968; Gudridge, 1969; Administrator . . . , 1969; Gendel and Green, 1971; McConnell, 1971; Reed, 1973; Schwartz, 1972), the studies also show that very substantial numbers of students receive no human sexuality education at all.

The most common reasons for the failure to include human sexuality education in public schools are: (1) fears of public opposition (Johnson and Schutt, 1966; Slaymaker, 1971; Reed, 1973); (2) actual public opposition (Dorr, 1969; Baker and Darcy, 1970; Breasted,

1970; Darden, 1971; Controversial . . . , 1970); (3) lack of qualified teachers (Kenkel, 1957; Manley, 1964; Johnson and Schutt, 1966; Kerns, 1970; Slaymaker, 1971; Baker and Darcy, 1970; Bayer and Nye, 1964; Gendel and Green, 1971; Reed, 1973).

Also paralleling the situation with parents is the fact that those human sexuality programs actually offered by schools are usually inadequate. The reasons these programs are inadequate include: (1) inadequately prepared teachers (Dager, Harper, and Whitehurst, 1962; Bayer and Nye, 1964; Malfetti and Rubin, 1967; Bender, 1971; Fassbender, 1971; Rubin and Adams, 1972); (2) a lack of good teaching materials (Reiss, 1957; Rubin, 1969; VD education . . . , 1972; Gendel and Green, 1971; Dalis, 1971); (3) lack of curriculum guides for teachers to follow (Reiss, 1968; Gudridge, 1969; Slaymaker, 1971; Gendel and Green, 1971); (4) the exclusion of controversial topics, such as abortion, homosexuality, masturbation, contraception, venereal disease prophylaxis, oral-genital contacts, intercourse, and the social-psychological aspects of human sexuality, from presentation and discussion (Dager, Whitehurst, and Harper, 1966; Johnson and Schutt, 1966; Reiss, 1968; Bell, 1969; Gudridge, 1969; Kirkendall, 1970; Baker and Darcy, 1970; Gendel and Green, 1971; Slaymaker, 1971; Ishisaka, 1972); (5) a highly moralistic bias (Gudridge, 1969; Rubin, 1969; Kirkendall, 1970; Klein, 1971; Schultz, 1968); (6) several poor pedagogical methods of presenting the

material (Kirkendall, 1970; Simon and Gagnon, 1967; Rubin, 1969; Gudridge, 1969); and (7) poor timing in the presentation of material, either giving it too early or too late (Simon and Gagnon, 1967; Juhasz, 1969; Carter, 1969; Wiechmann, 1968; Shipman, 1968; Kirkendall and Calderwood, 1965; Gudridge, 1969; Manley, 1959; Behlmer, 1961). The essence of these criticisms have been summed up by the words of a student speaking to Deryck Calderwood: "they give as little information as possible as late as possible to as few as possible" (Gudridge, 1969, p. 31).

Although the many inadequacies of school human sexuality education programs are all correctable, it seems unlikely that many, if not most, of the weaknesses, will persist for some time. There are three major reasons for this conclusion. One, teacher education institutions and school districts have shown little initiative in increasing the size and scope of teacher training programs in this area (Malfetti and Rubin, 1967; Force, 1970; Juhasz, 1970; Reed, 1971). Two, in spite of widespread parental support for human sexuality education, there also remains considerable opposition to human sexuality education in the schools (Dorr, 1969; Darden, 1971). Three, the moralistic bias which interferes with human sexuality education is still widely supported by many parents (Libby, 1971; Dearth, 1974), and teachers and administrators (Bennett, Taylor, and Ford, 1969; Greenberg, 1970; Dager, Whitehurst, and Harper,

1966), as well as by many human sexuality educators (e.g. Deschin, 1969; Hoyman, 1969; Burt and Brower, 1970, Steinhaus, 1965).

In addition to the reasons for college human sexuality education already advanced there are a few more which derive from the nature of the college experience and the goals and purposes of any institution of higher learning. One aspect of the college environment which may create or heighten already present sexual conflicts or anxieties is the extra tolerance of a wide variety of sexual mores and conduct. As long ago as 1935 a leader in the field of human sexuality education noted that there is "apt to be on the campus more familiarity with unconventional theories of sex conduct" (Groves, 1935, p. 356). Although today there is much greater familiarity with unconventional theories of sex conduct throughout our entire society than was true 40 years ago, in the more tolerant, liberated atmosphere of today's college these theories are apt to be even more openly discussed, and, in fact, openly lived. It is one thing to experience unconventional behaviors through books, magazines, television, and movies, and quite another thing to experience them through personal contact with roommates, classmates, new friends and acquaintances.

Being in college also confronts many individuals with increased intellectual demands and these demands may make them question their own intellectual ability. A means of compensating for the concomitant lack of self esteem may be to seek success with members

of the opposite sex (Riesman, 1959). Attempts to find oneself through sex are common throughout our society, but the logicality of this is never more apparent than during the college years when students are faced with the challenges of simultaneously achieving emotional and sexual maturity and of completing their intellectual development. It has been suggested by Anna Freud that "from a developmental point of view the four years of college come at the worst possible time in the schedule of biological and emotional development" (Group . . . , 1966, p. 40-41).

The doubts about intellectual ability mentioned above may also be stimulated by the fact that the individual is competing with a greater number of individuals than was true during primary and secondary school. The size of the college or university may also contribute to a sense of alienation, insignificance, or loneliness, and attempts to overcome these feelings may involve students in sexual relationships (Jencks, 1964).

Although the college and societal atmosphere together with normal adolescent psychological motives insure that almost every individual experience some sexual tensions, anxieties, or conflicts, the inference should not be made that these sexual problems are so great that most students want or need professional help in solving them. However, because students do not seek out professional help the equally false inference should not be made that they would not

like help. As long ago as 1936 the American Student Federation petitioned colleges and universities to offer credit courses in human sexuality education (Bromley and Britten, 1938). Before that time, as well as since, human sexuality courses have been enthusiastically received by students (Williams, 1940; Perkins, 1959; Sexuality . . . , 1969; Malcolm, 1971; Teen-age . . . , 1972). Students also have been instrumental in organizing courses (Sexuality . . . , 1969; Malcolm, 1971). Moreover, when asked, college students in the past 20 years have consistently listed sexuality as one of their two or three major concerns -- education, Viet Nam, and general mental health being the only areas to rank higher in surveys (Lantagne, 1956; Thornburg, 1969; Lussier, 1972). In the survey by Lussier the greatest unanimity on any issue was found on the topic of human sexuality education. Eighty-two percent of the students polled felt that human sexuality education should be offered at all education levels (Lussier, 1972). Indirect evidence of college student concerns with human sexuality comes from studies of their thought patterns and conversation and from examination of their letters to a college newspaper advice column. A study by Toohey "indicated that at any given instant in the college lecture hall 20% of both men and women were thinking about sex" (1969, p. 72). Cameron (1970) found that the only topics of conversation in competition with sex as the most talked about subject were school, schoolwork, and drinking. Of 700

consecutive letters sent to the writer of an advice column appearing in 50 student newspapers 53% concerned sex (Swift, 1974).

The essence of the many rationales for human sexuality education offered thus far was stated very simply by Bromley and Britten when they noted that human sexuality education is as important a subject as "many required academic subjects" (1938, p. 29). More recently this idea has been eloquently echoed by The College Subcommittee of the Sex Education Task Force of the New York State Coalition for Family Planning:

...if higher education is truly committed to enhancing the quality of human existence, then our colleges must start with the most compelling issues in the lives of their students. Unquestionably, sexuality is a particularly crucial and evolving issue in the college years (1974, p. 128).

One further compelling argument for human sexuality education at the college level remains. Colleges and universities have a commitment to a search for the truth, the dissemination of knowledge, and the creation of wisdom. This same commitment to the search for truth and dissemination of knowledge should be sufficient reason for providing human sexuality education.

The Need for Research on the Effects of Human Sexuality
Education Upon Central Sexual Attitudes

The relationships between beliefs, values, attitudes, and behavior are still a matter of dispute. In the first place, there is no consensus on the definition or characterization of each of the concepts. In the second place, research into the relationships has provided conflicting evidence. However, there does seem to be fairly widespread acceptance of the following assumptions: (1) "values are ... abstract ideals, ... not tied to any specific attitude object or situation, representing a person's beliefs about ideal modes of conduct and ideal terminal goals" (Rokeach, 1968, p. 124); (2) attitudes are to some degree dependent upon beliefs and values; (3) some attitudes are more "important" than others; (4) among the more "important" attitudes are those involving the individual's own self-concept and behavior; (5) increases in knowledge do not always produce corresponding amounts of attitude change; (6) the more "important" or "central" attitudes are more resistant to change than are more "peripheral" attitudes; (7) behavior is influenced by beliefs, values, and attitudes.

In the human sexuality education area the crucial fifth and sixth assumptions are verified by the fact that the widespread dissemination of birth control or venereal disease information is not automatically

followed by a decrease in the number of unwanted pregnancies or venereal disease cases (Simon and Gagnon, 1967; Holmes, Nicol, and Stubbs, 1968; Reiss, 1968; Fehrle, 1970; Cornacchia, 1971). Gain of additional information may modify the behavior of some individuals, but the behavior of other individuals will be unchanged. This is because values and attitudes also are involved--attitudes about the use of birth control or venereal disease prophylaxis, or attitudes about the importance of spontaneity in sexual relations, or attitudes about the individual's own participation in premarital sexual intercourse, or other attitudes. Some of these attitudes, such as the individual's attitudes toward his or her own participation in premarital sexual intercourse, are central. It may be this type of central attitude which must be changed if the additional knowledge is to have any effect. Analogous changes may be necessary to alleviate many other individual sexual problems involving tensions, anxieties, conflicts, and other behaviors.

Undoubtedly collegiate human sexuality programs will never be able to produce the changes in central attitudes necessary to alleviate many individual sexual problems. Only psychotherapy of some kind will suffice in many cases. Nevertheless, it is possible that human sexuality education can produce some significant changes in central attitudes, and research evidence indicating that these changes can be achieved would significantly strengthen the argument for human sexuality education in some people's minds.

Purpose of the Study

The need for a human sexuality course at Oregon State University was established in 1970 by a study of student desire for such a course (Vennewitz, 1970), and by the overwhelming student response to two human sexuality lectures on campus by Dr. Arnold Rustin, coordinator of the human sexuality course at Portland State University. This need and desire for a human sexuality course led the Family Life Department at the University to establish a course Winter term 1972. The purpose of this study is to examine the effects of this course upon the knowledge and attitudes of the students enrolled Spring term 1972, and to test attitude change theories which suggest that human sexuality education will produce changes in the peripheral attitudes involving sexual behavior of non significant others, but few changes in the central attitudes involving the individual's own sexual behavior and that of his or her spouse.

Importance of the Study

The importance of this study may be examined on three different levels. At the most basic, and general level, the study derives significance because of the importance of sex in the lives of men and women. As Hey has noted:

The most influential single fact about a person is sex. In most people's lives, sex limits the choice of clothing, kind of toys and play, and even the person's name. . . . there is a growing realization that sexuality is a fundamental dimension of the total personality throughout life. (Hey, 1966, p. 17).

A basic part of an individual's personality are his sex attitudes. An individual's sexual attitudes are at least as important to him as the attitudes he holds toward any other area in his self concept or the external world (Satir, 1967). The sexual attitudes of an individual relate to his concepts of masculinity and femininity, his child rearing concepts, his conception of love, and his ideas toward a host of family life, business and even world situations. An individual's attitudes toward various sexual topics affect his interpersonal relationships with members of both his/her own sex and the opposite sex. These attitudes affect the social groups to which an individual belongs, determine courting behaviors, influence marital decisions, and determine the satisfaction he receives from his sexual activities. It is perhaps only a minor over statement for Trainer to state: "Sex threads through our whole life, . . . If our sex life is a success we feel that our life is a success, if it is not, then life is a 'bust' for us." (Treleaven, 1971, p. 3). Considering the importance of sex attitudes in people's lives, this research achieves importance in so far as it increases the fund of knowledge about current sex attitudes and how they change as a result of an educational experience.

At a practical level this investigation derives importance because of the light it sheds on the potential effectiveness of college human sexuality courses, and the actual effectiveness of the course studied. The stated or implied objectives of any human sexuality education course are to increase the knowledge of students and assist in the achievement of healthy attitudes. Without research it is impossible to conclusively determine whether or not college human sexuality courses are in fact effective in increasing knowledge and effecting attitude change. This research represents one of the first efforts to measure such course outcomes. Prior to this investigation there had been only one other effort reported in the literature (Rubin, 1970; Rubin and Adams, 1972). At the same time the research being reported in this paper was being conducted a somewhat parallel investigation was being conducted by another investigator (Bernard, 1973). Since these two concurrent investigations were completed another evaluation of college human sexuality education outcomes has been conducted and reported (Rees and Zimmerman, 1974). The investigation being reported in this paper retains a uniqueness, however, because it included not only the same instrument used by Rubin (1970) and another instrument very similar to that used by Bernard (1973), but also a measure of central sexual attitudes not found on any other sex attitude questionnaire. The measure of central sexual attitudes used in this study also accords the study some additional

importance because it represents the first use of an attempted improvement in sex attitude questionnaires suggested by the noted sexologist Isadore Rubin (1965).

At a theoretical level this investigation has importance because of the basic assumptions about peripheral and central attitudes which will be tested. These assumptions are as follows. One, the more central an attitude the more it will resist change. Two, a change in a more central attitude will result in concomittant changes in more peripheral related attitudes. These two assumptions derive from another assumption about attitudes which will not be tested. This assumption is that not all attitudes are equally important to the individual, i. e., that attitudes vary in centrality or along a central-peripheral dimension. The testing of the two assumptions described is made possible by the inclusion of specific attitude instruments for the measurement of peripheral and central attitudes. Only two investigations have attempted similar research (Rokeach, Rehyer, and Wisemann, 1968; Cronen and Conville, 1973), and neither of them focused on the important area of sex attitudes.

Hypotheses

The specific null hypotheses to be tested are listed below. Each of these null hypotheses will be stated in terms of the "control groups" and "experimental groups". The term "control groups" will refer to

both the control group consisting of males only and the control group consisting of females only. Similarly, "experimental groups" will refer to the two experimental groups composed of members of one sex or the other. The separation of the two treatment groups by sex means that each comparison will initially involve four groups

Hypothesis 1: There are no significant differences between the experimental and control groups on the demographic and previous sexual experience variables.

Hypothesis 2: There are no significant differences between the experimental and control groups at the time of pretesting on the knowledge and attitude summary scores.

Hypothesis 3: There are no significant differences between the experimental and control groups in the amount of change shown on posttest knowledge and attitude summary scores.

Hypothesis 4: There are no relationships between demographic variables and significant changes between pretesting and posttesting on knowledge or attitude summary scores.

Hypothesis 5: There is no correlation between the amount of knowledge gain and the amount of attitude change.

Hypothesis 6: There is no correlation between the amount of change on central attitudes involving the self and spouse and the amount of change on peripheral attitudes involving non significant others.

Hypothesis 7: There are no attitude topic areas which show greater change from pretest to posttest than other topic areas.

Limitations of the Study

The most obvious limitation involving the study is that its focus is on sexual attitudes and not sexual behavior. Therefore, although attitudes are widely regarded as the determiners of behavior, the relationship between attitudes and behavior has not been firmly established, and any assumptions about behavior change based upon observed attitude change may or may not be valid.

Another obvious limitation derives from the focus of the study upon a college human sexuality course. Generalizations to elementary or secondary education courses may or may not be accurate. The same caution applies to college courses in broader areas, such as psychology, sociology, marriage preparation, or family life, which may have a substantial emphasis on sexuality.

The format of the course and quality of instructors also limits the generalizability of the results. Results from a study on a strictly lecture type presentation of the same information might be quite different from the results of this study involving a course in which lectures are followed by question-and-answer periods and then by small group discussions. Similarly, the quality of instructors may have substantial effects on the outcomes of a course.

Not to be overlooked, either, is the fact that a course with similar format and instructors might produce different outcomes by including different information and different approaches to the topics. A course in which the class presentations are keyed to cover items in the knowledge and attitude instruments, or vice versa, might also produce different outcomes.

All but the last limitation noted are beyond the control of the experimenter and all imply no lack of quality in the research. They might properly be called delimitations rather than limitations. There

are other limitations, however, which may affect the quality of the research. Some of these limitations are beyond the control of any investigator while others are substantially controllable.

One source of potentially substantial, and largely uncontrollable, bias in any study involves the use of self-selected or volunteer subjects, as this research did. Two recent reports of investigations into the nature of volunteer bias in sex research suggest that there is indeed the likelihood of bias being present (Diamant, 1970; Kaats and Davis, 1971). The possibility of this bias suggest that the results only cautiously be generalized to situations where participation in the research is involuntary. Insofar as this potential bias is accounted for in arriving at conclusions it will not affect the quality of the research.

A potential bias in this research which is less easily accountable for involves differences between the experimental and control groups. Although both groups had volunteered to take the course, the experimental group was required to take the research instrument while the control group was not. There is further possibility for bias because about 15% of the potential control group sample refused to participate in the investigation. The close similarity between the control and experimental groups on background variables, previous sexual experience, knowledge and attitude suggest that this bias is minimal.

However, these variables may not include all those potentially significant.

Closely related to the problem of volunteer bias is the problem of socially acceptable responses biasing results of investigations. The conditions which encourage socially acceptable responses, as noted by a number of authors (Nunnally, 1959; Udry and Morris, 1967; Clayton, 1971), all apply to the area of sexual attitudes and behavior. Moreover, a number of studies have found socially acceptable responses biasing the results of sex research (Freeman and Freeman, 1966; Clark and Tifft, 1966; Udry and Morris, 1967; Clayton, 1971). However, a number of tactics may be taken to alleviate the conditions which encourage giving socially acceptable responses (Pomeroy, 1963; Kauffman, 1970; Nunnally, 1959). Every one of these tactics, with the exception of having subjects take the questionnaire in private, were incorporated into this investigation. Because of these efforts to eliminate the bias of socially acceptable responses the author believes that their influence is probably present but slight.

Additional support for this assumption comes from studies in which verbal responses to sexual questions were compared with responses to the same questions on anonymous questionnaires (Ellis, 1947; Knudsen, Pope, and Irish, 1967; Wiseman, 1972). Moreover, as long as the tendency to give socially acceptable answers is present equally in both control and experimental groups, on both pretest and

posttest, the effect of the bias will not influence the results obtained in the main thrust of the research.

Another possible source of bias in the results of this study is that due to "demand characteristics" (Orne, 1962). However, demand characteristics seem to be of greater concern in research involving interviews or experimental situations where the subject is not anonymous (Silverman, 1968). In this research the subjects took the questionnaire anonymously and the author was especially careful to answer questions about the purpose of the study without revealing his hypotheses. The author doubts if much error occurred in this study due to demand characteristics.

Volunteer bias, socially acceptable responses, and biases due to demand characteristics are not the only sources of possible bias which could effect this research. There are a number of response sets or "test-taking habits" (Nunnally, 1959, p. 364) which may affect the results of this study and any other study involving questionnaires with similar question forms. These responses include: (1) the tendency to make choices at the extreme or middle of a continuum (Nunnally, 1959); (2) a tendency to respond positively or negatively (Helmstadter, 1964); (3) a tendency to take a stand or choose a neutral position (Nunnally, 1959); (4) a tendency to guess (Helmstadter, 1964). The first three of these response sets apply particularly to the Likert-type questions on the questionnaire (Bartlett, Quay and Wrightsman,

1960) and the last two apply to the knowledge questions. There is very little that a researcher can do to prevent these tendencies because the efforts to eliminate one are likely to encourage another. However, since the results of at least one study have shown "no significant evidence of interindividual positional response set" (Wilbur, 1970, p. 161), and this study is involved with groups of individuals where these sets are likely to cancel each other out in group scores, no efforts were made to prevent the operation of these sets.

A further source of response error which could influence the results of this study is attitude confusion on the part of the subjects (Edwards, 1957). If this is true, it would seem to be especially true with respect to sex attitudes, as Albert Ellis has noted:

The average American--in fact, virtually every living American--is completely muddled-, mixed-, and messed-up in his sex views, feelings, and acts. Much of the time he is quite consciously confused and knows that he does not know sex 'right' from 'wrong'. Or else he keeps changing his mind about what is sexually proper and improper.... The typical American male or female has no monolithic sex attitude, but only very pluralistic attitudes. And, while his or her attitudes on politics, religion, economics, or what you will may bend to be fairly consistent and self-harmonious, his or her sex beliefs normally tend to be self-contradictory and, in many ways, self-defeating (Ellis, 1968, p. 19).

As Edwards points out, however, verbal expressions of attitudes are still in most instances better indicators than observations of

non-verbal behavior (1957). This is particularly true where anonymity is provided and there is no social pressure to conform (Edwards, 1957), as should have been the situation in this study.

Another possible limitation of the study stems from the experimental design. The difficulty with the design used is the possibility of an interaction between the pretest and the experimental manipulation. In a review of 12 studies attempting to measure the effects of pretesting, Rosnow and Suls found that three showed "no appreciable systematic effects", six had "moderate dampening effect", and only three showed "some sort of facilitative effect" (1970, p. 338). Importantly, however, the three studies finding pretesting effects involved volunteers. Based upon this observation they conducted another experiment in which the results confirmed the differential effects of volunteer bias upon pretesting effects. The importance of these results for this study may be discounted somewhat, though, because the research reviewed by Rosnow and Suls typically involved subjects who volunteered to participate in experiments of one kind or another, rather than to participate in a course. Thus, if pretesting effects are likely to be found in this experiment, they are most likely to be found in the control group, rather than the experimental group. A study into the effects of interviews about sexual behavior and attitudes upon subsequent sexual behaviors and attitudes was conducted by Fujita, et. al. (1971). Where behavior was concerned

they found negligible effect, but where attitudes were concerned they found a greater tendency toward reflection. On the other hand, Bernard (1973) was unable to find any pretesting or pretesting treatment interaction effects in an investigation involving both volunteers and sex attitudes.

Another possible limitation upon the research results arises from the use of research instruments with only face validity. Although there is no evidence to suggest that the instruments do not measure what they purport to measure, the absence of any positive proof opens the results to doubt. This is potentially the most significant limitation of the study.

Definitions

Attitude. An attitude is a relatively stable, learned organization of tendencies to perceive, think of, feel towards, and act towards an element of the world in a particular way.

Centrality of an attitude. The centrality of an attitude refers to its closeness to or distance from the innermost core of the individual's being. The attitudes of greatest centrality are those involving the individual's self concept (ego), his basic values, beliefs, and ideals which make up his philosophy of life, and the most cherished and loved people in his/her life, which usually are family members, but may

occasionally include others. The attitudes toward self and basic values are probably the most central for all individuals, but just which part of an individual's self concept or which basic value is the most central entity undoubtedly varies from individual to individual. Similarly, the rank order of the many attitudes toward self, values, and cherished others undoubtedly varies among individuals. It is assumed that the more central an attitude is the more interconnections it will have with other attitudes. The centrality of an attitude is not dependent upon temporary situational factors, but the prominence or salience may be dependent upon situational factors.

Ego-involvement. The psychological manifestation of central attitudes is involvement. Ego-involvement is the psychological manifestation of attitudes related to the self-concept or basic values.

Human sexuality education. Human sexuality education refers to any more or less comprehensive educational course, unit or experience with a focus on human sexuality. Although the term is applicable to the same educational experiences most often called "sex education," and both terms will be used in this paper, the term human sexuality education will be preferred because it more accurately describes the

content of the material presented. Ideally, all topics related to human sexuality, including homosexuality, premarital intercourse, specific contraceptive methods, and other controversial topics, should be included. Morals should be discussed but moralizing should be avoided. Small group process should be an integral part of the program.

Sexual liberalism. On parts IIIA and IIIB of the attitude measurement instrument sexual liberalism is defined as a response which indicates a choice toward greater freedom of sexual expression for others in society than would be indicated by choices on the scale which would mean a choice for less freedom of sexual expression for others in society. On parts IVA and IVB sexual liberalism is defined as a response which indicates a greater ease of participation in a given sexual behavior, or greater tolerance for a given sexual behavior on part of spouse, than would be indicated by other responses.

Basic Assumptions

1. The person most central to the individual is himself/herself.
2. The person most central to the individual after himself/herself is his/her spouse.

3. In the individual's attitude system relating to himself/herself, among the most central attitudes are those relating to his/her evaluation of his/her own goodness or badness, his/her evaluation of his/her own competence, and his/her evaluation of his/her lovability.
4. Among the more central attitudes related to the individual's evaluation of his competence, worthwhileness, and lovability are his/her evaluations of his/her sexual competence, sexual desirability, and sexual morality.
5. In the individual's attitude system relating to his/her spouse, among the most central attitudes are those relating to his/her evaluation of the spouse's goodness or badness, worthwhileness, competence, and lovability.
6. Among the more central attitudes related to the individual's evaluation of his/her spouse's competence, worthwhileness, and lovability are his/her evaluations of the spouse's sexual competence, sexual desirability, and sexual morality.
7. Among the most central attitudes for all people are those related to the value and meaning of life, what is and isn't moral, and what is and isn't normal.
8. Parts I and IV of the attitude measurement instrument used in this investigation measure central attitudes.

9. The public attitudes expressed in this research closely approximate the private attitudes of the respondents.

II. REVIEW OF RELATED LITERATURE

The Concept of Attitude and Attitude Change Theories

One reviewer of the literature on attitudes and attitude change wrote:

The literature on attitudes is voluminous, and the definitions nearly as numerous as the authors who have written on the subject. The term 'attitude' would appear to be one of the most widely (and differently) defined terms in the whole of social psychology; and yet, for some reason, social scientists appear to understand each other when using it (Davis, 1965, p. 8).

Though written ten years ago this description of the situation is no less true today. The definitions still vary widely, and yet, they are ambiguous enough that it is difficult to determine precisely how they are similar or different, and what difference the variations in definition make. And, as Rokeach has noted, "most definitions of attitude seem more or less interchangeable insofar as attitude measurement and hypothesis-testing are concerned" (1968, p. 110). Because the literature contains so many definitions, and because the differences among the definitions seem to have little practical significance, no effort will be made to list, or even to sample, the definitions. Instead, the characteristics which seem most widely attributed to attitudes will be enumerated. Based upon his own analysis, and those of other authors (Davis, 1965; Shaw and Wright,

1967; Sherif and Sherif, 1967a; Zimbardo and Ebbesen, 1969), this author suggests that the following characterizations are unanimously, or near unanimously, made about attitudes: (1) attitudes are not innate or the result of maturation, but are learned; (2) once formed, attitudes are relatively stable and enduring; (3) attitudes have specific social referents, which may be people, groups of people, objects, issues, institutions, or other elements in the world; (4) attitudes have an evaluative and/or affective component; (5) attitudes have a cognitive or belief component; (6) attitudes are interrelated to one another.

Characterizations with somewhat less support are: (1) attitudes are a readiness, disposition, or predisposition; (2) attitudes are essentially internal entities, which cannot be measured directly, but can only be inferred from observable data. Widely held, but with considerable disagreement from some theorists, is the characterization of attitudes as having a behavioral component. Although many writers agree that an attitude is a predisposition, some of them see the predisposition as merely a predisposition to respond, or to evaluate, or to experience, or to be motivated, but not to act.

The number of attitude change theories is as great or greater than the number of attitude definitions. However, there are only one or two dozen major attitude change theories. The term "major" does not mean that any of these theories can properly be called "comprehensive." Rather, each of the major theories simply is more complete

or innovative than others in its own limited area. Because most aspects of these theories have no practical significance or theoretical importance for this investigation, these theories will not be discussed in their entirety. However, the portions directly relevant to this investigation will be discussed in the following subsection, and the many variables affecting attitude change identified by these theories will be described in the following paragraphs.

To present a coherent and complete description of all the variables of attitude change, and their interaction, would be to expound a theory of attitude change which has not yet been developed. The fact that such a theory has not been developed is due to the theoretical complexity of the problem and the practical difficulties in testing many propositions.

In the following paragraphs the author does not intend to attempt such a theory. Rather, he intends to briefly review those attitude change variables which have been theorized, and/or identified by research, without attempting to explain how each variable interacts with every other. Similar reviews have been made by Davis (1965), Newcomb, Turner, and Converse (1965), Zimbardo and Ebbesen (1969), and others. This author's review will draw upon the reviews of the authors just noted, as well as other publications noted in the following section.

The variables affecting attitude change may be arbitrarily divided into those within the individual and those outside the individual. The latter group will be considered first.

One of the important external variables is the person presenting the information. This person may be called the communicator, agent of communication, or persuader, but is most often referred to as the source. There are four perceptions of the source which affect the individual's evaluation of the source, and this evaluation of the source in turn affects the individual's response to the message of the source. One of these perceptions involves the expertise of the source. The source's knowledge, background, and reliability, at least as perceived by the individual, affect how the person responds to the source. The source's trustworthiness also affects how he is responded to. Trustworthiness is based upon the source's impartiality, bias, and motives for personal gain. These two attributes of expertise and trustworthiness are commonly considered under the term source credibility. Another factor influencing the receptor's perception of the source is the source's perceived "attitudinal distance" (Newcomb, Turner, and Converse, 1965) from the receptor. The similarity or dissimilarity of the source and receptor, with regard to irrelevant attitudes, as well as the attitude in question, may affect the receptor's evaluation of the source, and subsequently the kind and amount of attitude change. Extraneous or irrelevant source traits may also

have the same effect. Irrelevant source traits include the source's prestige, sociability, mannerisms, speaking ability, and personal attractiveness.

Another important facet of the situation involves the presence or absence of group influence on the individual. Most people are influenced by groups to which they belong or wish to belong, and the amount of influence is dependent upon the importance of the group to the individual. Even a group of little salience for an individual may have an effect if physically present. Although the influence of any group may be most noticeable when physically present, it may also be felt when physically absent. The influence of a group may be weakened if even one other person takes a position contrary to the group.

Other situational variables affecting attitude change involve the message or communication containing the beliefs, attitudes, opinions, or values which act as a stimulus or stimuli to change. One of these variable clusters involves the manner of presentation of the attitude change stimuli. When the situation involves a two-sided debate the order of argument may influence change. That is, whether the attitude change message is delivered first and benefits from primacy effects, or whether the message is delivered last and benefits from recency effects may affect the amount of change. Primacy-recency effects also affect the points made within an argument. In other words,

whether the strongest point comes first or last may have an effect. Whether an argument is rational or emotional, complex or simple, fear arousing or non-fear arousing, may affect attitude change. Explicit conclusion drawing may produce more or less attitude change than a "draw-your-own-conclusion" approach.

The medium of a message may affect its effectiveness. Involved here are mass media communications, face-to-face communications, written messages, oral messages, and non-verbal messages.

Almost unquestionably, the variable which most affects attitude change is the receptor of attitude change stimuli. Receptors react differently depending upon whether they are source-oriented or message oriented. Intelligence, knowledge level, critical-evaluative ability, ability to understand, and personality characteristics, such as low self esteem, dogmatism, and authoritarianism, may affect attitude change. Also factors are the recipient's interest in the message, the recipient's attention (selective or complete), and the recipient's comprehension.

Variables in the attitude itself may also play a part. The initial attitude, its strength, whether or not it has been made public, and its motivational basis or function also will affect whether or not changes occur. Other properties of an attitude which may influence

its change are its direction, intensity, salience, cognitive complexity, embeddedness, flexibility, consciousness, and centrality.

Not to be overlooked is the individual's participation in the attitude change process. Passive exposure to communications, repetition of attitude change arguments, and counter-attitudinal advocacy may have different effects.

Theoretical Background and Research Involving the Centrality of Attitudes

The attitudinal property of greatest importance to this research is that of centrality. In few other investigations, however, has centrality been an important concern or variable. In like manner, it has been overlooked in many theoretical characterizations or conceptualizations of attitude. Where not overlooked it often has been confused with other attitudinal properties or described under a different name. Because confusion over the term is widespread this section will begin with an example of the confusion and a couple of efforts by other authors to differentiate the concept from related concepts.

After reviewing a variety of theoretical formulations Scott (1968) identified eleven distinct properties of attitudes and suggested there are, or may be, even more. Among the properties he implied may be distinct, but did not list as such, was centrality. His mention of centrality was made in the course of discussing salience:

Salience. This is the 'prominence' of an attitude, or the readiness with which a person expresses it (Hartley and Hartley, 1952; Stern, 1938). It is closely related to (and perhaps indistinguishable from) the property of centrality (Krech and Crutchfield, 1948), which is the 'importance' of the focal object to the person (Scott, 1968, p. 206-207).

Unquestionably salience and centrality are related concepts, but it is inaccurate of Scott to suggest that they may be indistinguishable. Such a statement reflects and contributes to the confusion over these terms. This confusion has resulted in a variety of terms being used to refer to the same concept and a variety of concepts being identified by the same term. Other terms involved in the confusion include importance, relevance, meaningfulness, intensity, commitment, prominence, involvement, personal involvement, self-involvement, ego-involvement, and deep versus superficial. In spite of the confusion, review of attitude conceptualizations suggest: (1) that salience, centrality, and intensity are distinguishable and different properties; (2) that prominence is roughly equivalent to salience; (3) that involvement, personal involvement, self-involvement, and ego-involvement are manifestations of salience, or centrality, or the involvement of ego-attitudes; (4) that importance, relevance, meaningfulness, commitment, deep, and superficial are useful terms in defining these other properties but not as terms which themselves define distinct properties of attitudes.

A significant contribution to the confusion involving these terms has been the failure of most authors to sufficiently differentiate between them. Among the few exceptions related to the terms salience and the more closely related terms of centrality and involvement are Newcomb, Turner, and Converse (1965) and Cronen and Conville (1973). Both teams of authors are quoted below because their definitions include most of the key elements of most other authors' definitions, and also because their definitions exhibit differences and similarities illustrative of other authors' definitions.

A second prime characteristic of the attitude object is what we might call the centrality [italics in the original] of the object for the individual. Some objects stay persistently in the forefront of the individual's consciousness, almost without letup, either because of external circumstances or because of internal motive states. Other objects are psychologically remote from him, and would be said to have low centrality for him ...

If we had a means of recording all conscious thoughts in an individual's mind, centrality would be very closely related to the simple frequency with which an object occurs to a person, either because he notes it (or a symbol for it) in the environment, or because he reflects upon it in his thought. At the remote extreme of the centrality dimension would lie objects the person does not know exist. These objects would show no incidence at all in his conscious thought, and would be of 'zero' centrality. The objects that would lie at the other extreme might be more difficult to predict in advance, but we would certainly expect one of the most central objects to be that which is physically closest as well: the 'self'.

Research illustration 3.1 helps make clear the difference between the centrality of an object to an

individual and the closely related matter of its salience [italics in the original]. We have already ... defined an object as salient if the immediate situation is such as to sensitize the individual to it. Much the same sensitivity is involved in an object that is central for the individual; but centrality refers to a durable and generalized salience. An object of low centrality may become momentarily salient for the individual when the immediate situation prompts his attention to it forcefully and explicitly enough ... Thus salience is a short-term phenomenon that is a function of the immediate situation; centrality refers to a much more durable interest on the part of the individual in certain objects or kinds of objects, with these remaining situations (Newcomb, Turner, and Converse, 1965, p. 58-59).

Research on involvement and attitude change has shown that involving attitudes are more resistant to change than less involving attitudes.¹⁶ The present study was intended to probe this phenomenon further by investigating the relationship between involvement and the effects of situational cues on belief salience. To avoid terminological confusion, note that although the terms 'involvement' and 'salience' are sometimes used interchangeably, they are not isomorphic in this or Fishbein's conception. Here, belief salience refers to the position of a belief within a habit-family--the higher, the more salient. Involvement refers to the centrality of the attitude object with which the belief is associated. 'Sweet' may be the most salient belief when an individual considers the psychological object 'ice cream', but that does not mean that 'ice cream' or any beliefs about it are central to the individual's whole cognitive map. In the present study, the centrality of an entire habit-family was determined by the order in which responses to the stimulus concept were elicited in a free response situation. This is the same procedure which Kaplan and Fishbein have employed. (Cronen and Conville, 1973, p. 19-20).

Although the authors of these excerpts are differentiating between salience and centrality in one case, and salience and involvement in the second case, it is obvious that the terms centrality and

involvement are very highly related, whereas there are significant differences between the salience definitions and the definitions of centrality and involvement. In the first excerpt salience is defined in such a way as to suggest it applies to attitude systems. In the second excerpt salience is related to the place in a hierarchy of attitudes in an attitude habit-family (or system). Both of these definitions view salience as somewhat unstable and to some degree dependent upon situational cues. In contrast, the concepts of centrality and involvement are viewed as related to enduring and important aspects of the belief or attitude system, and both are defined as being independent of situational cues.

Although it is regrettable that Newcomb, Turner, and Converse confuse their definition of centrality by the use of the phrase "durable and generalized salience," their definition is fairly complete. They explicitly characterize centrality as being a durable dimension, as being applicable in many situations, and as being closely related to the importance of an attitude. Most important, they explicitly identify the self as being one of the most important and central focal objects. Elsewhere they identify 'inclusive' or 'ultimate' values (1965, p. 139), and "psychologically central" reference groups (1965, p. 145), such as family, close friends, ethnic and religious groups, as being highly central for many people. Newcomb, Turner, and Converse also distinguish the "ego" as the "'inner core' of the

self-percept . . . , . . . a restricted aspect of the self, that which is a value to be protected and enhanced" (1965, p. 143), and note that "Ego-involved attitudes can show an extreme resistance to change" (1965, p. 144).

Whether or not Cronen and Conville (1973) consider only attitudes toward the self as central, or also consider other objects as central, cannot be determined. However, by reference to the works of Sherif and associates in footnote 16, and by their operational definition of involvement, Cronen and Conville clearly identify the self as being a central focal object.

The number of authors who have written as comprehensively as Newcomb, Turner, and Converse (1965) about the centrality of attitudes, beliefs, or values is few. One of the few, and perhaps the only author to do so, is Milton Rokeach (1968). Indeed, Rokeach may have outlined the most complete theory in this area. Rokeach's basic statement on how centrality is to be determined is as follows:

We define importance solely in terms of connectedness: the more a given belief is functionally connected or in communication with other beliefs, the more implications and consequences it has for other beliefs and, therefore, the more central the belief. . . . We propose the following four defining assumptions or criteria of connectedness:

1. Existential versus nonexistential beliefs. Beliefs directly concerning one's own existence and identity in the physical and social world are assumed to have more functional connections and consequences for other beliefs than those which less directly concern one's existence and identity.

2. Shared versus unshared beliefs about existence and self identity. Beliefs concerning existence and self-identity may be shared or not shared with others. Those shared with others are assumed to have more functional connections and consequences for other beliefs than those not shared with others.
3. Derived versus underived beliefs. Many beliefs are learned not by direct encounter with the object of belief but, indirectly, from reference persons and groups. We refer to such beliefs as 'derived' beliefs. Derived beliefs are assumed to have fewer functional connections and consequences for other beliefs than the beliefs from which they are derived.
4. Beliefs concerning and not concerning matters of taste. Many beliefs represent more or less arbitrary matters of taste and often are so perceived by the individual holding them. Such beliefs are assumed to have relatively fewer functional connections and consequences for other beliefs than beliefs that do not represent arbitrary matters of taste (Rokeach, 1968, p. 5-6).

Later in the same work, however, and as the result of his own research, Rokeach modifies this basic framework with the following statement: "Centrality of belief, then, may be defined not only in terms of cognitive connectedness but also in terms of the extent to which a given belief serves to enhance or deflate the ego" (1968, p. 58).

Based upon the four criteria outlined Rokeach describes five classes of beliefs and suggests that they may be arranged along a central-peripheral continuum. The most central of these five classes is that containing "primitive beliefs" with 100 percent

consensus. Beliefs in this category are learned by personal experience with the object of belief and are supported by all of the individual's reference groups and persons. Rokeach says these primitive beliefs represent "'basic truths' about physical reality, social reality, and the nature of the self..." (1968, p. 6). It is to these beliefs that the person has the greatest commitments. In the next most central category are primitive beliefs with zero consensus. These beliefs also are based upon direct experience and involve existence and self-identity, but they are not shared with or supported by others. Although these beliefs may be questioned or challenged by others they are unchangeable through persuasion or argument by others. Examples of this type of belief given by Rokeach include "phobias, delusions, hallucinations, and various ego-enhancing and ego-deflating beliefs arising from learned experience" (1968, p. 9). Next in order of centrality are what Rokeach calls "authority beliefs". These beliefs involve the individual's evaluation of various possible reference groups and reference persons. That is, these beliefs involve which reference groups or persons are trustworthy and knowledgeable enough upon which to base other beliefs. Beliefs which are held because of identification with accepted reference groups are known as "derived beliefs" and occupy the next category. These beliefs include beliefs concerning matters of fact and also ideological beliefs derived from religious and political establishments. The fifth and most peripheral

category of beliefs involves "inconsequential beliefs". These beliefs are inconsequential because they have few connections with other beliefs. They largely involve matters of personal taste. They are generally based upon personal experience and they do not rely upon social support for maintenance. The fact that these beliefs are inconsequential and "have few or no implications or consequences for maintaining other beliefs involving self-identity and self esteem" (Rokeach, 1968, p. 11) does not mean that they may not be strongly or intensely held.

Three additional comments on Rokeach's theory seem warranted before discussing other theoretical positions. First, Rokeach acknowledges that five categories are probably not adequate to describe the actual situation (1968). Second, Rokeach, similar to Newcomb, Turner, and Converse (1965), views "primitive beliefs in the identity of significant others" (1968, p. 18) as being highly central. Third, Rokeach points out that theories of attitude change which are related to, and tested upon, authority, derived, and inconsequential beliefs may not be applicable to the primitive beliefs (1968).

This latter point is in essence the central thrust of the functional theorists, such as Katz (Katz, McClintock and Sarnoff, 1957; Katz and Stotland, 1959; Katz, 1960), Kelman (1958, 1961), and Smith, Bruner, and White (1956). Although these functional theorists have written in terms of different functions without linking them to different

attitude categories on a central-peripheral continuum, Katz does discuss explicitly the concept of centrality. He relates this term to both the self and values:

...the relation of the value system to the personality is a consideration of first importance. If an attitude is tied to a value system which is closely related to, or which consists of, the individual's conception of himself, then the appropriate change procedures become more complex. The centrality [italics in the original] of an attitude refers to its role as part of a value system which is closely related to the individual's self concept. (Katz, 1960, p. 169).

Statements in an earlier work by Katz amplify and clarify the above statements very succinctly:

Value systems are often involved in the individual's self-concept. He has an image of himself as having certain values; hence a threat to such a value system may arouse the same emotional response as does a more direct threat to the ego (Katz and Stotland, 1959, p. 433).

In these comments Katz appears to be taking a position very similar to that of Newcomb, Turner, and Converse (1965).

A statement by different authors which sounds quite similar to the first quote from Katz is the following:

The relation between the values of individuals and their attitudes is not, however, a simple one. For one thing, the degree to which the various value systems of the individual shape the development and organization of

his attitudes appears to be a function of the centrality of the value systems (Krech, Crutchfield, and Ballachey, 1962, p. 192).

The authors of this excerpt and the discussion in which it was embedded, while recognizing the property of centrality, failed to explicitly identify which kinds of values are most central. Thus, their formulation is considerably less complete than the others.

Although the preceding discussion has outlined many characterizations of the centrality concept, the discussion has emphasized theories which explicitly recognize the concept. The discussion has ignored theories which implicitly recognize the concept of a gradient or hierarchy of attitudes but do not explicitly use the term centrality. The focus of the discussion will now shift to the much larger group of theories which only implicitly recognize the concept.

Among the theories falling in this group is the functional theory of Smith, Bruner, and White (1956). These authors discuss the concept implicitly in the course of discussing personality and attitudes:

The various aspects of personality are mutually interdependent and mutually adapted. Since not all behavior tendencies are of equal potency, we may expect to find a hierarchical [italics in the original] organization in which some take precedence over others. Thus, a change in a basic need may bring about a change in a series of related, dependent attitudes. A change in one dominant attitude may change various others which are subservient to it (Smith, Bruner, and White, 1956, p. 32-33).

Finally, a special place in the hierarchical organization of personality must be given to those inferred processes which underlie the experience of self (Smith, Bruner, and White, 1956, p. 33).

In this same monograph the authors also recognize two kinds of saliency. One is "the extent to which a particular object or class of objects is central in the everyday concerns of a person" (1956, p. 35). The other is the importance of a specific "sentiment" (Smith, Bruner, and White's term for attitude) within a cluster of differentiated sentiments on the same object (1956). If the statements by Smith, Bruner, and White are accurately interpreted the most central attitudes in an individual's attitude system are those associated with the self. This position is similar to, but narrower than, that expressed in the functional theory of Katz.

An apparently similar position to that of Smith, Bruner, and White (1956) is that expressed by Hovland, Janis, and Kelley (1953) in another early and important monograph. In the course of discussing a variety of factors affecting opinion change these authors wrote the following:

Kind of issue. One important factor might be expected to be the degree to which the issue is of primary concern to the individual...where strong 'ego-involving' issues are concerned his independence may be more vigorously asserted, and he may be more motivated (Hovland, Janis, and Kelley, 1953, p. 104).

In the theory of Hovland, Janis, and Kelley, and most of the theories mentioned previously, a basic assumption is that ego-linked attitudes are the most central, or among the most central, of all kinds of attitudes. None of these theories, however, have made ego-involving attitudes of as great a concern as the theory of Sherif and his associates. (Sherif and Cantril, 1947; Sherif and Hovland, 1961; Sherif, Sherif, and Nebergall, 1965; Sherif and Sherif, 1967a).

Although Sherif himself never uses the term centrality, he implicitly acknowledges the principle of the concept when he touts his own theory of attitude change because it deals with ego-attitudes and not with attitudes of lesser importance or consequence. In a number of specific statements he and his associates also recognize the concept: "...the priority of the topic in a hierarchy defining for the person the bounds of his self identity" (Sherif, Sherif, and Nebergall, 1965, p. xiii); "...individual stands and personal ties form a hierarchy of personal importance..." (Sherif, Sherif, and Nebergall, 1965, p. 68); "...a hierarchy of ego values or ego attitudes..." (Sherif, Sherif, and Nebergall, 1965, p. 73); "...high priority in his self system (degree of ego-involvement)..." (Sherif and Sherif, 1967b, p. 126); and other statements.

In an article included in a book edited by Sherif and Sherif, another author has linked the concepts of centrality and ego-involvement much more explicitly than Sherif in any of the publications

he has authored or coauthored. In this article Harvey wrote of "...more central and ego-involving domains..." (1967, p. 206), "...concept referents of low centrality and involvement..." (1967, p. 207), and "...levels of involvement or centrality..." (1967, p. 207). From these statements by Sherif and Harvey it seems clear that centrality is recognized as an important variable in the social judgment-involvement approach to attitudes and attitude change.

Because the social judgment-involvement approach has stimulated more research in areas related to the centrality of attitudes than any other approach a few further comments seem important and appropriate. The manner in which ego-involvement is used in the quotations from Harvey, and from Sherif on page 126 of his 1967 (Sherif and Sherif, 1967b) publication, appear to be somewhat different from or at variance with the usage prescribed in several other locations. In their 1947 publication Sherif and Cantril defined the concept of ego in the following manner:

...the ego consists of many attitudes which from infancy on are related to the delimited, differentiated and accumulating 'I', 'me,' 'mine' experiences. These attitudes, which may be designated as ego-attitudes, are constituent components of the ego. Apart from the constellation of these ego-attitudes, there is no such entity as the ego.... [ego-attitudes are] attitudes that determine the more or less enduring character of one's personal identity with the values or norms incorporated in him (1947, p. 4).

In subsequent paragraphs they then characterize the nature of ego-involvements:

... When these attitudes are situationally called for, when they are at any time consciously or unconsciously involved in a psychological function, we become personally involved.

Once formed, the ego is by no means rigid and unchangeable. To a large extent, ego-involvements are situationally [italics not in the original] determined (Sherif and Cantril, 1947, p. 4).

This characterization of ego-involvements is continued in later publications as the following examples illustrate:

... When an attitude is associated with the individual's conception of himself in relation to his social world, communication relevant to it situationally produces ego-involvement (Sherif and Hovland, 1961, p. 174).

... Ego involvement, in plain terms, is the arousal, singly or in combination, of the individual's commitments or stands in the context of appropriate situations, be they interpersonal relations or a judgment task in actual life or the experiment (Sherif, Sherif and Nebergall, 1965, p. 64).

... Situational arousal of the ego attitude is what is meant by ego involvement (Sherif, Sherif and Nebergall, 1965, p. 73).

From these last four excerpts it would appear that the authors are defining "ego-involvement" as the arousal of ego-attitudes or central attitudes under conditions when they are salient, using the term salient as Newcomb, Turner, and Converse (1965) have used it.

This definition of ego-involvement includes a time or situation dimension which is not part of the meaning as Harvey and Sherif used it in the excerpts noted, nor is it part of the meaning as the term is used by most other authors. Practically, however, the difference may not be significant because of the way in which Sherif and other investigators operationally define ego-involvement.

Among the types of ego-attitudes identified by Sherif and his associates are "the values a person upholds for himself" (Sherif and Cantril, 1947, p. 5), "all attitudes that define a person's status or that give him some relative role with respect to other individuals, groups, or institutions" (Sherif and Cantril, 1947, p. 96), attitudes which "refer to his lasting ties to persons, objects, groups, and institutions in his social setting" (Sherif, Sherif and Nebergall, 1965, p. 66), and "the individual's commitments, dedications, and cherished positions in highly involving matters (matters related to family, sex role, religion, school, politics, or profession)" (Sherif, Sherif and Nebergall, 1965, p. 228).

Among the theories discussed so far the concept of centrality most often has been related to an individual's self concept or value system or combination of these. A theory which has implicitly incorporated the notion of centrality and related it to values, but which will probably move in the direction of an explicit linkage of both values and self to centrality is that of Rosenberg (1956, 1960a,

1965, 1968). According to early expoundings of Rosenberg's theory the key variables in attitude change are "the rated importance of each value associated with" an attitude object and the "perceived instrumentality" or "rated potency of the object for achieving or blocking the realization of that value" (Rosenberg, 1956, p. 367-368).

Significantly, however, in a work more recent than that cited, Rosenberg has suggested that cognitive consistency theories will likely need to be modified to account for the variable of "ego-centrality" (Rosenberg, 1968, p. 385).

The 1968 citation of Rosenberg was published as part of a collection of articles dealing with cognitive consistency theories. In this same collection two other authors made the modification of cognitive consistency theory suggested by Rosenberg and outline a cognitive consistency theory incorporating the concepts of centrality and ego-involvement (Ostrom and Brock, 1968). The theory which Ostrom and Brock outline looks very much like a synthesis of ideas from Newcomb, Turner, and Converse (1965), Rokeach (1968), and Sherif and associates (1947, 1961, 1965, 1967). The actual starting points, however, were provided by Sherif and associates and a work by Scott (1968). Because of the succinctness with which Ostrom and Brock present their model, and because of the resemblances between their model and that of this investigator, their statement is presented almost in toto:

The basic feature of an ego-involved attitude is its relation to the manner in which the individual defines himself. The individual defines himself primarily in terms of that 'distinct constellation of social and personal values' he has acquired. The closer the relation between his attitude and these values and the more central these related values are, the higher the degree of attitudinal involvement. The major consequence of heightened involvement is increased resistance to persuasion...

The elements [italics in the original] of the present cognitive model are the social and personal values of the individual and the particular attitudes held by the individual. Three structural properties of cognition are employed in the model. Centrality of a value is defined as the extent to which the value is integral to the individual's self-definition. The degree of relatedness between an attitude position and a value refers to the amount of similarity, relevance, association, dependency, or distance existing between the pairs of elements... One element is dependent on another to the extent that a change in one produces a change in the other. The third structural property is the number of value elements which are engaged by the focal attitude. [All italics in this paragraph are in the original.]

The proposed model postulates three primary determinants of the magnitude of ego involvement.

1. Involvement is greater where the attitude is related to more central or important values. An attitude related to values integral to the individual's self-definition will be more ego involving than if the values are tangential to the content of his ego.
2. Involvement is greater under high relatedness. As the attitude is personally more relevant to the individual's values, the more involved he is in that attitude.
3. Involvement is greater when a larger number of values are engaged. The wider the array of social

and personal values bonded to the attitude, the higher the resulting involvement of the individual in his attitude position. [All italics in these paragraphs are in the original.]

The first two factors combine in a multiplicative fashion in determining ego involvement... Combining all three factors, the magnitude of attitudinal ego involvement is defined as the sum over values of the products of the value centrality and the value-attitude relatedness (Ostrom and Brock, 1968, p. 375).

Another theory which may be considered a cognitive consistency theory is the cognitive dissonance theory of Festinger. Although Festinger's early statement of cognitive dissonance theory refers to the "importance" and "relevance" of opinions and the "importance" of decisions and behavior, the theory is stated so broadly as not to provide a referent for the term "importance" (1957). Festinger's subsequent theoretical statement in 1964 is stated in similarly broad language, but it appears to restrict the theory to cognitions involving self-perceptions. If this observation is correct, and if the "importance" of an attitude can be assumed to depend heavily upon its centrality, Festinger's modified theory of dissonance may be said to implicitly include the notion of centrality as it relates to self-perceptions and self-concept. Such an interpretation has been made by at least one other author (M. Smith, 1968).

The only major attitude theories not discussed so far are the balance or consistency theories of Heider (1946, 1958), McGuire

(1960a, 1960b), and Osgood and Tannenbaum (1955). The reason is simple. None of these seem to even implicitly incorporate the notion of centrality. With little effort, however, all could be modified so as to incorporate the concept.

The discussion thus far has focused on the different characterizations and definitions of centrality and related concepts, especially ego involvement, because of the great variety of conceptualizations, and because the definition and identification of central attitudes are integrally related to the concerns of this study. Equally important as the definition and identification of central attitudes are hypothesis about the effects of centrality upon attitude change. However, in striking contrast to the number of centrality definitions is the virtually unanimous concensus that the more central an attitude the more resistant to change it will be. The reasons offered for this resistance include greater amounts of information associated with the attitude object, greater ego involvement, and greater interconnectedness with other attitudes. Precisely how these factors affect attitude change will not be discussed because these rationales are not a subject of study in this research, even though the basic hypothesis is. Nevertheless, some mention will be made of these rationales in interpreting the data generated by this study.

Another area of concern to this study involves operational methods of measuring centrality or differentiating between central

and peripheral attitudes. No theorist or experimenter has presented a method of measuring the degree of centrality. The only theorist to present a method of operationally differentiating between attitudes of varying centrality is Rokeach (1968). However, Rokeach is the only investigator known to this author who has used it, and because of its complexity the method will not be discussed. On the other hand, if one views involvement as describing "the psychological state that accompanies the activation of a relatively central concept" (Eagly, 1967, p. 1), and ego-involvement as describing "the psychological state that accompanies the activation of "the self concept or ego (Eagly, 1967, p. 1), then a number of methods have been proposed and used. In other words, all methods other than that of Rokeach are described as measures of involvement or ego involvement. In only exceptional instances, however, have these methods been used to differentiate between attitudes varying in centrality or ego involvement. In virtually all the investigations the measures have been used to differentiate between people with varying degrees of involvement or ego involvement on a single issue or attitude object.

One of these methods of measuring ego-involvement is known as the "own categories" procedure (Sherif and Cantril, 1947; Sherif and Hovland, 1961; Sherif, Sherif and Nebergall, 1965). This procedure involves presenting subjects with a large number of statements, ranging over the continuum from extremely favorable to

extremely unfavorable, on the selected attitude object, and having the subjects sort the statements according to how favorable or unfavorable they think the statements are. The social judgment-involvement approach of Sherif and his associates theorizes that the individual compares each statement with his own position and this own position acts as an "anchor." In the process of comparing, statements viewed as different from the individual's anchoring own position are subject to a "contrasting effect" and are viewed as more unfavorable than they actually are. On the other hand, statements viewed as similar to the individual's anchoring own position are subject to an "assimilation effect" and are seen as more favorable than they actually are. The strength of the contrasting and assimilation effects is postulated to depend upon the degree of ego involvement. The predicted outcomes of this procedure are that individuals with high involvement on the issue (Sherif and his associates have generally used controversial social and/or political issues as their attitude objects) will use fewer categories than low involvement individuals, and that high involvement individuals will place fewer statements in the extremely favorable category than in the extremely unfavorable category. The number of categories used and proportional placement of statements are used as the operational measures of involvement.

Another measure of ego-involvement developed by Sherif and associates (Sherif and Cantril, 1947) is called the method of "ordered

alternatives." In this procedure the subject is presented a set of nine statements ranging from extremely favorable to extremely unfavorable. As in the "own categories" procedure, the subject is then faced with a sorting task. However, in the method of ordered alternatives the subject sorts the statements into three categories, one for acceptable statements, another for unacceptable statements, and a third for those statements capable of being placed in neither of the first two. The subject is also asked to indicate the one statement most acceptable and the one most objectionable to him or her. The number of statements in each of the three categories represent the individual's "latitude of acceptance," "latitude of rejection," and "latitude of noncommitment." The sizes of an individual's latitudes of acceptance, rejection, and noncommitment are postulated to depend upon the individual's involvement. The higher the individual's involvement the smaller the latitude of acceptance and the larger the latitude of rejection. Although the latitude of rejection is suggested as the best predictor of involvement, involvement also has been measured by using only the latitude of acceptance or combinations of the various measures. The statements selected as most acceptable or objectionable also have been used as a means of classifying individuals into high or low involvement groups.

Two additional methods are modifications of the method of ordered alternatives by Sherif and associates. These modifications

are the result of work by Diab (1965a, 1965b, 1967). The first modification involves having the subjects indicate how strongly they feel about each statement in addition to whether or not they find it acceptable, objectionable, or neither of these. This procedure allows the identification of individuals strongly committed to moderate or neutral stands. It also allows differentiation between individuals with seemingly similar extreme stands. The second modification involves the same procedures as the first modification, but includes the use of semantic differential scales. This procedure allows even greater differentiation between subjects.

The five methods of measuring centrality or ego-involvement thus far described may be identified as originating with specific individuals. The other means of classifying people according to their involvement are not closely identified with any one individual or team of researchers. They also are less sophisticated than those already mentioned. One method involves the selection of subjects on the basis of their membership or participation in a group which is identified with an extreme position. A similar method, often combined with that just mentioned, involves the selection of people on the basis of their public stands or commitments. A third method involves the selection of people on the basis of extreme scores on some attitude measure. A fourth method involves the classification of people on the basis of their self-report evaluations of how important the topic

is to themselves personally. A fifth method involves the classification of people on the basis of their self-report evaluations of the importance of the topic to society. Self-report evaluations of interest in, concern about, and commitment to an attitude object or issue may be used as a substitute for, or in combination with, self-report measures of importance. Occasionally behavioral measures, usually self-reported, such as estimated amount of time spent talking about a topic, are used as measures of involvement. Also used have been combinations of two or more of the methods listed in this paragraph, and combinations of methods listed in this paragraph with one of the more sophisticated methods mentioned earlier.

At least forty studies have been conducted with involvement as an independent variable and attitude change as a dependent variable. These studies have concerned attitudes toward fluoridation of water, presidential candidates, prohibition, farm policy, labor management relations, segregation and attitudes toward the Negro, reapportionment of state legislatures, fraternities, organized religion, teenagers being controlled by their parents, legalization of the sale of marijuana, elimination of draft deferments for college students, the Vietnam War, replacing undergraduate professors with teaching assistants, use of contraceptive pill by unmarried females, love and rabbits, Arab unity, and many other topics. Most of the studies have involved only Americans, but some have involved subjects in foreign countries.

Most of the studies have involved college students, but a fair number have involved adults from the population as a whole. Many of the studies have involved other independent variables, e.g. dogmatism, source credibility, communication discrepancy. The overwhelming majority were concerned in some way with the theory of Sherif and associates, either with the theoretical aspects or operational aspects, either to confirm, challenge or compare with another theory.

Not surprisingly, the results of these studies or the interpretations of them often have conflicted. One of the reasons is variations in the definition of involvement (Wilmot, 1971a). Another reason is the low predictive power of the various operational measures of involvement. Wilmot (1971b) selected 13 different methods of determining involvement and computed the correlations between them, as well as their relative attitude change predictive powers, in a single experimental situation. He found correlations from $-.43$ to $.69$, with most in the positive or negative range of $.00$ to $.20$. Correlations between the measures were very low, with only a few exceptions. Moreover, "only five percent of the variance in attitude change toward the persuasive messages is accounted for by all the independent variables acting together" (Wilmot, 1971b, p. 221).

Another reason for the failure of these studies to agree may be that the majority of topics studied actually involved minimal ego-involvement (Rokeach, 1968; Sherif and Hovland, 1961; Sherif, et al.,

1965; and others). Support for this theory comes from the fact that Diab's (1965b) study of Arab unity among Arabs living in the Middle East, and McGinnies (1968) study of attitudes towards Viet Nam held by Taiwanese produced results somewhat different than predicted.

In spite of the contradictory results of some studies, the larger trend does suggest that high involvement affects attitude change negatively. This interpretation of the trend, however, is challenged by some who maintain that individual personality traits may be responsible, rather than involvement (e.g. Keisler, Collins, and Miller, 1969, p. 254).

Of the more than three dozen studies reviewed by the investigator only a small handful have any direct relevance to this study. The only study which comes close to paralleling this study is an investigation by Rokeach, Reyher, and Wiseman (1968). These investigators developed an instrument with 55 belief statements equally divided between the five categories described on pages 64-66. After pretesting 29 individuals with this instrument the investigators attempted to induce belief change through hypnosis. The hypothesis that the relative order of change would be primitive beliefs, unanimous consensus < primitive beliefs, zero consensus < authority beliefs < derived beliefs < inconsequential beliefs was confirmed at $p < .008$. In the instrument development phase of their research these authors also came up with a result of interest to this study. They found that

their a priori assignments of beliefs to the five categories were 85 percent accurate. Their only significant failures occurred in the assignment of beliefs to the category of primitive beliefs with zero consensus. Only 55 percent of their assignments to this category actually had their highest loadings on this factor.

An ability to classify beliefs on an a priori basis with a degree of accuracy also has been reported by other researchers. Clark and Stewart (1971) were interested in how well Sherif's latitude of rejection acts as a measure of different degrees of ego involvement. They selected 17 issues to represent a range of ego involvement and asked their subjects to sort nine statements for each of the 17 issues into groups of acceptable, unacceptable, and noncommitted. This task provided the measure of latitude of rejection, i. e. number of unacceptable statements. They also asked each subject to respond to three sets of semantic differential scales for each of the 17 issues. These semantic differential scales were worded so as to provide a measure of the centrality of the attitude object, the amount of consideration given the attitude object, and the degree of personal importance to the individual. When the 17 issues were ranked on each of the four measures of ego involvement and intercorrelations computed, the investigators found that the highest correlation between latitude of rejection and any of the other measures was .15. On the other hand, the three other measures had intercorrelations of .54 to

.81. The fact that these three other measures all involved the use of a semantic differential scale probably accounts for part of the differences in intercorrelations. But, the similarity in measurement technique does not account for the fact that the rankings of all three of the semantic differential scales closely corresponded with a priori judgments, whereas the latitude of rejection rankings did not.

Additional doubts about the latitude of rejection as a measure of ego involvement were raised by the fact that individuals displayed considerable consistency in the size of their latitudes of rejection regardless of issue.

When Clark and Stewart (1971) investigated the consistency of latitude of rejection size among individuals and across issues they were following up a study by Glixman (1965). Glixman also used a latitude of rejection measure (number of categories in own categories procedure) to determine involvement with three different areas selected on an a priori basis to represent widely different levels of ego involvement. The three attitude objects were the self, nuclear war, and miscellaneous other objects. Correlations between the number of categories his subjects used on one topic with the number they used on another topic ranged from .47 to .66. These correlations, much higher than expected, led Glixman to make the following statement: "In view of the apparent importance of self to the subject, it is tempting to think of self as a core domain around which the

others are organized. There is no direct evidence in this study to support this view,..." (1965, p. 375). Considering the data from the Glixman and Clark and Stewart research together, there also is no direct evidence to discard the concept of the self as a central domain. First, latitude of rejection measures may actually be measuring a personality trait (Clark and Stewart, 1971). Second, latitude of rejection measures may be overly influenced by a response set (Clark and Stewart, 1971).

In the three studies already described in detail the attitude objects were preselected to represent a range of ego involvements or centrality. In a fourth experiment an operational measure of centrality was used to select two objects at the extremes for study in an attitude change experiment. In this investigation centrality was determined by three face valid questions with seven place response scales: "How important should this concept be to you?...; how important is this concept to you?...; how much do you care about this concept? [all italics in the original]" (Cronen and Conville, 1973, p. 20). The first two questions were answered on a "very important--very unimportant" scale, and the third question was answered on "a great deal--very little" scale (1973, p. 20). The six attitude objects were "Rabbits, Muskie, Newspapers, Love, Freedom, and Politics" (1973, p. 20). The two selected as representing extremes on the central-peripheral continuum were "Love" and "Rabbits." Once the attitude objects were

selected the investigators attempted to induce negative attitude change in their subjects through the arousal of frustration and anger. The results indicated that the change in number of negative associations for "Rabbits" was statistically significant beyond $p = .01$, whereas the results for "Love" were not significant. However, although mean differences in attitude were also in the predicted direction, they were nonsignificant, suggesting that attitudes toward "Rabbits" did not shift more than attitudes toward "Love."

Evaluations of Sex Knowledge and Attitude Change
Resulting from Exposure to Educational Experiences

The number of studies which have evaluated sex knowledge and attitude change as a result of exposure to college human sexuality courses are few, and the number of such studies including control groups is even fewer. On the other hand, quite large is the number of studies which have evaluated sex knowledge and attitude change as a result of exposure to some type of educational experience. Included in this larger category of studies are those involving grade school human sexuality education, high school human sexuality education, high school family life education, college marriage and family life education, college health education, and a variety of education programs involving adults.

Among the studies dealing with grade school human sexuality education two found some significant attitude change and one found no

significant attitude change. (In this section of the monograph the term significant will be used only in the sense of statistical significance.) The study finding no significant attitude change was done by Coates (1970). He used the evaluative dimension scores of 12 sex related concepts in semantic differential form. He also used a 70 item multiple choice instrument to measure change in reproductive information. He found significant information gain. The research design involved five randomly selected intact fifth and sixth grade classes and five analogous control groups, containing a total of 318 students.

A study somewhat similar to that of Coates was done by Kolesnik (1970). Kolesnik tested the attitudes of 345 fourth, fifth, and sixth graders, plus some teachers and parents, but he used no control groups. Like Coates, he used a semantic differential with 12 sex-related concepts. Testing before and after the course he found that the fourth, fifth, and sixth graders increased on 11, 9, and 8 of the concepts, respectively, and increased significantly on 5, 6, and 5 concepts, respectively.

The third study involving grade school students differs substantially from the other two. Carton and Carton (1971) used a 28 item Likert-type scale developed by Deryck Calderwood to test the attitude change of 10 and 11 year old children participating in a "Living One's Human Sexuality" curriculum developed by the

Unitarian-Universalist Association. They found a significant change, with the greatest change occurring in the areas of same-sex behavior and masturbation. A lesser amount of change occurred in the area of nudity. The areas of touch-talk, love-making, and gender identity changed the least. Whereas the mean scores for masturbation, same-sex behavior, and nudity were much lower on the pretest than the mean scores for the others, all posttest scores were approximately equal. All changes were in the direction of less permissive to more permissive.

The number of publications evaluating the experiences of high school age adolescents with human sexuality education is about twice as large as the number involving grade school aged children. The diversity among studies is even greater. Among the groups of subjects were 492 hospitalized indigent postpartum girls (Goldfarb, Flowers, and Kaufman, 1970), 113 disadvantaged high school students (Soares and Soares, 1970), 135 middle-class participants in an About Your Sexuality course offered by a Unitarian church (Iverson, 1973), 299 viewers of a television series (Larson, 1969), and high school

biology class students in separate studies of size 67 and 100 (Wallace, 1970; Hoch, 1971). Instruction periods were spread over three days (Goldfarb, et al., 1970), two weeks (Wallace, 1970; Hoch, 1971) five weeks (Larson, 1969), and six weeks (Soares and Soares, 1970). All of the educational programs involved both didactic and discussion aspects, but the emphasis on discussion was much stronger in some (Goldfarb, et al., 1970; Hoch, 1971; Soares and Soares, 1970; Iverson, 1973). The studies also showed differences in the content emphases, degree to which the instructional staff was interdisciplinary, and other aspects of the instructional program. In addition, there were substantial variations in research design, research goals, and specific attitude areas of concern. Attitude measurement instruments included semantic differential scales (Larson, 1969; Wallace, 1970; Hoch, 1971), a Likert-type scale (Soares and Soares, 1970), a scale developed by Athanasiou and Shaver (Iverson, 1973), Reiss' "Premarital Sexual Permissiveness Scale" (Hoch, 1971), and behavioral measures (Goldfarb, et al., 1970). Two of the studies measured knowledge gain as well as attitude change (Wallace, 1970; Hoch, 1971). One of the studies included a follow-up 12 weeks after the end of the educational program (Wallace, 1970). About the only similarity in research design was the use of control groups by all but Wallace (1970).

Data generated by each of these investigations indicated varying amounts of attitude change, some of it statistically significant. The results of greatest interest to this investigation are those of Wallace (1970) and Hoch (1971). As a result of his research Hoch drew the following conclusions:

1. Factual knowledge is increased as a result of sex education.
2. Students do not become more permissive in their attitudes involving sexual behavior as a result of sex education. [This conclusion was based upon data using Reiss' Premarital Sexual Permissiveness Scale.]
3. Students become more confident in their ability to make 'correct' decisions in the future involving their own sexual behavior (anxiety level is decreased).
4. Students become more conscious of the problems facing the world in the areas of population control, family planning, birth control, and abortion and tend to be more liberal in their thinking in regard to these topics.
5. Students tend to be less hostile and more accepting of deviates [homosexuals] as a result of sex education (Hoch, 1971, p. 366).

Wallace (1970) found that students in a mixed-sex class did not learn substantially more than students in a single sex class, but they did have more verbal interaction, and they did have more liberal changes in attitudes. He also found that girls in all-girl classes retained their

more liberal attitudes over the 12 week follow-up better than boys in all-boy classes.

In the course of discussing studies involving high school age adolescents the author noted that there are twice as many published studies involving this age group as there are involving grade school age subjects. This same observation may be made with respect to college age and high school age subjects. However, studies involving college age subjects are more readily classified. Investigations involving college age subjects may be divided into three groups based upon the type of course offering information about human sexuality. These groups include health and biology courses, marriage and family life courses, and human sexuality courses. Five publications in the health and biology group will be reviewed first.

Undoubtedly one of the pioneering efforts in conducting and reporting research in the area of human sexuality education was that of Perkins (1959). During the spring and fall of 1956 and 1957 he pre- and posttested a total of 138 males and 144 females enrolled in a general biology course which included an eight week section on human reproduction and the relationship of sex to marriage and interpersonal relations. Perkins used McHugh's "Sex Knowledge Inventory" and a second inventory covering beliefs and attitudes to measure changes in knowledge and attitudes. Both males and females

showed a significant increase in knowledge and the belief and attitude inventory "indicated comparable improvement" (1959, p. 41).

Another pioneering effort has been made by Lisbe (1971). He developed a computerized unit for use as a resource in college level human sexuality education and then tested its effect on the quality of instruction, acquisition of knowledge, and attitude development. Experimental and control groups involving 990 students enrolled in general health education courses participated in the research. A "Sex Knowledge Inventory" and the "Segal Sex Education Scale" were given to students at the completion of the human sexuality education unit. No significant differences were found between the experimental and control groups on any of the measures, but mean differences favoring the experimental group were found for each of the instruments at three of the four colleges involved.

A second investigator who has studied and reported on sex knowledge and attitude change resulting from participation in a college health course is Shaw (1971, 1972). Both of Shaw's studies involved the measurement of attitudes toward premarital sex relations, abortion, contraception, incest and homosexuality. The first study also included some additional questions on pornography, and prostitution, while the second contained additional questions on venereal disease. Both of the studies included attitude questions on other social health issues as well. Because of the ambiguous nature

of many questions, questionable statistical analyses, and questionable interpretation of the data, the results of the first study will not be discussed. In the second study Shaw measured both knowledge gain and attitude change. The knowledge test consisted of 50 questions with five questions on each of ten topics. Each question had five choices, one of which was "do not know." Only correct responses were used in determining level of knowledge. The attitude questionnaire contained three questions each for the same ten topics. Both measures were given before and after completion of a semester long course. Both before and after the course the correlations between the ten specific knowledge sections and their corresponding attitude sections were quite low. On the pretest the highest correlation between knowledge and attitude for a sex related concept was .11. On the posttest there was a correlation of .22 between knowledge of and attitude toward sexual deviance. Sex knowledge gain was significant at the .05 level, but knowledge level remained low (An average of slightly over 28 correct answers out of 50 on the posttest.) For unexplained reasons the sex attitude change data were not reported. Percentages agreeing with the various attitude questions were reported, but they were not identified as based upon pretest or posttest data.

Like health and biology courses, marriage and family life courses have always been responsible for providing students with

small to substantial amounts of human sexuality education.

Unfortunately, and also like health and biology courses, though many studies have been published evaluating the effects of marriage and family life courses, few have considered the effects of these courses on sex knowledge or attitudes. A survey by Duvall (1965) of more than 80 reports made prior to 1965 suggested that these courses are indeed effective in producing a wide variety of changes, but only two of the reports (Perkins, 1959; Bardis, 1963) were concerned directly with sex knowledge or attitudes. The study by Perkins, which actually involved a college health class, has already been reviewed.

Bardis (1963) administered the McHugh "Sex Knowledge Inventory" on the first and last days of a semester to 45 students in a family life course and 45 students in a control group. On the first day of the semester the experimental and control groups achieved similar scores, but experimental males achieved significantly higher scores than those of the experimental females. There also was a positive and significant correlation within the experimental group between sex knowledge and three demographic variables--age, class level, and amount of parental education. On the posttest all the differences within the experimental group related to sex, age, class level, and amount of parental education, had disappeared, and the total experimental group mean was significantly higher than the control group mean, which had not changed.

Since Duvall's (1965) comprehensive survey of the literature three additional studies of marriage and family life education effects on sex knowledge and/or attitudes have been published. Each of these investigations studied the relationship of attitude and/or knowledge change to some other variable. The first of these studies to be published was conducted by Olson (Olson, 1967; Olson and Gravatt, 1968). Olson studied attitude and knowledge change in functional marriage courses and related these changes to the positions of functional marriage course professors. In order to sample the topics most frequently covered in a functional marriage course Olson developed the "Premarital Attitude Scale," which is actually a mixture of attitude questions with a few knowledge questions. Twelve of the items relate directly to sexual beliefs, attitudes, or behaviors. All of the questions are scored on a seven point scale from "Strongly Disagree" to "Strongly Agree." An unforced Q-sort was used to administer the scale. Ten professors and 322 students were given the questionnaire to establish norms. Then the questionnaire was given twice to 97 experimental group and 47 control group subjects. Ten weeks separated administrations of the questionnaire to the experimental group taking the course and three weeks separated administrations to the control group. Students in the class group were intentionally presented specific questionnaire items for discussion. Between testings the experimental group changed towards the position

of the professors on 30 of 48 items. Twenty-four of the thirty changes were significant at a $p < .01$ level. In contrast, the control group showed a change at a $p < .01$ level on only one question. Considering the 12 sex related items the control group changed on three at the .05 level and the experimental group changed on one at the .05 level and five at the .01 level. Based on these statistics the course members became more willing to admit that one of their motives for dating was to satisfy sexual needs, became even less embarrassed talking about sex with members of the opposite sex, became even more convinced that their understanding of sex and human reproduction was adequate, and came to feel even more strongly that homosexuals should not be treated like criminals. They also changed their beliefs about the physical harmfulness of masturbation and the nature of the male sex drive.

Another study attempting to link knowledge and attitude change with another variable was conducted by Adams (1969). This study also used the "Premarital Attitude Scale" (PMAS). Adams was interested in the relationship between knowledge and attitude change and participation in a coeducational family life class. Experimental and control subjects were 31 women in a coed class and 31 women in a single sex class. The PMAS was used as a measure of attitude and a "Family Life Information Inventory" developed by the investigator was used to ascertain knowledge. As a result of his analysis

Adams concluded that the coeducational class was not noticeably superior and that there was some relationship between knowledge gain and attitude change.

In spite of the continuing controversy over human sexuality education and the rapid increase in college level courses there are still very few published studies concerning their effects. The first study reported in the literature was carried out by Rubin (1970; Rubin and Adams, 1972). She supervised the administration of Reiss' "Premarital Sexual Permissiveness Scale" in a pre- and posttest design to 303 females and 95 males at 14 colleges in New York, New Jersey, Connecticut, and Missouri. She found no significant change as a result of participation in a sex education course. Both the experimental and control groups exhibited a natural regression toward the mean.

The most recent report in the literature describes a study by Rees and Zimmerman (1974). They administered an anonymous questionnaire to a human sexuality class during the first and last weeks. Both questionnaires were returned by 128 males and 102 females. "Yes" or "No" responses were required to answer the four behavioral questions concerning masturbation, sexual intercourse, oral-genital sex, and mutual masturbation, and nine attitudinal questions on these same topics, plus the topics of anal intercourse, intercourse during pregnancy and menstruation, foreplay,

homosexuality, and prostitution. Another question related to concerns about penis size. Because of the data collection procedures no statistical analyses were performed, but visual inspection of the data indicates no changes in behavior and substantial attitudinal change. . On each of the nine attitude questions, both pre- and posttest, more males than females expressed an accepting, tolerant, or liberal position. However, where there were substantial differences on the pretest there were virtually no differences on the posttest, except on one question. . All attitude change on the part of both males and females was in a more tolerant or liberal direction. The topics on which the greatest amount of change occurred were masturbation, homosexuality, and anal intercourse. Thirty-four percent of the females became more accepting of masturbation, 31% more accepting of anal intercourse, and 30% more accepting of homosexuality. Among the males, 24% became more accepting of anal intercourse, and 22% more tolerant of homosexuality. In spite of the large percentages of students who became more tolerant of homosexuality and anal intercourse these topics remained the least acceptable behaviors for both males and females.

The most comprehensive evaluation to date of a college human sexuality course outcomes was done by Bernard (1973). Bernard's research was part of a very thorough evaluation of a new human sexuality course being introduced at the University of Rochester

during the spring semester of the 1971-72 academic year. Subjects in the study were 275 participants in the new course (experimental group), 93 students who had signed up for the course but were not admitted (first control group), and 48 students randomly chosen from the undergraduate population at the university (second control group). A modified Solomon four group design was used in which everyone took the posttest measures and portions of the experimental and first control group also took a pretest. Because of this experimental design the effects of pretesting and pretesting x treatment interaction could be determined. Neither had a significant influence on posttest results. Four dependent measures were utilized. Analyses of the data generated by two of these measures indicated no behavioral changes or changes in sex guilt (as determined by the Mosher F-C Inventory) could be attributed to participation in the course. However, significant knowledge gain and some significant attitude shifts were revealed by analysis of the data generated by the other two instruments. The knowledge questionnaire was a combination of a final exam given by Katchadourian and a slightly modified version of the "Sex Knowledge and Attitude Test" adapted by Sarrel and Coplin from an instrument developed by Leif and Reed for use with medical students. Analyses of the knowledge data revealed that the experimental group achieved significant increases in knowledge, whereas the control groups showed no significant changes. Experimental

females were found to have gained significantly more than men. To measure attitudes the investigator used an 82 item survey which included 70 questions from the "Sex Knowledge and Attitude Test". This 82 item instrument was factor analyzed yielding 16 factors which accounted for 53.4% of the common item variance. Each of these factors was examined individually. Analysis of variance or covariance was used depending upon whether there were significant pretest differences between groups. Few significant changes were noted. At the time of pretesting there were no significant differences between groups on the topic of masturbation, but at the time of post-testing "experimental subjects were significantly more accepting and approving of masturbation than the second group of controls, and non-significantly different in the same direction from the first group of controls" (1973, p. 66). Further analyses of the data indicated that most of this change was due to the females. The males started out significantly more accepting than the females, but there was no difference on the posttest. Another topic on which significant changes were noted was homosexuality. At the time of pretesting the experimental groups were significantly different so analysis of covariance was used. The results indicated that the experimental groups were significantly more accepting than either group of controls on the posttest. Additional analyses indicated that the males were responsible for most of the change on this topic. Although both sexes became

more accepting, only the males exhibited significant change. An anomalous finding was that the first control group changed significantly more than the experimental group or second control group on the subject of extra-marital sex. Considering only the experimental group, significant differences between the sexes were noted for two topics in addition to masturbation and homosexuality. On the topic of premarital sex the males began significantly more accepting than the females, and both sexes became more accepting, but the females changed significantly and there was no significant difference between the sexes on posttesting. On the topic of sexual freedom for self the males also began significantly more accepting than the females. On posttesting, even though the males had become non-significantly less accepting, and the females had become significantly more accepting, the males were still significantly more accepting than the females. Significant changes on five other topics were linked to class standing or major field of study.

The semester before the University of Rochester offered its human sexuality course Vanderbilt University established an experimental voluntary course. Although the course lasted only four weeks, 50% of those who returned follow-up questionnaires (only half of the 65 participants returned the questionnaires) "indicated that their feelings and/or attitudes changed as a result of their participation in the program, and 95 percent indicated that they received new

[*italics in the original*] information from the program". (Maxwell, 1972).

The four reports by Rubin (1970; Rubin and Adams, 1972), Maxwell (1972), Bernard (1973), and Rees and Zimmerman (1974) represent the only reports in the literature which deal directly with college human sexuality courses. There are three additional reports, however, which deal with college age students, but not with college courses, that deserve very brief mention. Two of these reports deal with retrospective evaluations of human sexuality education on sexual behavior (Wiechmann and Ellis, 1969; Spanier, 1973). Spanier's was the more extensive study, involving interviews of a national probability sample of 1177 college students, but their findings are quite congruent. Their results were succinctly summarized by Spanier: "Sex education in the schools was not related to premarital sexual behavior, regardless of the nature of the program, who taught it, when it was taught, or what material was covered" (1973, p. 3579).

The third report (Wallace, Wehmer, 1971) concerns the experimental exposure of undergraduate males to pornography. Comparison of pre- and posttest measures indicated that exposure to erotic pictures did not produce deleterious changes in personal morals or changes in attitudes toward the materials and their censorship.

In addition to the evaluations of grade school, high school, and college human sexuality programs, the literature contains evaluations

of a variety of human sexuality programs involving adults. Three of these reports deal with training teachers for work in the area of human sexuality education. A fourth report deals with training educators and other professionals in the same area. The latter report will be reviewed first. Humphrey and Libby (1969) evaluated a rather comprehensive six week institute attended by 62 clergymen, school administrators and teachers, and medical professionals. The attitudes of interest to Humphrey and Libby were those toward high school human sexuality programs, their philosophy and possible curriculum content areas. To measure these attitudes they developed their own instruments, the "Sex Education Liberalism Scale" (SELS) and "Sex Education Content Scale" (SECS). Analysis of their data revealed significant changes in the direction of a more liberal philosophy and an increased willingness to include a broad range of topics in high school human sexuality programs. Both anticipated and unexpected correlations between specific demographic variables and different degrees and direction of change were noted.

Two years after Humphrey and Libby's research was reported a similar but much more elaborate study was published. Fretz and Johnson (1971) studied the effects of an "intensive workshop" (the duration and content of the workshop was never described) on teachers' sex information and attitudes toward sex education. Like Humphrey and Libby, Fretz and Johnson developed their own instruments, but

their attitude questionnaire included questions about sex education outcomes, teacher qualifications, and curriculum topics in kindergarten through junior high schools, as well as questions about curriculum topics in high schools. Subjects were given the questionnaires before the workshop, after the workshop, and six months following. Two control groups were incorporated in the study. One of these groups included teaching colleagues of the workshop participants. These "controls" were selected to see if changes in workshop participants would influence their colleagues. The second group of controls included teachers at schools without workshop participants. From analysis of their data Fretz and Johnson concluded: (1) the workshop had some immediate effect on sex knowledge but only minimal long-range effects; (2) there were fewer attitude changes than knowledge gains and these, too, faded over time; (3) pretest sensitization played "at most" (1971, p. 163) a minor role in the outcomes.

A second study of an intensive workshop for teachers was carried out by Barnum (1973). The workshop studied by Barnum took place on a weekend and lasted 18 1/2 hours. Thirty-two teachers and education majors participated in the workshop. Thirty-two similar individuals acted as controls. Like Humphrey and Johnson, Barnum studied both sex knowledge and sex attitudes. Unlike the other authors, however, Barnum studied attitudes toward premarital

sexual permissiveness and a variety of other sexual behaviors. Two instruments were used, Reiss' "Premarital Sexual Permissiveness Scale", and the knowledge and attitude questionnaire developed by Vennewitz. Both the experimental and control groups were tested before the workshop, immediately after the workshop, and five weeks following. On the pretest administration of the instruments the experimental and control groups were not significantly different in knowledge possessed. On the posttest and follow-up, however, the experimental group was significantly more knowledgeable. Although similar in knowledge on the pretest, the two groups differed significantly on all measures of attitude. These differences persisted or increased on the posttest and follow-up. The control group showed no significant change on either of the posttests. The experimental group, on the other hand, became significantly more accepting of premarital sexual permissiveness and a variety of other sexual behaviors and this change persisted on the follow-up. However, the workshop participants showed no significant change in attitude toward their own sexual behavior and that of their spouse.

The fourth study of similar nature to the three most recently reviewed was conducted by Bennet, Taylor, and Ford (1969). These investigators studied the effects of a college sex education course upon sex knowledge and attitudes toward sex education in the schools. The instruments used were McHugh's "Sex Knowledge Inventory" and

an attitude scale developed by the senior author and instructor of the course. The experimental group consisted of 23 school nurses, 37 teachers, and 6 others. The control group contained 41 students in educational psychology and statistics courses. The two instruments were administered before and after the course. The data revealed that the experimental group showed significant knowledge gain and also changed significantly in the desired direction on the attitude scale.

One of the few investigations to utilize a behavioral measure of attitude change was conducted by Machen (1970). He used the polygraph to measure anxiety related to sex concepts. One hundred "young male adults" (1970, p. 6407) were divided into equal sized experimental and control groups. The experimental group received ten hours of human sexuality education. Both groups were given polygraph tests and McHugh's "Sex Knowledge Inventory" before and after the treatment. The data indicated that the experimental group showed a significant decrease in anxiety related to sex concepts as measured by the polygraph.

A treatment quite dissimilar from most studies is one conducted by Caplan. Caplan's (1973) treatment was a sexual therapy program for sexually dysfunctional couples. Five couples made up her experimental group. Six couples with similar sexual problems who had not had therapy made up one control group, and six couples with adequate

sexual functioning made up a second control group. Two Q-sorts of 50 items each were used. One sort dealt with attitudes toward the self in the sexual area. The other sort dealt with attitudes toward the spouse in the sexual area. Both were administered to the experimental and control groups before the therapy, after the therapy, and one month following therapy. The results were as predicted. Both males and females who underwent therapy changed significantly in their attitudes toward themselves and their partners. These changes persisted through the follow-up. Males and females as groups did not show significantly different amounts of change. The controls showed no change.

Based upon the more than 30 reports reviewed in this section the following generalizations appear warranted: (1) significant sex knowledge gain is the usual result of human sexuality education; (2) significant sex attitude liberalization is a very common result when the attitudes involve behavior of others (3) significant change in attitudes toward the behavior of self is unlikely unless the program is designed to facilitate such change; (4) some knowledge gain and attitude change persist, the amount being partially dependent upon the length of time between completion of the educational program and the follow-up; (5) significant sex knowledge gain may occur without concomitant sex attitude change; (6) there are no standardized and

widely accepted instruments for the measurement of sex attitudes,
and only one sex knowledge instrument which has been widely utilized.

III. RESEARCH DESIGN AND METHODOLOGY

The research design used in this study has been called the "Pretest-Posttest Control Group Design" by Campbell and Stanley (1963). Schematically the research design may be represented by the following:

Group E R O_1 X O_2

Group C R O_3 O_4

Group E consists of those individuals receiving the treatment

Group C consists of those individuals in the control group

R represents random assignment of participants to treatment groups

O represents an observation or measure

X represents the experimental treatment.

Selection of Student Groups

In this study Group E consisted of 188 students who took the course Family Life 200X, "Human Sexuality", during Spring term 1972 at Oregon State University. Group C consisted of 131 students who signed up for Family Life 200X but were not admitted. Group E and C were randomly selected from the populations of students admitted or denied admittance to the class during registration. Students were admitted or not admitted to the class on a random basis by a computer.

The Experimental Treatment

The experimental treatment was participation in the course Family Life 200X, "Human Sexuality", offered Spring term 1972 at Oregon State University in Corvallis, Oregon. This course was held on Monday nights from 1900 to 2200. Movies, lectures, and question and answer periods consumed the first two hours each evening. The third hour was spent in small group discussions with discussion group leaders who had previously taken the course and received special training. Three credits were given those who completed the course. Grading was on a pass-no pass basis. Class assignments included a paper and some required readings. Lecturers included members of the Family Life Department and professionals in a variety of fields from other areas of the state and nation. During the term a glossary of terms, bibliography, syllabus, information sheet, and other hand-outs were distributed to the students. Copies of the course syllabus and the information sheet may be found in Appendices A and B.

Sources of Data

The data collection instruments used in this study were the "Premarital Sexual Permissiveness Scale" developed by Reiss (1967) and a questionnaire including attitude, knowledge, background, and sexual experience questions which was developed by the investigator.

(In subsequent references to the "Premarital Sexual Permissiveness Scale" it may be referred to as the P.S.P.S.). Prior to the development of the questionnaire, and the decision to include the P.S.P.S., over three dozen sex knowledge, attitude, and experience questionnaires were located and carefully reviewed. Although several of these questionnaires were seriously considered for use in this investigation all but the P.S.P.S. were ultimately determined to be unsuitable. Considerations leading to the disqualification of questionnaires included the length of the questionnaire, form in which questions were asked, topic mix of questions, relative proportions of knowledge and attitude questions, and appropriateness for use with college students. Reliability and validity were not considerations because reliability data was available for very few of the questionnaires, and validity data was available for none of them.

The Premarital Sexual Permissiveness Scale

The P.S.P.S. (Appendix C) is a 24 item Guttman scale. Each of the 24 items is a six choice Likert-type question. However, each

item is scored dichotomously. Half of the items pertain to females and an identical 12 items apply to males. Only the items applicable to the individual's own sex are used in determining his scale score. The other half of the items are used in determining whether the individual is equalitarian, double standard, or reverse double standard, i.e. is more permissive with females than males. All 12 items, or one of several combinations of less than 12 items, may be used in assigning an individual a score. In this research questions 4 and 8 were ignored. This procedure follows that used by Reiss. The items used in the scoring procedure may also be grouped in several different ways to determine scale types. Individuals with irregular responses are placed in the scale type closest to their response, while trying to place them nearer the center of the scale than either extreme. In this research subjects who responded affirmatively to questions 1, 2, and 3 were scored as type one. Respondents who also accepted the positions of item 5 and/or 6 were classified as type two. Acceptance of item 7 in addition placed an individual in scale type three. Individuals responding positively to items 9 and/or 10 were classified as type four. Subjects also

accepting item 11 were labeled type five, and subjects accepting all 12 items were classified as type six. This is the same subscale used by Reiss. However, in this study, it was necessary and logical to collapse some of these groups together when computing chi-squares. Types one, two, and three were considered together. Individuals in these groups believe only kissing or petting are acceptable before marriage. Individuals in types four and five also were combined. These subjects accept sexual intercourse before marriage if the participants are engaged, in love, or feel strong affection. Individuals of type six believe intercourse is acceptable even when the participants do not feel strong affection, and they represent the third of the three groups used in computing chi-square statistics. These three groups were labeled low, moderate, and high permissives.

The P.S.P.S. was included in this research because it represents the best and most widely used measure of individual premarital sexual permissiveness available. The questionnaire was used by its developer with 2,166 students and adults in seven samples from various parts of the country, and it has since been used in over fifteen studies reported in the literature. There are no validity data for the scale, but its reliability as measured by a variety of estimators is quite high. Considering all the samples upon which the developer used the scale, both adult and student, the scale "showed a coefficient of reproducibility of about .95, a coefficient of scalability of about .85,

a minimal marginal reproducibility of about .75 and a percent pure scale type of about .55" (Reiss, 1967, p. 222).

Additional reliability data for this scale were developed as part of this research. Coefficients of reproducibility and percentage of pure scale types were computed for six separate groups on two separate administrations of the scale. The coefficients of reproducibility ranged from .91 to .99, with an average at least as high as that found by Reiss. The percentages of pure scale types ranged from .37 to .89 with 8 of 12 percentages equal to or greater than .55. The average pure scale type on the two administrations of the scale for the six groups was .57. All of these coefficients or percentages would be substantially higher if figured with responses to questions 4 and 8 on the scale deleted from the computations. These two questions accounted for 93% of all irregular responses. Since the scale types assigned to individuals in this research were based upon a scoring method in which questions 4 and 8 were in fact ignored, one can assume the coefficients of reproducibility and percentages of pure scale types to be much higher than those computed. Test-retest reliability correlations also were developed. The test-retest reliability for administrations one week apart was .91 for males and .94 for females. The test-retest reliability correlation for administration seven weeks apart was .87 for males and .83 for females.

These correlations, as well as correlations for the other major sections of the test, are summarized in Appendix W.

The Sex Knowledge and Attitude Survey: Description

The data collection instrument developed by the investigator consists of eight distinct sections (Appendix F, p.271). These sections were divided so as to create five separate parts. When administered to the treatment groups these parts were numbered II-VI, and the P.S.P.S. was considered Part I. Throughout the remainder of this paper, however, the eight sections, plus the P.S.P.S., will be referred to as Parts I, II IIIA, IIIB, IVA, IVB, IVC, V, and VI.

Part II consists of 17 demographic questions. These questions ask for data on the respondent's sex, sexual orientation, academic class, age, marital status, religion, major, and a variety of other areas relating to the individual and his/her family. These questions were used to establish the areas of similarity and dissimilarity in the backgrounds of the treatment groups. They also were used to investigate the relationship of background factors on attitude change.

Part IIIA consists of 21 multiple-choice questions involving attitudes towards social-sexual issues or the sexual behavior of others. When scoring this section the alternative responses to each question were given values of one to five depending upon the degree to which

they were estimated to express a restrictive or liberal position. A value of five represented the most liberal position and one the most conservative position. This practice of scoring each question so that the most liberal position received a value of five also was followed in scoring Parts IIIB, IVA and IVB.

Part IIIB consists of 48 Likert-type questions involving attitudes toward social-sexual issues or the sexual behavior of others. The response alternatives for these questions were Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree.

Part IVA consists of 18 Likert type questions designed to determine the subject's attitude toward his/her actual or potential participation in different kinds of sexual behaviors. The individual is asked to estimate how difficult it would be for him/her to engage in each of the 18 sexual behaviors listed. The five possible responses provided are: Impossible/Almost Impossible, Very Difficult, Difficult, Not Very Difficult, and Easy. For each question a response of Easy represents the most liberal position and is given a value of five.

Part IVB consists of additional questions answered along the same lines as those in Part IVA. However, they differ in two ways. One, 14 of the questions are for men only and 11 are for women only. Two, most of them deal with behaviors involving a spouse. Seven of the men and women only questions are exactly alike. The remainder

deal with areas of behavior, such as abortion and artificial insemination, in which exactly equivalent male and female behaviors are impossible.

The questions in these two sections are assumed to provide a measure of more central attitudes than those in Parts IIIA and IIIB. The basic assumption is that attitudes toward one's own behaviors and those of one's spouse are more central than attitudes toward behaviors of individuals in the larger society. Support for this assumption comes from the theoretical and research data presented in Chapter II. Support for the assumption underlying the creation of these two sections also comes from research unrelated to the theoretical positions described in the review of the literature. Wells (1969) developed a conceptual model of premarital sex norms based upon situational or personal involvement. He postulated that each individual possesses reference norms for the "Cultural Ideal", the "Peer Group", the "Ideal Mate", and the "Individual". His research data generally supports the model, but also suggests that males have a separate set of expectations for their sisters. The development of these two sections and their inclusion in the questionnaire represent a significant improvement over other questionnaires. Even if other questionnaires had been used to measure attitudes toward social-sexual attitudes and the behavior of others these sections would have

had to be developed in order to test the basic hypotheses of this research.

Part IVC consists of nine multiple choice questions. Seven of these questions ask the respondent to evaluate his sexual standards in a variety of ways. Two of the questions ask the subject to evaluate the questionnaire. All of these questions are slightly modified versions of questions included in the research by Reiss (1967).

Part V is made up of 50 knowledge questions. The response categories provided are True, False, and Don't Know.

Part VI consists of multiple choice questions about the individual's past sexual behavior. Seven of the questions concern the number of partners in various types of sexual behaviors. The other 11 questions ask about the number of times the individual has experienced various behaviors. The majority of sexual behaviors asked about are included in most survey's of sexual behavior. However, some additional areas were suggested by Clayton (1969) and by the sexual history section of Sarrel's second revision of the S.K.A.T. All of the questions follow a format similar to that used in the second revision of the S.K.A.T.

At the time of posttesting an additional 12 follow-up questions were asked (Appendix G, p.273). Six of these questions ask the subject to indicate whether or not he/she attended each of the six lectures given up to that point. The other questions ask the respondent

to estimate how much his/her knowledge and attitudes have changed since the pretest and to identify the sources of the changes.

The Sex Knowledge and Attitude Survey: Development

The process followed in developing and validating the questionnaire varied somewhat with the different parts. Most of these variations, however, involved either the first step, creation of an item pool, or the last step, development of reliability data.

The process followed in creating item pools for Parts II and VI was the same. The literature was reviewed for variables which had previously been demonstrated to correlate with different sex attitudes. Extant sex knowledge and attitude questionnaires also were examined to identify variables which other investigators considered potentially important determinants or important for describing the characteristics of their samples. Although many of the questions in these two item pools were suggested by several sources, virtually all those ultimately chosen for inclusion in the questionnaire were also included in either the larger research instrument of Reiss (1967) or the second revision of the S.K.A.T. by Sarrel, or were suggested by Clayton (1969). The questions making up Part IVC were isolated as a part of this process.

The creation of item pools for Parts IIIB and V also followed parallel procedures. Six attitude and eleven knowledge questionnaires

were cut up so that each question was isolated on a slip of paper. All of the knowledge and all of the attitude questions on a particular topic were then pasted on separate sheets of paper. The questions in each topic area were then examined to identify similar or equivalent questions, and to identify important areas of concern which were not covered by them. New questions were then written to approximate the questions most often asked in the other questionnaires and to fill in the gaps. At this stage of the process all attitude questions were stated in the form of Likert-type questions. The multiple choice questions of Part IIIA were created at a later stage. In this investigators view a common weakness of some sex attitude questionnaires is the inclusion of questions in which the belief component is much more potent than the affective component in determining the attitude. These questions generally involve relatively uncontroversial or unemotional areas of concern and reflect inaccurate information. Because of these factors they are highly influenced by the acquisition of accurate information. In writing items for this questionnaire particular care was taken to emphasize the affective components of attitudes. This was done in two primary ways. First, Likert's advice that the verb "should" be included in all statements was followed (Likert, 1932). Second, wherever appropriate the terms "permissible" or "acceptable" or their antonyms were used. The term "acceptable" was used more frequently because it connotes greater

approval than does "permissible." The term "tolerable" was avoided because it has fewer positive connotations than do the other terms. Care also was taken to follow the rules of good item writing (Edwards, 1957; Newcomb, Turner, and Converse, 1965).

The item pool for Parts IVA and IVB were created without reference to any other questionnaire. Although the greatest number of questions were written concerning the most important areas of behavior, an effort was made to include questions over the complete range of behaviors covered in Part III.

From these item pools the first draft of the questionnaire was created. This questionnaire consisted of 19 questions in Part II, 188 in Part III, 55 in Part IV, 118 in Part V, and 24 in Part VI.

This first draft of the questionnaire was sent for evaluation to eight professionals in the areas of psychology, health, family life, and human sexuality education. These professionals were asked to evaluate each individual question for face validity and construction. They also were asked to evaluate the comprehensiveness of the instrument and its ability to accomplish its objectives. The eight professionals contacted were Dr. Roy Foster, Professor of Health and instructor of Health Education 444, "Sex Education", at Oregon State University, Mrs. Leah Miller Clarke, Instructor in Family Life and instructor of Family Life 200X, "Human Sexuality", Dr. J. Richard Connelly, Assistant Professor of Family Life

at Oregon State University, Dr. Lester Kirkendall, Professor Emeritus of Family Life at Oregon State University, Mr. Frederick Bidgood, Education and Research Associate of the Sex Information and Education Council of the U.S., Dr. Raymond Sanders, Director of Mental Health Section of Student Health Service at Oregon State University, Mrs. Georgine Thompson, Psychiatric Social Worker at the Oregon State University Student Health Service, and Dr. Mark Wagener, Psychologist at the Oregon State University Health Service. Oral evaluations of the total instrument were received from each of the individuals. Written evaluations also were received from Mr. Bidgood, Mrs. Clarke, Dr. Foster, Dr. Kirkendall, and Dr. Wagner.

Based upon the evaluations of these men and women many questions were deleted, many others rewritten, and the Part IIIA questions written. Some restructuring of the questionnaire also was carried out. The revised questionnaire contained the following numbers of questions: Part II-19; Part IIIA-39; Part IIIB-69; Part IVA-20; Part IVB-16 for males only and 13 for females only; Part IVC-11; Part V-100; Part VI-18. This revised questionnaire was administered to a pilot group of 24 students enrolled in Health Education 444, "Sex Education", at Oregon State University. These students took the questionnaire under essentially the same instructions used later with the treatment and reliability groups. However, they also were asked to write on the questionnaire any comments they

thought would assist the investigator in further revisions.

In the revision process following administration of the questionnaire to the pilot group student comments were taken into account. Other factors affecting the decision to revise, include, or delete a particular question included the degree to which responses were distributed across all alternatives, the percentages of students choosing a response not listed or don't know, and a desire to include a variety of topics but with certain emphases. Although questions were deleted from all sections, the shortening process was concentrated upon Part V because the main thrust of the investigation involved attitudes. Revisions and deletions made during this stage of the development process produced the final instrument containing 207 questions for males and 204 questions for females.

The Sex Knowledge and Attitude Survey:
Reliability and Validity Data

The only kind of validity available for this instrument is its face validity. As serious as this shortcoming may be, it is

shared by all other sex attitude and knowledge questionnaires with which the investigator is familiar.

Although there is only face validity data for the questionnaire, a substantial amount of reliability data has been developed. Because of time restrictions this data was generated concurrently with the actual research. The groups used for the generation of reliability data included the treatment groups, one class of Education 211, "Contemporary Education," one class of Health Education 321S, "School Health Education," and two classes of Education 312, "Educational Psychology."

The experimental and control groups were used in the development of split-half reliability data. The control group also was used for the development of test-retest reliability data with seven weeks separating the questionnaire administrations. The four education and health class groups were used in the development of test-retest reliability data with one week separating the questionnaire administrations.

The generation of reliability data based on the treatment groups involved the use of protocols which also provided the raw data for the

basic research. The generation of reliability data on the class groups involved a separate process. In order to avoid taking up two complete class periods for each of these groups the decision was made to divide the questionnaire in half and give each of the groups only one half. Parts I, IIIA, and IIIB were included in one half. Parts IVA, IVB, IVC, V, and VI were included in the other half. Reliability data for the demographic questions of Part II were not generated. The number of students enrolled in each of the four classes was approximately 40, 25, 30, and 30, respectively. The first half of the questionnaire was given to the first two groups and the second half to the latter two groups. Over 110 individuals took at least one administration of the questionnaire, but it was possible to match only 86 test and retest questionnaires. Thirty-five of these questionnaires were from the groups taking the first half and 41 were from the groups taking the second half of the questionnaire.

Although no demographic data other than sex and academic class were collected for the reliability groups, this data showed that the reliability groups contained a higher proportion of females and juniors and seniors than the treatment groups. It may also be assumed that the reliability groups differed from the treatment groups because they had not signed up to take the human sexuality course. The possibility of a difference because of this situation may have been reduced by the fact that the questionnaire was given to these classes

only after they expressed a willingness to take it. Moreover, similar research by Bernard (1973) with two control groups, one equivalent to that in this research, and a second constituted of a random sample from the total campus population, suggests that the attitudes of students seeking admittance to a human sexuality course are no different from those in the campus population. In any case, the data presented in Appendices J-N indicate only a few differences between the treatment and reliability groups in their responses to individual questions on the first administration of the questionnaire. Thus, the reliability data generated with these groups appears applicable to the treatment groups.

Reliability data was generated for both individual questions and for the summary scores associated with Parts IIIA, IIIB, IVA, and IVB. Reliability data also was generated for the combined summary scores of Parts IIIA and IIIB, and Parts IVA and IVB. The reliability data generated for Part I has been discussed already.

Test-retest reliability coefficients for individual questions are summarized in Appendices O-U. For all questions one test-retest reliability coefficient was computed using the formula for computing Pearson product-moment correlation coefficients. For some sections Cramer's statistic (Hays, 1963, p. 606) also was computed. The reliability coefficient is superior to the coefficient of contingency because it can attain an upper limit of 1.00 (Hays, 1963, p. 606).

The two types of correlation coefficients are reported in the same tables. Separate reliability coefficients were computed for males and females, and in some instances also for males and females combined. In all instances the time between testing and retesting was one week.

Reliability data generated for the parts as a whole are of two types, split-half and test-retest on the summary score. Except for Part IVA the number of individual questions included in these computations varied from the total number of questions included in the questionnaire. One question in Part IIIA and four items in Part V were excluded because they were determined to be impossible to score accurately. One female only and four male only questions in Part IVB were excluded to facilitate comparisons between the sexes. Fourteen questions in Part IIIB were excluded because it was determined that doing so did not decrease the reliability coefficients.

Split-half reliability coefficients were calculated for all four treatment groups on both pretest and posttest measures. These coefficients are summarized in Appendix V. They show a range of .58 to .95, with 55 of 56 above .70. The poorest split-half reliability coefficients were obtained for Part V. The best coefficients were obtained for Parts IIIA and IIIB combined and Parts IVA and IVB combined.

Test-retest reliability coefficients were calculated for administrations of the questionnaire both one week apart and seven weeks apart. These coefficients are summarized in Appendix W. Again, the coefficients for Part V are the lowest, but virtually all coefficients are higher than the split-half coefficients. Only 2 of 24 are below .80.

Although some of the reliability coefficients for Part V are of marginal acceptability, the other coefficients, with a very few exceptions, appear quite satisfactory. Helmstadter (1964, p. 85) reviewed 18 well-known attitude scales and found the median reliability coefficient to be .79, and the range of coefficients to be .47 to .98.

Collection of the Data

Collection of data from the experimental group was facilitated by the requirement that course enrollees participate in the research and by the administration of the questionnaires during class time. The pretest measurement was carried out on April 3, 1972, after the introductory lecture. The posttest measurement was made on May 22, 1972, two weeks and one class period before the end of the term (one class meeting time fell on Memorial Day, May 29, 1972). On both occasions students were required to have their names checked off a master roll before being given questionnaires.

Administration of the questionnaires to the control group was a much more complicated and difficult process. All potential control group members were contacted by letter on March 28, 1972 (Appendix F). This letter did several things: (1) it gave some general background on the research; (2) it requested the recipient's participation in the research; (3) it explained the importance of the individual's participation; (4) it explained that responses would be anonymous; (5) it detailed when and where the questionnaire could be taken.

Enclosed with each letter was a stamped and addressed postcard on which the student was asked to indicate whether or not he or she was willing to participate and when he or she would take the questionnaire if willing. Instructions concerning this postcard also were included in the letter. Although all but six of the students returning the postcards indicated a willingness to participate, a disconcertingly low percentage (40%) of students returned the postcards. This low response was followed by even poorer participation on the first scheduled day of questionnaire administration. These two conditions caused the investigator to consider emergency alternative methods of developing a control group. Before putting any of these methods into operation, however, two immediate steps were taken to increase participation of those already contacted. First, the times when the questionnaire could be taken were extended over two additional days and an additional 15 hours. Second, every potential participant was

contacted by telephone. Some individuals were contacted more than once if they failed to take the questionnaire at the time they had previously indicated they would do so. Because questionnaires were taken anonymously, a method of determining who had taken the questionnaire was implemented to allow the contact of non-participants while preventing further calls to participants. On the second day of test administration a list of potential participants was placed on a table across the room from the test administrator. After turning in the questionnaire each subject was asked to go back across the room and cross off his/her name. Based upon telephone contacts the first day's participants were crossed off by the investigator.

Even though hundreds of telephone calls were made, every potential subject was not reached and many did not take the questionnaire during the 31 hours it was administered. In a last attempt to elicit the participation of these individuals another letter (Appendix G), a questionnaire, and an answer sheet were mailed to them. A convenient location on campus was designated for the return of the questionnaires. This procedure produced the participation of an additional 37 individuals.

Contact with the control group in mid-May was again initiated by letter (Appendix H). This letter outlined when and where the questionnaire could be taken, and reiterated the importance of each person's participation. It also called attention to the fact that the

posttest questionnaire was 20% shorter. More important, it offered two dollars to each person completing the second questionnaire who also completed the first questionnaire.

Even though the two dollar reward for taking the questionnaire acted as a significant incentive to many subjects, it was still necessary for the researcher to follow a process similar to that followed with the pretest. The days originally scheduled for giving the test were Monday through Thursday, May 22-25. To accommodate the expressed desires of many subjects the questionnaire also was given on Friday. As with the pretest administration of the questionnaire, telephone contacts were made Tuesday, Wednesday and Thursday evenings. Based on the pretest experience, another "last ditch plea" letter was written prior to Friday (Appendix I). Together with the questionnaire and answer sheet this letter was hand delivered or mailed on Friday evening to all the subjects who had not completed the questionnaire during the previous week's 37 1/2 hours of administration. Fifteen hours the following week were set aside when the potential subjects could turn in their questionnaire and collect the two dollars. Twenty-nine questionnaires were mailed or hand-delivered. Nineteen were returned.

The size of the potential control group was 131. This included 57 men and 74 women. Only three men and three women indicated they were unwilling to participate. However, another seven men and five

women simply failed to take the questionnaire. Other individuals took the pretest and then withdrew from school or were admitted to the course or were inadvertently mixed in other concurrent research on the same course. Still other individuals failed to take the posttest. The actual number of individuals included in the research reflected the loss of these individuals, plus those whose pre- and posttest questionnaires could not be matched, and a few individuals whose questionnaires were discarded for other reasons. The individuals actually included in the research represented 67% of the males and 69% of the females in the population available for study.

The population from which the experimental group could be drawn was larger than the corresponding control group and greater success was achieved in obtaining a high level of participation. The potential experimental group included 74 men and 114 women. The number of individuals actually included in the data analysis was 61 men and 106 women. Most of the original population not included in the final sample withdrew from school. Fifteen individuals fell in this category. Other individuals were not included for the same reasons individuals were left out of the control group. The data analysis was performed on the questionnaires of 82% of the potential experimental group males and 93% of the potential experimental group females.

Although the participation percentages for the control groups are much lower than desirable they may not be unreasonable in view of the lack of positive incentives offered for participation and the need for obtaining two protocols. This hypothesis is suggested by several facts. One, in a very similar investigation another researcher was able to obtain 96% participation from a similar potential control population by offering three dollars to fill out the pre-measure, three dollars to fill out the post-measure, and guaranteed admission to the course the next year (Bernard, 1973). Additionally, only 3 of 96 participants dropped out of the research after taking the pre-measure. Two, the investigation described in this paper incorporated every other strategy which other investigators had found useful in increasing participation in their research, except one, use of individually typed letters (Linsky and Spendlove, 1967; Roeher, 1964; Ruppel, 1970). Three, by following similar procedures as outlined in this paper another investigator was able to obtain a response rate of 83%, which he considered "an excellent level of response for a study of this type" (Ruppel, 1970), but this figure was achieved for one measure only. A somewhat higher figure was achieved in this investigation on the pretest.

What effect the relatively high attrition rate had upon the research cannot be determined. Examination of the data in Tables 2-9 and Appendices J-N indicates that the treatment and control groups

were very similar in background, previous sexual experience, and scores on pretest measures of attitude and knowledge. Though simplifying the data analysis and interpretation this situation does not prove that the attrition rates had little or no effect upon the composition of the groups. It may indicate that attrition removed or reduced significant differences which had been present initially.

Data Processing

Responses to Part I, the P.S.P.S., were recorded by the subjects on the combination questionnaire-answer sheet (Appendix C) which was hand scored. All other responses were recorded on a machine scored IBM 504 answer sheet. The first step in the data processing involved matching the P.S.P.S. questionnaire-answer sheets with IBM 504 answer sheets and pretest answer sheets with posttest answer sheets. Answer sheets which could not be matched were discarded. The next step involved hand scoring the P.S.P.S. and entering the scores on the IBM 504 answer sheet. The P.S.P.S. score was incorporated in a unique identification number for each individual. This identification number was designed to facilitate data analysis and also incorporated codes to indicate the individual's treatment group, sex, academic class, and religion.

At the same time the identification numbers were being marked on the answer sheets the answer sheets were checked for a number of

possible irregularities, e.g. incomplete erasures, stray pencil marks, use of pen instead of pencil, which could cause problems in subsequent data processing. Also checked were irregularities, e.g. incomplete answer sheets, faking, random or purposefully distorted responses, which could affect subsequent data analysis. Faking and random or distorted responses were checked by comparing responses to pairs of questions in Parts III and VI. These procedures resulted in several more protocols being discarded.

The corrected answer sheets were then processed by an IBM 1232 Optical Mark Page Reader and a 534 Card Punch to provide punched data tab cards. A total of twelve cards were created for each individual. These cards were subsequently submitted to a CDC 3300 computer for further data processing and the data analysis. The computer processing first involved steps to reduce the number of lines of file storage for each individual from twelve to six and to rearrange the data for easier data analysis. Once the first step of data analysis was complete new files were created with one line of file space per person and the other six lines were destroyed.

Analysis of the Data

The data analysis followed an essentially two stage process. In the first stage the responses to individual questions were analyzed. In the second stage total scores were analyzed. This sequence made

it possible to destroy huge files of data before the data analysis was complete and thereby reduce storage costs on the computer. This sequence also facilitated the development of reliability data which influenced subsequent analysis. Throughout the data analysis, except when being compared with each other, experimental group males, experimental group females, control group males, and control group females were analyzed separately.

The first step in the first stage was to generate certain basic descriptive statistics. The number of responses to the various alternative answers to each question were tabulated and then converted to percentages. For the attitude and knowledge portions of the questionnaire, means, standard deviations, and variances were computed. Pre- and posttest paired-t tests also were computed for these questions. All of these statistics were tabled--a separate table for each of the four treatment groups and each of the test parts. Comparisons of these tables indicated differences among questions and among groups.

Differences among questions were compared with similar data concurrently generated on the reliability groups and used to develop hypotheses about which questions should be included in the total scores to be computed in stage two. Differences among groups were generally in line with expectations that males differed from females on the pretest, but differences between the control and experimental

groups were slight. This stage of the analysis provided answers to hypothesis seven.

The second stage of the analysis dealt with total scores and concerned hypothesis two. The first step in this part of the analysis used a multivariate analysis procedure to determine if the four groups were equivalent on the pretest measure considering at the same time the following seven summary scores: Part IIIA, Part IIIB, Parts IIIA and IIIB combined, Part IVA, part IVB, Parts IVA and IVB combined, and Part V. The results of the multivariate test indicated that the groups were significantly different. Univariate F-tests were then calculated for each of the seven summary scores. Significant differences on the univariate F-tests were followed by t-tests to pinpoint the source of the differences.

A similar process was then followed with posttest data. First, a multivariate analysis was performed on the same seven summary scores. A significant difference was found again. Univariate analyses of variance and covariance were then used to determine which of the posttest summary scores were different. Analysis of covariance was used wherever pretest analysis of variance indicated significant difference among groups. T-tests were calculated to locate which groups differed from each other.

Completion of the data analysis thus far left several of the basic hypotheses of the study unanswered. The remainder of the analysis

was directed to answering these questions, but followed no pattern such as that described above. To determine the effect of demographic and sexual experience variables upon attitude change and knowledge gain a series of one-way analyses of variance on change scores were computed. A series of product moment correlations were computed to determine the relationship of change in one part of the test with changes in other parts.

Throughout the data analysis a significance level of $p \leq .05$ was used for both one and two-tailed tests. At the same time, other significance levels were noted. Significance levels of $p \leq .10$ confirmed trends suggested by data significant at higher levels of significance. Significance levels of $p \leq .025$ and higher were indicated wherever achieved to increase the precision of data interpretation.

Throughout the test of the next chapter reference will be made to the summary scores of the attitude and knowledge subsections of the questionnaire by the designations given the subsections when they were described in pages 121-123. For easier reference these designators and a brief description of the questions they represent are presented in the following table.

Table 1. Designators for the summary scores considered and brief descriptions of the questions upon which summary scores are based.

Designator	Description
I or P.S P.S.	The "Premarital Sexual Permissiveness Scale". A 12 item Guttman scale.
IIIA	Twenty multiple choice questions dealing with sexual behaviors of non-significant others.
IIIB	Thirty four Likert-type questions dealing with sexual behaviors of non-significant others. Response alternatives were "Strongly Agree," "Agree," "Uncertain," "Disagree," and "Strongly Disagree." Pretest correlations between IIIA and IIIB for the four treatment groups ranged from .64 to .84 with an arithmetic average of .75.
IIIA & IIIB	This designator refers to the combined summary scores of the two parts. Pretest correlations between IIIA and IIIA & IIIB for the four treatment groups ranged from .88 to .94 with an arithmetic average of .91. Similar correlations for IIIB and IIIA & IIIB ranged from .93 to .98 with an arithmetic average of .96.
IVA	Eighteen Likert-type questions dealing with individual's attitudes toward his own possible sexual behavior. Response alternatives were "Impossible/Almost Impossible," "Very Difficult," "Difficult," "Not Very Difficult," and "Easy".
IVB	Ten Likert-type questions dealing with attitudes toward the possible sexual behavior of the individual (three questions) and his/her spouse (seven questions). Pretest correlations between IVA and IVB for the four treatment groups ranged from .61 to .72 with an arithmetic average of .64.

Table 1. Continued

Designator	Description
IVA & IVB	This designator refers to the combined summary scores of the two parts. Pretest correlations between IVA and IVA & IVB for the four treatment groups ranged from .91 to .94 with an arithmetic average of .93. Similar correlations for IVB and IVA & IVB ranged from .86 to .91 with an arithmetic average of .89.
V	Forty six knowledge questions with response alternatives of "True," "False," and "Don't Know". Only the number of correct responses were used in computing the summary score.

IV. RESULTS

Hypothesis 1: There are no significant differences between the experimental and control groups on the demographic and previous sexual experience variables.

The first step in testing this hypothesis was a comparison of the four treatment groups on each of the demographic variables. A complete table of the chi squares can be found in Table 2. McNemar (1955, p. 222) recommends that adjacent cells be combined so as to have no expected frequency less than ten, but he also indicates that chi squares may be computed with expected frequencies of only five if interpreted cautiously. In this research it was necessary to combine cells on most variables just to achieve an expected frequency in each cell of five, much less of ten. For some variables it was impossible to achieve expected frequencies of five even by reducing the data to 4 x 2 tables. Therefore, all of these statistics should be considered with caution. The danger of combining cells is the possibility of maximizing differences. The decisions on cell combination in this study were made upon the logical relationships between the responses represented by the two or more cells combined. No effort was made to maximize differences. Where the most logical combination appeared to maximize differences, or when an equally logical combination of cells could have been made, another

Table 2. Comparison of experimental males vs. experimental females vs. control males vs. control females on demographic variables.

Item Number	Item Description	Chi Square	df	Significance
5	Age	10.63	6*	p < .10
		9.59	3	p < .025
9	Marital status	3.11	3	ns
13	Academic class	20.19	9	p < .025
		7.65	3	p < .10
17	Sexual orientation	11.61	3*	p < .01
21	Race	.34	3*	ns
24	Children in household	12.00	9	ns
29	Religion	18.73	9*	p < .05
		17.55	6	p < .01
33	Religious devoutness	12.21	9*	ns
37	Major	68.17	12*	p < .001
		66.27	9	p < .001
41	Size of hometown	14.60	9*	ns
		10.14	6*	ns
45	Father's occupation	3.73	6	ns
49	Mother's occupation	8.39	9*	ns
		6.66	6	ns
53	Student's expected occupation	120.76	6*	p < .001
		121.55	3	p < .001
57	Mother's education	13.49	6*	p < .05
		5.03	3	ns
61	Father's education	4.24	9	ns
65	Parent's income	1.50	6	ns

* Indicates that the expected frequency for at least one cell was less than five.

chi square was computed. Both chi squares are reported in the table. Two chi squares also are reported where the first chi square calculated involved one or more expected values less than five.

Following these comparisons of all four treatment groups simultaneously the groups were compared two at a time. Four types of comparisons were made: experimental males vs. experimental females; control males vs. control females; experimental males vs. control males; experimental females vs. control females. The results of these comparisons are largely what might be expected and are summarized in Tables 3 and 4. Males were very similar regardless of treatment condition (see Table 3). The same was true of females (see Table 3). The only apparent exceptions were on the variable of religion (question 29) and mother's education (question 57) for males and the related variables of age (question 5) and academic class (question 13) for females. Experimental males were more likely than control males to have mothers whose highest level of education was high school and less likely to have mothers with advanced college degrees. Experimental males were more likely than control males to be Catholic. Although the significance of these results for the males differed depending upon the way in which cells were or were not combined, examination of the raw data suggests that the differences were in fact significant in the manner described. The method of cell combination did not affect whether or not the

Table 3. Comparison of experimental males vs. control males and experimental females vs. control females on demographic variables.

Item Number	Experimental males vs. control males			Experimental females vs. control females		
	Chi Square	df	Significance	Chi Square	df	Significance
5	.11	2*	ns	6.53	2*	p < .05
	.07	1	ns	6.49	1	p < .025
9	1.01	1	ns	.15	1	ns
13	.68	3	ns	17.24	3	p < .001
	.07	1	ns			
17	.04	1*	ns	33.06	0	ns
21	.10	1*	ns	.17	1*	ns
25	4.45	3	ns	4.58	3	ns
29	6.06	3*	ns	1.61	3*	ns
	6.04	2	p < .05	.91	2	ns
33	4.55	3*	ns	4.17	3	ns
	3.52	2	ns			
37	1.64	3*	ns	1.41	3*	ns
	1.07	3	ns			
41	3.32	3	ns	5.66	3*	ns
45	.42	2	ns	1.82	2	ns
49	2.39	3*	ns	1.09	3	ns
53	.14	2*	ns	1.04	2	ns
57	9.93	2*	p < .01	.56	2*	ns
	2.28	2	ns	.23	2	ns
61	.57	3	ns	1.72	3	ns
65	.02	2	ns	1.29	2	ns

* Indicates that the expected frequency for at least one cell was less than five.

Table 4. Comparison of experimental males vs. experimental females and control males vs. control females on demographic variables.

Item Number	Emperimental males vs. Experimental females			Control males vs. Control females		
	Chi Square	df	Significance	Chi Square	df	Significance
5	7.16	2*	p < .05	.32	2*	ns
	6.27	1	p < .025	.16	1	ns
9	.78	1	ns	.65	1*	ns
13	6.32	3	p < .10	2.67	3	ns
	4.61	1	p < .05	.21	1	ns
17	7.23	1*	p < .01	4.17	1*	p < .05
21	.03	1*	ns	.02	1*	ns
25	.19	3	ns	11.78	3	p < .01
29	5.07	3	ns	8.02	2	p < .025
33	2.32	3	ns	7.57	3	p < .10
37	45.41	3	p < .001	19.58	3	p < .001
41	8.13	3	p < .05	2.78	3*	ns
45	1.43	2	ns	.16	2	ns
49	5.66	3	ns	1.01	3*	ns
53	72.91	2	p < .001	46.38	2*	p < .001
57	6.44	2*	p < .05	4.13	2*	ns
	3.65	2	ns	.92	2	ns
61	.47	3	ns	2.19	3	ns
65	.43	2	ns	.16	2	ns

* Indicates that the expected frequency for at least one cell was less than five.

female groups differed significantly. Among the experimental females there were proportionately more 16-20 year olds, while control females were proportionately more in the 21-22 age group. These differences paralleled the differences in academic class. Experimental females were drawn more heavily from the freshmen and sophomore classes, while almost half of the control females were seniors (question 13).

The number of variables on which the sexes within treatment conditions differed were substantially larger (see Table 4). In both treatment conditions the sexes differed on the variables of sexual orientation (question 17), major (question 37), and expected occupation (question 53). The differences in major and expected occupation were completely what one would expect. The males were more likely to be in agriculture, forestry, engineering, or business and technology, and the females were more likely to be in humanities and social sciences or home economics. Over 90% of the males expected to be either professionals or business executives, while high proportions of the females expected to be homemakers. On the sexual orientation variable both of the male groups had more individuals who described themselves as homosexual or bisexual. Not one female described herself as anything other than heterosexual, but two males described themselves as homosexual and five males described themselves as bisexual.

Comparisons of experimental males with experimental females indicated that the male group had more 21 and 22 year olds while the female group had more 19 and 20 year olds (question 5). Paralleling this situation, the male group had more seniors, while the female group had more sophomores (question 13). Experimental males also appear to have come proportionately more from smaller hometowns, although the percentage data is not strikingly clearcut (question 41). The percentage data also seems to indicate that experimental males had a greater percentage of mothers who completed high school (question 57).

The control males and control females appear to be somewhat less different from each other than the experimental group males and females. Control males apparently came more from homes with only one or two children, while the control females apparently came more from homes with three children (question 25). Perhaps in some way related is the fact that control females were more likely to describe themselves as Catholic, whereas control males were more likely to describe themselves as either having no religion or being one of the non-major religions (question 29).

A process parallel to that used with the demographic variables was followed with the sexual experience variables. The chi squares computed on all four groups compared simultaneously indicated that significant differences existed on nine of the 18 variables. The

results are summarized in Table 5. Subsequent t-tests indicated that experimental males did not differ significantly from control males, and experimental females did not differ significantly from control females (see Table 6). On the other hand, males in both groups differed significantly from the females in the same treatment condition on many variables (see Table 7). On four of the variables males and females in both treatment conditions differed significantly: number of people with whom petted to orgasm (question 285), number of people with whom had homosexual relations (question 289), number of homosexual experiences (question 309), and weekly frequency of masturbation (question 182). Males and females in both treatment groups also differed on number of coital partners, but at the .10 level, a level only approaching significance. On the variable of coital experiences without orgasm (question 313), control males and females differed significantly, but the difference between experimental males and females only approached significance at a .10 level. This result was switched on the topic of coitus with orgasm (question 317). Experimental males and females differed significantly, but the difference between control males and females only approached significance at the .10 level. The direction of difference on all the variables discussed this far was very much as expected. On every variable except that of coitus without orgasm (question 313) the males proportionately fell in the higher

Table 5. Comparison of experimental males vs. experimental females vs. control males vs. control females on sexual history variables.

Item Number	Item Description	Chi Square	df ^a	Significance
273	No. people dated	7.95	12	ns
277	No. of "steadies"	4.05	6	ns
281	No. of people petted without orgasm	9.78	6	ns
301	No. of times petted without orgasm	13.13 9.45	9* 6	ns ns
285	No. of people pet to orgasm	21.84 18.45	9* 6	p < .01 p < .01
305	No. of times pet to orgasm	6.62 7.32	9* 6	ns ns
289	No. of people had homosexual relations with	16.01	3*	p < .001
309	No. of homosexual experiences	16.11	3*	p < .005
166	No. of times had an abortion or impregnated woman who had one	3.97	3*	ns
182	No. of times masturbate per week	5.08 36.31	3* 3	ns p < .001
297	No. of people paid or been paid by for intercourse	7.09	3*	p < .10
162	No. of times paid or received payment for intercourse	7.58	3*	p < .10
293	No. of people had coitus with	14.69	6	p < .025
313	No. of times had coitus without orgasm	28.63	9*	p < .001
317	No. of times had coitus with orgasm	22.36	6	p < .005

(Continued on next page)

Table 5. (Continued)

Item Number	Item Description	Chi Square	df ^a	Significance
170	No. of times coitus with "effective" contraception	12.80	6	p < .05
174	No. of times coitus with "ineffective" contraception	2.01	6	ns
178	No. of times coitus without contraception	20.69	6	p < .05

^aNote that all chi square statistics in this table would have 12 degrees of freedom if it were not necessary to collapse cells together in order to have an expected frequency of five in each cell.

* Even with collapsed cells some cells had expected frequencies less than five.

Table 6. Comparison of experimental males vs. control males and experimental females vs. control females on sexual history variables.

Item Number	Experimental males vs. Control males			Experimental females vs. Control females		
	Chi Square	df ^a	Significance	Chi Square	df ^a	Significance
273	1.90	4	ns	5.59	4	ns
277	1.40	2	ns	2.58	2	ns
281	4.55	3	ns	.20	2	ns
301	5.81	2	p < .10	3.27	3*	ns
				1.51	2	ns
285	2.45	3*	ns	2.51	3*	ns
	1.72	2	ns	.39	2	ns
305	1.02	3*	ns	.15	3*	ns
289	.00	1	ns	.21	1*	ns
309	1.34	1	ns	.00	1*	ns
166	.76	1*	ns	.40	1*	ns
182	.50	1*	ns	.41	1	ns
	.47	1	ns			
297	.45	1*	ns	.20	1*	ns
162	.14	1*	ns	1.87	1*	ns
293	3.64	2	ns	.50	2	ns
313	4.01	2	ns	3.21	3	ns
317	1.68	2	ns	2.87	2	ns
170	.37	2	ns	2.96	2	ns
174	.15	2	ns	.49	2	ns
178	5.34	2	p < .10	.27	2	ns

^a Note that all chi square statistics in this table would have 4 degrees of freedom if it were not necessary to collapse cells together in order to have an expected frequency of five in each cell.

* Indicates that the expected frequency for at least one cell was less than five.

Table 7. Comparison of experimental males vs. experimental females and control males vs. control females on sexual history variables.

Item Number	Experimental Males vs. Experimental Females			Control Males vs. Control Females		
	Chi Square	df ^a	Significance	Chi Square	df ^a	Significance
273	1.09	4	ns	1.36	4	ns
277	.07	2	ns	.09	2	ns
281	4.22	4*	ns	6.75	2	p<.05
301	3.41	2	ns	2.31	3	ns
285	8.42	3*	p<.05	12.16	3*	p<.01
	6.73	2	p<.05	9.97	2	p<.01
305	2.40	3	ns	3.68	3*	ns
289	11.36	1*	p<.001	4.74	1*	p<.05
309	5.41	1*	p<.025	7.82	1*	p<.01
166	3.86	1*	p<.05	.01	1*	ns
182	17.19	1	p<.001	18.86	1	p<.001
297	5.99	1*	p<.025	.79	1*	ns
162	7.22	1*	p<.01	.79	1*	ns
293	5.58	2	p<.10	5.98	2	p<.10
313	7.74	3	p<.10	20.61	3*	p<.001
317	15.90	2	p<.001	5.94	2	p<.10
170	3.69	2	ns	7.79	2	p<.025
174	.80	2	ns	.86	2	ns
178	13.38	2	p<.005	3.25	2	ns

^aNote that all chi square statistics in this table would have 12 degrees of freedom if it were not necessary to collapse cells together in order to have an expected frequency of five in each cell.

*Indicates that the expected frequency for at least one cell was less than five.

activity levels. On the variable of number of coital experiences with "effective" birth control (question 170) the experimental males and females did not differ significantly, but the control males tended to fall more often into the extreme categories than the control females and the control females more often seemed to have had coitus with effective contraception two to five times. On the variable of coitus without any form of contraception (question 178) the control males and females did not differ, but the experimental males were much more likely to have coitus under these circumstances ten or more times. On two of the variables the four way comparison produced results which only approached significance at .10. Two-way comparisons on these variables, number of people and experiences involving paid intercourse (questions 297 and 162), indicated that on both variables experimental males differed significantly from experimental females, but control males and females did not differ. On both of these variables the males were more likely to indicate more activity. Two significant results on two-way comparisons were fortuitously discovered because of the computer program and not expected from the four-way comparisons. Experimental females were apparently more likely to have had experience with abortion (question 166) than were experimental males. Control males in greater proportions than control females had experience with a number of people in which they petted without orgasm (question 281).

Considering all of the personal history and sexual history variables it would seem appropriate to reject the first hypothesis. Although there were some significant differences between experimental males and control males, and also between experimental females and control females, these differences were so few as to suggest that the females in both groups were closely alike and the same was true of males in both groups. On the other hand, there were many significant differences between the sexes within both the experimental and control conditions. Thus, based upon the differences between the sexes the hypothesis was rejected.

Hypothesis 2: There are no significant differences between the experimental and control groups at the time of pre-testing on the knowledge and attitude summary scores.

The first step in testing this hypothesis was to conduct a multivariate analysis on the means of the summary scores, except for the P. S. P. S. This test involved an extension of Hotelling's T^2 and the statistic is distributed like chi square. A chi square of 344.73 was obtained, which is significant beyond the .001 level.

Thus, the second hypothesis must be rejected.

The second step involved conducting univariate analyses of variance on each of the summary scores, except for the P.S.P.S., to locate the significant differences. Differences significant at the .05 level were found on all of the summary scores except Part V, the knowledge section. These results are summarized in Table 8.

Step three involved multiple t-tests to identify the sources of differences suggested in step two. For each of the summary scores four t-tests were computed: experimental males vs. experimental females, control males vs. control females, experimental males vs. control males, and experimental females vs. control females. These results are summarized in Table 9. For each of the summary scores the t-tests indicated significant differences between the experimental males and females, and also between control males and females, but non-significant differences between experimental males and control males, and between experimental females and control females. In other words, as was true on the demographic and sexual history variables, the significant differences existed between the sexes within treatment conditions, but not between members of the same sex in different treatment conditions.

Table 8. Comparison of experimental males vs. experimental females vs. control males vs. control females on pretest summary scores.

X^2 for multivariate means test = 344.73

df = 21

p < .001

Variable	Univariate F*	Significance
IIIA	7.49	p < .001
IIIB	9.52	p < .001
IIIA & IIIB	9.23	p < .001
IVA	23.34	p < .001
IVB	2.99	p < .05
IVA & IVB	14.25	p < .001
V	1.60	ns

* df for each test = 3,252

Table 9. Comparison of treatment groups on pretest summary scores.

Part of questionnaire	Experimental Males vs. Experimental Females ^a		Control Males vs. Control Females ^b		Experimental Males vs. Control Males		Experimental Females vs. Control Females	
	Value of t	Significance	Value of t	Significance	Value of t	Significance	Value of t	Significance
IIIA	4.10	p < .001	2.53	p < .025	.36	ns	.78	ns
IIIB	4.98	p < .001	2.33	p < .025	.67	ns	-.37	ns
IIIA & IIIB	4.84	p < .001	2.56	p < .025	.52	ns	.35	ns
IVA	7.11	p < .001	4.40	p < .001	1.01	ns	.40	ns
IVB	2.32	p < .025	1.92	p < .05	.17	ns	.27	ns
IVA & IVB	5.37	p < .001	3.69	p < .001	.70	ns	.38	ns
V	t- tests not calculated because Univariate F-test non-significant.							

^a df = 165

^b df = 87

^c df = 97

^d df = 155

Because the data for Part I may be logically classified on an a priori basis into meaningful groups, chi square statistics were computed. Individuals receiving scores of one, two, or three were classified as low permissive, those receiving scores of four or five were classified as moderate permissive, and those receiving a score of six were classified as high permissive. This method of classification was previously discussed on page 119 of Chapter III. The results of these chi squares (as well as similar results for the post-test data) are summarized in Table 10. A comparison of the results in Table 10 with those for the other parts in Tables 8 and 9 shows them to be congruent.

Based on the results reported in Tables 8, 9, and 10 hypothesis two was rejected for all the measures of attitude, but accepted for the measure of knowledge. Because both hypotheses one and two were rejected the analyses of posttest data retained the separation of the sexes. Had the two hypotheses been accepted there would have been good justification for combining the experimental group males with experimental females and control group males with control females.

Hypothesis 3: There are no significant differences between the experimental and control groups in the amount of change shown on posttest knowledge and attitude summary scores.

Table 10. Comparisons of treatment groups on pretest and posttest administrations of Part I,
P.S.P.S.

	Pretest			Posttest		
	Chi square	df ^a	Significance	Chi square	df	Significance
Experimental Males vs. Control Males vs. Experimental Females vs. Control Females	33.39	6	p<.001	48.42	6*	p<.001
Experimental Males vs. Control Males	1.30	2*	ns	2.32	2	ns
Experimental Females vs. Control Females	1.29	2	ns	.05	2	ns
Experimental Males vs. Experimental Females	25.25	2	p<.001	37.25	2	p<.001
Control Males vs. Control Females	6.92	2	p<.05	10.65	2*	p<.005

^aIn order to achieve an expected frequency of five in each cell the scale scores were combined into three groups as described on pages . On three comparisons this procedure still left one or more cells with expected frequencies less than five. Nevertheless, further combinations were not made because there was no way to do so and retain a logical consistency with the other comparisons. Moreover, the expected frequencies were generally close to five.

*Indicates that at least one cell had an expected frequency of less than five.

Hypothesis three was tested in a fashion very similar to that followed in testing hypothesis two. First, a multivariate analysis on the means of the seven summary scores of Parts III, IV, and V was computed. This produced a chi square statistic of 150.00 which is significant well beyond the .001 level. As in the testing of hypothesis two, additional procedures were followed to identify the parts of the questionnaire on which there were significant differences and to identify which groups differed significantly from each other.

The summary scores on which significant differences existed were identified by conducting analyses of covariance with the pretest scores used as covariants. Analysis of covariance was used instead of analysis variance because of the differences which existed at time of pretesting. The results of these analyses are presented in Table 11. Significant differences at the .001 level were found on five of the summary scores. The significant differences on the posttest were found for the scores of Parts IIIA, IIIB, IIIA & IIIB, IVA, and V. These results indicate substantial or significant changes for four of the seven summary scores. The scores for IVB and IVA & IVB exhibited nonsignificant differences on the posttest whereas there had been none on the pretest. Although the differences on Part IVA remained significant at the .001 level the size of the F statistic was drastically reduced.

Table 11. Comparison of experimental males vs. experimental females vs. control males vs. control females on posttest summary scores.

X^2 for multivariate means test = 150.00		
df = 21		
p < .001		
Variable	Univariate F*	Significance
<hr/>		
IIIA	6.75	p < .001
IIIB	8.83	p < .001
IIIA & IIIB	11.46	p < .001
IVA	5.88	p < .001
IVB	1.21	ns
IVA & IVB	1.67	ns
V ^a	31.25	p < .001

* All statistics based upon analysis of covariance with pretest score as covariate and df = 3,251.

^a Analysis of variance performed on this score produced a statistic of 10.22 which also is significant at p < .001.

T-tests computed to identify which groups differed significantly from each other showed similar dramatic shifts (see Table 12). On the pretest 12 significant differences were identified (see Table 9, p. 159). All twelve of these differences were found in comparisons of experimental males vs. experimental females and control males vs. control females. In other words, all pretest differences existed between the sexes; experimental males did not differ significantly from control males and experimental females did not differ significantly from control females. In contrast, on the posttest 11 significant differences were identified, but only 3 of them involved comparisons of males and females. Two of these differences had existed on the pretest; but in each instance where significant differences were found on both pretest and posttest the level of significance was greater at the time of pretesting. Significant differences between the sexes found on pretesting which remained upon posttesting involved experimental males vs. experimental females on Part IVA and control males vs. control females also on Part IVA. The only significant difference between the sexes which was identified on posttesting but not pretesting involved control males vs. control females on Part V. This difference is likely the most marginal of any which achieved a significance level of .05. This significance level was achieved with analysis of covariance. Because pretest differences were nonsignificant analysis of variance also

Table 12. Results of t-tests on posttest summary score adjusted group means.

Part of Questionnaire	Experimental males vs. Experimental females ^a		Control males vs. Control females ^b		Experimental males vs. Control males ^c		Experimental females vs. Control females ^d	
	Value of t	Significance	Value of t	Significance	Value of t	Significance	Value of t	Significance
IIIA	.79	ns	.77	ns	2.79	p < .005	2.70	p < .005
IIIB	-.02	ns	-.59	ns	3.59	p < .001	2.88	p < .005
IIIA & IIIB	-.02	ns	-.37	ns	3.92	p < .001	3.43	p < .001
IVA	2.98	p < .005	2.06	p < .025	1.77	ns	.89	ns
IVB	nc		nc		nc		nc	
IVA & IVB	nc		nc		nc		nc	
V	-1.40 (-.08) ^z	ns (ns)	-1.72 (-1.05)	p < .05 (ns)	6.14 (3.69)	p < .001 (p < .001)	5.55 (3.81)	p < .001 (p < .001)

a df = 165

b df = 87

c df = 97

d df = 155

nc Not calculated because analysis of covariance was nonsignificant.

z Results of analysis of variance included in parentheses.

was computed. The difference detected by the analysis of variance was nonsignificant.

The chi square statistics for Part I on pretest and posttest (see Table 10, p. 161) somewhat follow the same pattern as those for Part IVA. Like the scores on IVA the differences between the sexes found at the time of pretesting were found again on posttesting.

The differences described thus far are completely overshadowed by the other differences identified on posttesting. At the time of pretesting there were no significant differences between experimental males and control males or between experimental females and control females (see Table 9, p. 159). On posttesting there were eight significant differences (Table 12), all involving peripheral attitudes and knowledge. The pattern of these differences indicate that the experimental males and females changed significantly more from pretest to posttest than did control males and females in the two areas of peripheral attitudes and knowledge. These results indicate that hypothesis three should be accepted for central attitudes and rejected for peripheral attitudes and knowledge.

Hypothesis 4: There are no relationships between demographic variables and significant changes between pretesting and posttesting on knowledge or attitude summary scores.

The procedure followed in testing this hypothesis differed in three respects from the procedures used in testing any of the first three hypotheses. First of all, since the changes from pretest to posttest were greatest for experimental males and females only these groups were involved in the analyses. Secondly, because the three measures of peripheral attitudes were so highly correlated with each other only one measure was chosen for analyses. The IIIA & IIIB score was chosen because the reliability data indicated it was slightly superior to the IIIA or IIIB measures taken alone (See appendices V and W). In the third place, the analyses were performed on change scores. In other respects the procedure was similar to procedures followed before. As was true in testing hypothesis one it was often necessary to combine the scores of individuals in logically related groups in order to make meaningful analyses of variance or t-tests. This was particularly true with respect to the experimental males where 61 individuals were typically spread over five categories. In all cases where significant t-test results were obtained without first testing the variance, a subsequent check for homogeneity of variances was made. For some variables it was impossible to even approach 20 individuals in a group even by combining so as to have only two groups. No analyses were made on these variables, i. e., race and sexual orientation.

Because analyses were not performed on the two demographic variables, a total of 14 demographic variables were analyzed for their relationship to knowledge gain and peripheral attitude change in the two groups. In addition, six sexual experience questions (182, 273, 277, 281, 285, and 293), two items from the follow-up questions (202 and 214; see Appendix E), the P.S.P.S. pretest score, and the pretest and posttest responses to question 68 were also included in the analyses. The six experience items included those asking about frequency of masturbation, and number of people dated, gone steady with, petted without orgasm, petted with orgasm, and had coitus with. The two follow-up questions asked the subjects to estimate how much their knowledge and attitudes had changed over the term. Question 68 asks the subjects to indicate whether the questionnaire got at the essence of their sexual attitudes. Those variables for which results approached or reached significance are listed in Tables 13 and 14. Based upon these results it appears that religious devoutness, education of mother, and personal sexual permissiveness were related to peripheral attitude change in females. Religion and coital experience appear related to peripheral attitude change in experimental males. Religion and number of people with whom petted without reaching orgasm appear related to knowledge gain in females. Because this number of significant findings would be

Table 13. Variables found to be significantly related to attitude change.

Item Number	Groups Compared	Test Statistic	df	Significance
33	Very devout, devout, & moderately devout vs. slightly devout vs. inactive in religious beliefs	<u>Experimental Females</u> 4.72 ^a	2, 104	p < .025
	Inactive vs. very devout, devout, & moderately devout in religious beliefs	2.88 ^b	84	p < .01
57	Grade school & high school vs. some college vs. college or graduate degree education of mother	3.02 ^a	2, 104	p < .10
	Grade school & high school vs. college or graduate degree education of mother	2.02 ^b	66	p < .05
	Some college vs. college or graduate degree education of mother	2.28 ^b	69	p < .05
202	Not at all & very little vs. somewhat & a great deal on estimate of attitude change over the term	1.66 ^b	96	p < .10
P.S.P.S.	Low vs. moderate vs. high personal premarital sexual permissiveness	3.11 ^a	2, 104	p < .05
	Low vs. high personal premarital sexual permissiveness	1.92 ^b	85	p < .10
	Moderate vs. high personal premarital sexual permissiveness	2.45 ^b	37	p < .02

Table 13. Continued

Item Number	Groups Compared	Test Statistic	df	Significance
<u>Experimental Males</u>				
29	Protestant vs. Catholics vs. Jewish, other & none in religious preference	6.12 ^a	259	p < .005
	Protestants vs. Jewish, other, & none in religious beliefs	3.76 ^b	47	p < .002
	Catholics vs. Jewish, other & none in religious beliefs	2.49 ^b	29	p < .02
285	Petted to orgasm with 0 to 1 person vs. petted to orgasm with 2 or more people	1.72 ^b	60	p < .10
293	Coitus with 0 to 1 person vs. coitus with 2 or more people	3.05 ^b	60	p < .05

a Analysis of variance

b t-test

Table 14. Variables found to be significantly related to knowledge gain.

Item Number	Groups Compared	Test Statistic	df	Significance
<u>Experimental Females</u>				
29	Protestants vs. Catholics vs. Jewish, other & none as religious preference	2.38 ^a	2,104	p < .10
	Catholics vs. Protestants	2.20 ^b	87	p < .05
281	Petted without orgasm with 0 to 1 person vs. 2-5 people vs. 6 or more people	2.83 ^a	2,104	p < .10
	Petted without orgasm with 2-5 people vs. 0 or 1 person	2.01 ^b	56	p < .05
	Petted without orgasm with 2-5 people vs. 6 or more people	1.89 ^b	71	p < .10
<u>Experimental Males</u>				
182	Masturbates 1 or more times per week vs. 0 times per week	1.80 ^b	57	p < .10

a Analysis of variance

b t-test

expected by chance these results must be considered with caution. Nevertheless, the level of significance achieved on item 33 with experimental females and item 29 with experimental males indicate that this hypothesis should be rejected.

Hypothesis 5: There is no correlation between the amount of knowledge gain and the amount of attitude change.

The first step in the testing of hypothesis five was the computation of change scores for each part of the questionnaire except Part I. Change scores for Part I were not calculated for two reasons: (1) examination of the raw data indicated that the range of possible change scores was so restricted in comparison with other change scores that a low correlation was almost insured; (2) the proportionately few number of changes also suggested the correlation would be low and essentially uninterpretable. Change scores for all of the other parts of the questionnaire were computed by subtracting the pretest summary scores from the posttest summary scores. Pearson product-moment correlations were then calculated for each attitude change score with the knowledge change score. This was done for each of the four groups. These correlations are reported in Table 15.

Of the 24 correlations two just barely achieved significance at the .05 level. Both of the correlations involved the control

Table 15. Correlations^a between the change score for Part V and each of the attitude change scores.

Change Scores Correlated	Experimental		Control	
	Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
V and IIIA	.16	.09	-.25	.27*
V and IIIB	.01	.04	.15	.17
V and IIIA & IIIB combined	.08	.07	-.06	.28*
V and IVA	.13	.16	-.13	.09
V and IVB	-.01	.04	.16	-.07
V and IVA & IVB combined	.07	-.01	-.01	.02

^aAll correlations represent Pearson product-moment correlations.

*Significant at $p \leq .05$

females, a group where significant correlations would not be expected. And, not surprisingly, the two attitude change scores significantly correlated with the knowledge gain score were significantly correlated with each other ($r = .60$). Because of the above facts, and the additional fact that there was a probability of one significant change being found simply by chance, the fifth hypothesis was accepted without reservation.

Hypothesis 6: There is no correlation between the amount of change on central attitudes involving the self and spouse and the amount of change on peripheral attitudes involving non-significant others.

The testing of hypothesis six followed the same steps as those followed in testing hypothesis five and the correlations are presented in Table 16. Because the significance of these correlations are dependent upon the size of the group upon which calculated the correlation coefficients are not directly comparable. That is, a high correlation computed on the control group males, the smallest in the research, may not be as significantly different from zero correlation as a much lower correlation on the experimental females, the largest group in the investigation.

Careful examination of Table 16 prompts the following observations: (1) the correlations for control group females are less

Table 16. Correlations* between change scores for measures of peripheral and central attitudes.

Change Scores Correlated	Experimental		Control	
	Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
IIIA and IVA	.14	.15	.46 ^b	.05
IIIB and IVA	.31 ^b	.23 ^b	.45 ^b	.28 ^c
IIIA + IIIB and IVA	.31 ^b	.24 ^b	.59 ^a	.25 ^c
IIIA and IVB	.13	.26 ^b	.19	-.18
IIIB and IVB	.49 ^a	.17 ^c	.31 ^c	.10
IIIA + IIIB and IVB	.44 ^a	.24 ^b	.33 ^c	-.01
IIIA and IVA + IVB	.16	.24 ^b	.45 ^b	-.08
IIIB and IVA + IVB	.47 ^a	.23 ^b	.51 ^a	.26 ^c
IIIA + IIIB and IVA + IVB	.45 ^a	.28 ^b	.62 ^a	.17

^aSignificant at $p \leq .001$

^bSignificant at $p \leq .01$

^cSignificant at $p \leq .05$

* All correlations are Pearson product-moment correlations

often significant than is true for the other three groups; (2) the correlations for control group males are as likely to be significant as those for experimental males and females; (3) correlations for experimental females are more often significant than is true for experimental males, but the levels of significance achieved are lower; (4) no other clear trends are apparent. Because the trends evident in the experimental males and females are in agreement, and indicate a correlation between central and peripheral attitude change, hypothesis six was rejected.

Hypothesis 7: There are no attitude topic areas which show greater change from pretest to posttest than other topic areas.

A conclusion about hypothesis seven can only be reached by an examination of changes on individual questions in Parts III and IV. The significance level of the change on questions in these parts are presented in Tables 17-20. The questions are grouped according to topic area and the topic areas are presented in alphabetical order. Because of varying numbers of questions on the individual topics, and because the individual questions vary in the degree to which they tap liberal or conservative attitudes on the various topics, there is some risk in arriving at a conclusion about the validity of hypothesis seven and in identifying specific topic areas showing greater change. Nevertheless, the changes observed on the peripheral attitudes

Table 17. Significance levels of changes on individual questions of Part IIIA.

Item Number	Topic	Experimental		Control	
		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
81	Abortion	-ns ^a	ns	ns	-ns
109	Bisexuality	.01	.002	ns	ns
77	Cohabitation	ns	ns	ns	ns
133		ns	ns	.05	ns
93	Extramartial Sex	.10	.01	ns	-ns
129		ns	.10	ns	.05
105	Group Sex	.05	.002	-ns	-ns
149	Homosexuals	.002	.002	-ns	ns
117	Mutual Masturbation	ns	ns	-ns	ns
97	Mate-swapping	ns	.10	ns	-.05
125	Nudity	.01	.002	ns	ns
145		ns	ns	ns	ns
89	Pornography	ns	ns	-ns	.10
85	Premarital Intercourse	ns	ns	ns	-ns
141		.05	ns	-ns	-ns
113	Prostitution	.05	.05	-ns	-ns
121		ns	ns	-ns	ns
73	Sex Education	ns	.05	ns	ns
137		ns	ns	-ns	ns
69	Sex in Elderly	ns	ns	.10	ns

^aMinus sign indicates change was in more conservative direction.

Table 18. Significance levels of changes on individual questions of Part IIIB.

Item Number	Topic	Experimental		Control	
		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
2	Abortion	ns	.05	-ns ^a	-ns
3*		.10	-ns	ns	-ns
34		ns	ns	ns	ns
82		ns	.05	-ns	-ns
122		-.10	.10	ns	ns
146		-ns	ns	ns	-ns
70	Artificial Insemination	ns	.01	.05	ns
62*	Double Standard	ns	ns	ns	.10
18	Extramarital Sex	-ns	-ns	-ns	-ns
19*		-ns	ns	ns	-ns
130		ns	ns	-ns	-ns
26*	Homosexuals	.05	.002	-ns	-ns
54*		.05	.05	-ns	ns
66		ns	.10	-ns	-ns
106		.10	.002	-ns	-ns
126		ns	.10	-ns	-ns
150		ns	.002	-.10	-ns
157*		ns	.05	-.05	-ns
158		.05	.002	-.002	ns
153*	Love as Part of Sex	-ns	-ns	-ns	-.05
6	Mutual Masturbation	.002	.002	ns	.01
7		.05	.002	ns	ns

(Continued on next page)

Table 18. (Continued)

Item Number	Topic	Experimental		Control	
		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
46	Mutual Masturbation (cont'd)	.002	.002	-ns	ns
118*		ns	.002	ns	-ns
14*	Oral-genital Contacts	ns	.01	-ns	-ns
15		.10	.10	-ns	.05
30		.05	.002	ns	ns
42		ns	ns	-ns	ns
58		-ns	.05	-ns	ns
94		.05	.002	ns	-ns
114		.01	.002	ns	.05
98*		.01	.01	-ns	.05
90	Pornography	.002	.05	ns	ns
110		.01	.002	ns	ns
10	Premarital Intercourse	ns	-ns	-.10	-ns
11		-ns	-.002	-.10	-ns
22		ns	ns	-ns	-ns
23		ns	ns	-ns	-ns
50*		ns	ns	-ns	-ns
86		ns	-ns	-ns	ns
138		-ns	ns	-ns	ns
142*		.01	.01	ns	-ns
154		-ns	-ns	-ns	-ns
74	Sex Education	ns	-ns	ns	ns

(Continued on next page)

Table 18. (Continued)

Item Number	Topic	Experimental		Control	
		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
38*	Sterilization	ns	-ns	.10	ns
78		-.05	-.002	-ns	-ns
134*		ns	.05	ns	-ns
102	Unwed Mothers	ns	ns	-ns	ns

^a Minus sign indicates change was in more conservative direction.

* Left out of summary score computations.

Table 19. Significance levels of changes on individual questions of Part IVA.

Item Number	Topic	Experimental		Control	
		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
83	Cohabitation	.10	-ns ^a	ns	.10
27	Extramerital Sex	ns	-ns	ns	ns
47		ns	ns	ns	ns
63		ns	-ns	ns	-ns
75		.05	-ns	-ns	-ns
31	Group Sex	.01	ns	ns	-ns
35	Homosexual Relations	ns	.10	ns	ns
51		ns	.05	ns	ns
43	Mutual Masturbation	.01	.002	ns	ns
59	Mate-swapping	ns	-ns	ns	-ns
91		-ns	ns	-ns	ns
67	Nudity	ns	ns	ns	ns
79		ns	.01	-ns	ns
87		.002	.01	ns	ns
95		ns	ns	ns	ns
39	Oral-genital Contact	ns	ns	ns	ns
55		.01	.05	ns	.10
71	Sterilization	-ns	ns	ns	-ns

^a Minus sign indicates change was in more conservative direction.

Table 20. Significance levels of changes on individual questions of Part IVB.

Item Number		Topic	Experimental		Control	
Males	Females		Males (N=61)	Females (N=106)	Males (N=38)	Females (N=51)
107		Abortion	ns	nd	ns	nd
143	155		ns	ns	ns	ns
99*		Artificial Insemination	.10	nd	ns	nd
135	159		.05	ns	ns	.10
111	28	Extramartial Sex	-ns ^a	.10	ns	ns
131	16		-ns	.05	.05	-ns
123	20	Homosexual Relations	-ns	.10	.10	ns
147	32		-ns	.05	ns	.01
103	4	Pornography/nudity	-ns	ns	ns	ns
	8*		nd	.01	nd	.10
115	12	Premarital Intercourse	ns	.002	ns	ns
139	36		ns	.05	-ns	ns
151	24		ns	.002	ns	ns
119*		Unwed Mothers	ns	nd	.05	nd
127*			ns	nd	.05	nd

^a Minus sign indicates change was in more conservative direction.

* Indicates left out of computations of summary scores.

nd = no equivalent data

toward homosexuals, mutual masturbation, and oral-genital contacts (see especially Table 18), indicate that hypothesis seven should be rejected in so far as it applies to peripheral attitudes. Although involving fewer questions, and therefore encountering greater risk of change significance, the fairly high level of significant change noted for both experimental males and females on questions related to bisexuality, group sex, nudity, prostitution, pornography, and sterilization, support this conclusion.

Hypothesis seven should also be rejected in so far as it applies to central attitudes involving the sexual behavior of self and spouse. Although there are fewer questions upon which to judge than was true for Part III, the significance levels of the changes observed for both experimental males and females on questions relating to mutual masturbation (question 43), nudity (question 87), and oral-genital contact (question 55), indicate the validity of this conclusion. Also supporting this conclusion are the consistently significant changes noted for experimental females on the topics of homosexual relations (questions 35, 51, 123, and 147), extramarital sexual relations (questions 111 and 131), and premarital coitus of spouse (questions 12, 36, and 24).

On all of the topics where significant change was observed, and most of the others also, females showed more change than males. The fact that experimental females showed more attitude change than

experimental males, coupled with the fact that experimental females started with less liberal attitudes on most subjects, suggests that the lack of attitude change on some topics, particularly where males were concerned, might have been due to the fact that attitudes were very high to begin with. Examination of the raw data in Appendix K supports this conclusion on some topics but not others. Examination of the means on the questions relating to oral-genital contacts supports the idea that significant attitude change in the expected liberal direction did not occur because the attitudes were so liberal to begin with that there was little room for change except in a more conservative direction. The one question on which neither males nor females changed significantly was the question with the single highest mean to begin with for the experimental males, and one of the five highest for the experimental females. The two additional questions dealing with oral-genital contact upon which experimental males showed no change were the questions upon which they had the second and third highest means of all the questions in Part III.

The same factor does not appear to have affected attitudes on the subject of premarital intercourse. Of the 11 questions dealing with premarital coitus only one (question 50) had a pretest mean approaching the upper limits. Thus, the only other logical explanation for the failure to find more attitude change on the topic of premarital intercourse is the assumption that individuals were in fact

selective in their attitude change.

Examination of the raw data in Appendix K concerning attitudes toward homosexuals also suggests that the individuals were selective in their attitude change. The four questions upon which experimental males failed to show significant change dealt with homosexuals being allowed to marry, adopt children and serve in the Armed Forces, and homosexual relations between a consenting adult and consenting adolescent. Of the nine questions asked relating to homosexuals these four are the ones logic suggests should be the most resistant to change.

Further comparisons of the data in Appendix K with the data in Tables 17 and 18, pages 177-180, provides additional support for the assumption that most of the differences in attitude change observed were due to individual selectivity rather than the original level of the attitude. On all seven of the additional topics for which there were two or more questions, with at least one question which showed significant attitude change for one sex or the other, and with at least one question showing no significant change, the initial attitudes on the question that changed were as high or higher than one of the questions showing no significant attitude change. On the other hand, virtually every time one sex showed significant change, but the other sex did not, the sex showing significant change started out equal or lower. In six of eight such situations where this occurred the initial

differences were slight and, although not tested statistically, certainly not significant. Changes in these situations may have been been partially due to regression toward the mean or represent chance changes.

A close look at the content of the questions on which there was significant and non-significant change provides further evidence of selectivity. Just a few examples should suffice. On the topic of nudity the attitudes toward nudity in the home and public were about equal initially, but both sexes showed significant liberalization on their attitudes toward the former, but not the latter. On the topic of pornography, both males and females became more accepting of it as a source of stimulation for both adults and adolescents, but neither sex significantly changed its attitude toward pornography laws. In contrast, both males and females changed significantly on the matter of laws relating to prostitution, but not on the morality of prostitution. On the topics of extramarital sexual relations and mate-swapping both males and females viewed these kinds of activity as more acceptable when spouse's consent was given than when it was not. The question on which both experimental males and females showed significant change in the conservative direction concerned mandatory sterilization for those couples with two living children. The fact that both sexes started out rather conservative on this issue and became even more so suggests that the change was not due to regression toward the mean

or chance occurrence. It is also of note that the one question about bisexuality showed changes very similar to those noted on the related concept of homosexuality, and the two questions on cohabitation behaved very much like the questions on premarital intercourse. If accurate, the data indicate that the attitudes of college students toward premarital intercourse and cohabitation are not as liberal as the media and their own conversation might suggest.

Comparisons of the data in Appendices L and M, with the data in Tables 19 and 20, pages 181-182, suggest that two observations made for Parts IIIA and IIIB are valid for Parts IVA and IVB. One, the absence of significant change on any attitude question is with only a few exceptions (question 67 dealing with nudity and question 39 dealing with oral stimulation of the genitals by partner) not due to the restrictions on change imposed by a highly liberal attitude on pretest, but to an individual and group selectivity in attitude change. Two, experimental females started out less liberal and showed significant change more often than did males. As with attitudes toward non-significant others the females showed more change than males in attitudes toward their own or their spouse's participation in homosexual relations. The females started out less liberal than the males and became slightly, but significantly, more liberal, while the males remained as they started or became slightly more conservative. The gap between the two sexes was lessened some but

not very substantially. Not surprisingly, both males and females found homosexual behavior in their spouse easier to accept than homosexual behavior in themselves, and both sexes were more accepting of homosexual relations before marriage than after.

As was evident in the results on Part III, the subjects again made a distinction between public and private nudity. Neither males nor females changed significantly on how difficult they felt it would be to go to a nudist camp, but both sexes became more accepting of the idea of appearing nude in front of their teenage children, and females became significantly more accepting of appearing nude in front of small children.

Results which were somewhat surprising involved attitudes toward the premarital heterosexual coital experience of the spouse. On the pretest the experimental females were more accepting than the males of their spouses having had coitus with a variety of partners and on the posttest they had become significantly more accepting. As the following table indicates, the differences were slight for two of the three questions on the pretest, but fairly large on posttest for all three questions. These results are likely related to the fact that the females also became significantly more accepting of a spouse's extramarital sexual experience while the males did not change significantly on either of these questions either.

Mean Difficulty of Accepting Behavior Indicated

Number of premarital coital partners of spouse	Males		Females	
	Pretest	Posttest	Pretest	Posttest
1-5	3.1	3.2	3.2	3.7
6-10	2.4	2.4	2.5	2.9
more than 10	2.1	2.1	2.7	2.9

V. SUMMARY, DISCUSSION OF RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This research was stimulated by an interest in the impact of college human sexuality courses upon student sex knowledge and attitudes, particularly the more important central attitudes relating to the sexual behaviors of self and spouse. Although there have been many studies on human sexuality education programs of one kind or another, only a few studies have dealt with college human sexuality courses, and only one has involved the more important central attitudes. The latter study (Rubin, 1970; Rubin and Adams, 1972) was concerned with a very limited area of people's central sexual attitudes, i. e., the individual's own premarital sexual permissiveness as related to kissing, petting, and intercourse. Similarly, although other studies have investigated the relationship between knowledge and attitude change, no attempt has ever been made to determine if there is a relationship between attitude changes involving sexual behaviors of self and spouse and attitude changes involving non significant others. Hence, the purpose of this study was to assess the relationship between participation in a human sexuality course, changes in central sexual attitudes, defined as attitudes involving sexual behaviors of the self and spouse, and changes in peripheral

sexual attitudes, defined as attitudes toward sexual behaviors involving non significant others. The research also sought to determine if males and females differed significantly in their sexual knowledge and attitudes before and after taking the course.

Subjects for this investigation included males and females from all academic classes who enrolled in the course "Human Sexuality" or who had signed up for the course and been denied admission because of enrollment limitations. Subjects in the former classification made up the experimental group, and subjects in the latter category made up the control group. One hundred and sixty seven members of the experimental group took both the pretest and posttest, and eighty-nine in the control group did the same. The attrition rates for control group males and females were slightly above 30%. Attrition rates for experimental group males and females were 18% and 7% respectively.

The primary source of the data was students' responses to a knowledge and attitude questionnaire developed by the investigator. The "Premarital Sexual Permissiveness Scale" by Reiss also was used. Both instruments were initially administered to the subjects during the week of April 3-7, 1972. They were administered a second time seven weeks later.

The data were analyzed using an analysis of variance model and an analysis of covariance model. Chi square, Pearson

product-moment correlation, and a multivariate analysis involving an extension of Hotellings T^2 also were used. Observed differences were accepted as significant when $p \leq .05$. In the data analyses experimental males, experimental females, control males, and control females were treated separately. Statistical comparisons were made to determine if differences existed between experimental males, experimental females, control males, and control females on a variety of demographic and sexual experience variables, pre-test measures of knowledge and attitudes, and posttest measures of attitudes and knowledge. Correlations between central and peripheral attitude change scores, and between attitude and knowledge change scores, were computed and these correlations checked for significance.

Discussion of Results

Hypothesis 1: There are no significant differences between the experimental and control groups on the demographic and previous sexual experience variables.

Hypothesis one was rejected. The decision to reject hypothesis one was based upon numerous significant differences between the sexes on both demographic and sexual experience variables.

Apparently, however, based upon the analyses performed in testing

hypothesis four, none of these differences had a differential impact on the knowledge gain or attitude change observed in the experimental males and females when compared with each other.

The difference in the number of males and females who admitted to being homosexual or bisexual is interesting because it raises a host of questions about this condition, its development, and meaning. It is also interesting that more people failed to answer this question than failed to answer any other demographic question (two males and two females), and that comparisons of responses to questions 17 and 289, and 17 and 309, revealed inconsistencies on the part of six individuals. The implication of these findings is that additional subjects were unwilling to identify themselves as homosexual or bisexual and that additional students have had homosexual experiences without labeling themselves as bisexual or homosexual. A better wording for question 17 might be to ask subjects to identify themselves as strictly heterosexual, mostly heterosexual, slightly heterosexual, bisexual, slightly homosexual, mostly homosexual, strictly homosexual, or according to some similar classification system.

The finding that males had significantly greater experience than females on a number of sexual experience variables suggests that there are still attitudinal differences between the sexes in spite of the sexual revolution and decline of the double standard. This

conclusion is based upon the assumption that attitudes influence behavior. This same conclusion could be reached if one believed that behavior influences attitudes. Regardless, the results support or are congruent with the results of testing hypothesis two.

Hypothesis 2: There are no significant differences between the experimental and control groups at the time of pretesting on the knowledge and attitude summary scores.

Hypothesis two was rejected on the basis of significant differences between both experimental males and females and between control males and females (Table 9, p. 159). The rejection of both hypotheses one and two made imperative the continued separation of the two sexes on all further data analyses.

Hypothesis 3: There are no significant differences between the experimental and control groups in the amount of change shown on posttest knowledge and attitude summary scores.

Hypothesis three was accepted in so far as it applied to central sexual attitudes and rejected in so far as it applied to peripheral sexual attitudes and knowledge. The human sexuality course was clearly responsible for significant changes in the knowledge and

peripheral sexual attitudes of both the males and females who participated. These results are clear justification for the continuation of college human sexuality courses. The results support the assumption that college students can learn much through such a course and that they may also increase their tolerance for a variety of sexual behavior in other people. Seldom is increased tolerance and acceptance of other people and different ways of living not a worthwhile goal or outcome of an educational experience.

Hypothesis 4: There are no relationships between demographic variables and significant changes between pretesting and posttesting on knowledge or attitude summary scores.

Hypothesis four was rejected. However, no one variable was significantly related to attitude change or knowledge gain for both experimental males and females. These results suggest that as far as sexual attitudes are concerned, at least as far as peripheral attitudes are concerned, demographic variables have little effect on the amount of change produced by participation in a college human sexuality course.

Although not stated as part of the hypothesis, the effects of selected sexual variables also were investigated as part of the same procedure. These results were presented in the same table with the

results relating to demographic variables (Tables 13 and 14, pages 169-171). These analyses indicated that previous coital experience was significantly related to attitude change in experimental males, and that the relationship of petting to orgasm with a number of partners to peripheral attitude change approached significance at $p < .10$. It is precisely on these two most intimate of interpersonal sexual behaviors that one would seem most likely to find significant differences. The attitudes involved in these two forms of behavior are almost certainly more central than those related to dating, going steady, and petting without orgasm. Further examination of the data indicates that for all six sexual experience variables, for both experimental males and females, there was a trend for those with lower sexual experience levels to change more on peripheral attitudes than those with greater sexual experience. This too is consonant with attitude theory. One would expect individuals with little previous experience to have more conservative attitudes and therefore to be more susceptible to attitude change agents.

Also examined were the relationships between attitude change and knowledge gain to subject estimations of how much his/her attitudes had changed over the term (question 202), how much his/her knowledge had changed (question 214), and whether or not the questionnaire had gotten at the essence of his/her attitudes (question 68). All of the relationships for both experimental males and females were

non significant. But, the relationship for females between attitude change and estimates of their own attitude change approached significance at $p = .10$. This result is of interest because the amount of estimated change and actual change was opposite to the predictions of the subjects. In other words, those students who estimated their attitudes had changed somewhat or a great deal changed less than those who estimated their attitudes had changed very little or not at all. The non significant difference for males was in the same direction. Similar non significant differences for both experimental males and females were indicated on the parallel question relating to knowledge gain. The fact that the subjects were evidently such poor estimators of their own attitude and knowledge change may be interpreted in at least three ways. One, students are poor estimators of their own knowledge and attitude change. Two, the questionnaire may have tapped different attitudes from those the respondent had in mind when they answered the questions. Three, both of the previous interpretations have validity. The third alternative seems the best. First of all, other researchers have noted that people of all kinds are poor estimators of their attitude change. Secondly, other studies have shown that students are poor estimators of their own sex knowledge. Third, only 51% of all experimental and control males and 55% of all experimental and control females, considering both pretest and posttest responses to question 68, felt that the

questionnaire had gotten at the essence of their beliefs. Fourteen percent of the males and nine percent of the females indicated that the questionnaire had definitely not gotten at the essence of their beliefs, and the remainder were not sure. Regardless of the interpretation, the almost significant inverse relationship between the estimation of attitude change and actual change on the part of experimental females suggests that single question evaluations cannot be expected to provide valid evaluations of such large areas of concern.

The finding that just over 50% of the students in the research felt that the questionnaire got at the essence of their beliefs raises some important questions about the validity of the questionnaire. These questions, however, appear to be answerable satisfactorily so as not to discredit the instrument or the research in which it was used. In the first place, the term "essence" may have little or no meaning as applied to the great variety of sexual behaviors covered in the questionnaire. An almost identical question had been used by Reiss (1968) but the question was then applied to the very limited area of premarital kissing, petting, and intercourse with varying amounts of affection present between the participants. In the second place, as used in this questionnaire, the term may be answered from different frames of reference. For example, a student expecting to be asked a question like "Are your attitudes based on the Bible?" might respond differently from the student who perceived that

opportunities were given to agree or disagree with questions expressing Judeo-Christian mores on a variety of topics. In the third place, a questionnaire may measure important attitudes, attitudes well worth studying, without getting at the "essence." And last, there were no significant differences in attitude change or knowledge gain among experimental males and females who felt that the questionnaire had gotten at the essence of their beliefs and those who felt that it had not or were not sure.

Hypothesis 5: There is no correlation between the amount of knowledge gain and the amount of attitude change.

Hypothesis five was accepted. This is consistent with other research evidence that knowledge gain cannot be expected to produce attitude change. At least the results of this study and others suggest that knowledge gain of the type measured is not related to attitude change. The question that remains is just what does cause attitude change? Perhaps the kind of knowledge gain that produces changes in attitudes involves perceptions of normalcy, threat, and similar concepts. Also, attitude change may be produced by new knowledge or other people's attitudes toward an attitude object rather than by any new information about the object itself.

Hypothesis 6: There is no correlation between the amount of change on a central attitude involving the self and spouse and the amount of change on peripheral attitudes involving non significant others.

Hypothesis six was rejected. Rejection of hypothesis six and acceptance of hypothesis three as it related to central attitudes would appear to be contradictory. In fact, the two conclusions are quite congruent. The fact that a correlation is significant means only that the correlation is not a zero correlation. Thus, it is entirely possible for one measure to change significantly while a measure significantly correlated with it does not change significantly. The significant, but relatively low, correlations found in this part of the research suggest that measurements of one kind of sexual attitude cannot be substituted for another.

Hypothesis 7: There are no attitude topic areas which show greater change from pretest to posttest than other topic areas.

Hypothesis seven was rejected for both peripheral and central sexual attitudes. In presenting the results of testing hypothesis seven considerable data were noted which indicate substantial selectivity. Neither males nor females participating in the human sexuality course changed indiscriminantly on all topics. This fact

has a couple of important implications. One, human sexuality education cannot be viewed as a process which acts uniformly to change participants against their own judgment. That is, human sexuality education cannot be accurately compared to brainwashing, as some opponents have done. Two, a different approach would seem necessary to change those attitudes which did not change. Programs aimed at reducing venereal disease rates and unwanted pregnancies, for example, may need to be quite different in approach.

Based upon comparisons of summary scores hypothesis three was accepted as applied to central sexual attitudes. In discussing this conclusion the author implied that the conclusion might not be valid. The data suggesting such a postulation were generated in the testing of hypothesis seven and are summarized, with related data applying to Part V, in Appendix X. Examination of Appendix X indicates that experimental males and females changed on a much larger percentage of the questions included in Parts IVA and IVB than did the control males and females. Three significant changes were noted for the control males and females taken together. In contrast, 30 significant changes were noted for the experimental males and females considered together. The explanation for the apparent discrepancy between the data developed in testing hypothesis three and seven may be found in Appendix Y. Paired-t tests were computed on the pretest and posttest summary scores for the various

parts of the questionnaire. These results indicate significant changes for both experimental and control group males and females on summary scores relating to central attitudes. They also indicate that the changes in control groups were significant at lower levels than the changes for the experimental groups. Such a situation may be reconciled with the results of testing hypothesis three in the following manner. Few students have likely been asked how they personally would respond to most of the situations described in the questions of Parts IVA and IVB. A natural inclination after such a confrontation would be for them to think about their responses, and possibly to talk them over with someone else. A logical result of this contemplation would be some attitude change. If the individuals were also participating in a human sexuality course these attitude changes might be facilitated and positions on various topics clarified. Because these attitudes were ego-involving, however, there might be some limitation on the amount of change the course was capable of inducing. Thus, at the end of the course, both course participants and non-participants would not be significantly larger on the whole than that of non-participants. However, the non-significantly greater change in the course participants could show up as greater change in specific topic areas on which the course most facilitated change.

The significant change in summary scores might also be explained by the unreliability of the attitude measure. This

explanation, however, does not account for the large number of significant changes on specific topics related to central sexual attitudes. This explanation also seems incomplete because it ignores the fact that reliability coefficients for summary score measures of central sexual attitudes were as high as those for measures of peripheral sexual attitudes but no comparable pretest-posttest changes were observed in the peripheral attitude scores.

The implication of these results is that human sexuality education may have a significant effect upon central sexual attitudes. The results also would appear to indicate a significant test presentization effect where central sexual attitudes are concerned.

Conclusions

1. Males and females differed significantly on several demographic variables, many sexual experience variables, and all of the pretest attitude measures, but did not differ significantly on the pretest measure of knowledge.

2. Very few demographic and previous sexual experience variables were significantly related to either attitude change or knowledge gain.

3. Experimental males, experimental females, and control females showed significant knowledge gain, but the experimental females gained significantly more than the control females.

4. Experimental males became significantly more liberal on attitudes toward sexual behaviors of non significant others than control males.

5. Experimental females became significantly more liberal on attitudes toward sexual behaviors of non significant others than control females.

6. Significant liberalization in attitudes toward behaviors of non significant others was observed in experimental males and females for some topics, e.g. homosexual relations, mutual masturbation, and oral-genital contacts, but not for others, e.g. premarital intercourse and cohabitation.

7. Experimental females more often than experimental males exhibited significant changes in attitudes toward a variety of sexual behaviors involving non significant others.

8. Experimental males and females did not change significantly more than control males and females from pretest to posttest on the "Premarital Sexual Permissiveness Scale."

9. Significant pretest differences between experimental males and females and between control males and females on the "Premarital Sexual Permissiveness Scale" remained upon posttesting.

10. As measured by the summary scores the experimental males and females did not change significantly more than control

males and females from pretest to posttest on attitudes toward sexual behaviors of self and spouse.

11. On specific areas of sexual behavior involving the self or spouse, e. g. nudity and mutual masturbation, the experimental males and females became significantly more liberal than the control males and females.

12. Experimental females exhibited more significant changes in attitudes toward specific sexual behaviors of self and spouse than did experimental males.

13. There was no correlation between knowledge change and any measure of attitude change.

14. The correlation between change on central attitudes involving the self and spouse and peripheral attitudes involving non significant others was positive and significantly different from zero correlation, but not large enough to predict change in one type of attitude from observations of change in the other type.

Educational Implications

The relationships between knowledge, attitudes, values, and behavior are not completely understood. However, it is widely accepted that knowledge influences attitudes and values, and that knowledge, attitudes, and values influence behavior. It also is widely assumed that education facilitates the acquisition of knowledge and the

development of attitudes and values, and that education thereby effects behavior. Generally, the members of society can agree upon what information is to be given, and what attitudes and values are to be fostered by a particular educational program. Occasionally, there is disagreement. Human sexuality education is an area where such disagreement exists. On the one hand, many people feel that human sexuality education should provide information about the entire range of human sexual behaviors. People who feel this way also are likely to feel that human sexuality education should foster attitudes which are tolerant or accepting of a variety of sexual behaviors and the people who practice them. This tolerance should extend to the behavior of the self. On the other hand, many people feel that human sexuality education should not cover all types of sexual behavior and should foster the "traditional" attitudes which are non-accepting of many types of sexual expression. People in this group are apt to view the changes sought by those in the first group as contributing to a decline in moral standards, increased promiscuity, increased secularization of society, and a decline in the importance of the family. Essentially, people in the former group would like human sexuality education to effect a liberalization of the society's traditional Puritan sexual attitudes and mores, and the people in the latter group oppose and fear such changes.

The results of this investigation cast some light on the question of whether or not the hopes of the former group and fears of the latter group are likely to be realized through human sexuality education as applied to college students. In so far as attitudes toward a variety of sexual behaviors involving non significant others is concerned this study indicates that statistically significant changes occurred among both males and females participating in such a course. However, the changes followed a selective pattern. Course participants became more tolerant of "deviant" sexual behaviors (homosexual behavior, bisexual behavior, group sex, use of pornography) and normal sexual behaviors short of intercourse (mutual masturbation and oral-genital contact), but did not become significantly more accepting of premarital or extramarital coitus. To some observers these results will suggest that a desired liberalization of attitudes took place. To other observers the results will suggest that a decline in moral standards occurred. But, results certainly do not suggest an increased acceptance of promiscuity. They also do not suggest that the impact of such courses will be detrimental to American families. Neither males nor females became significantly more accepting of extramarital relations. And, both males and females became significantly less accepting of mandatory sterilization for parents with two living biological offspring.

Perhaps the most important changes reflected by these results involve homosexuals and pornography. Homosexuals are probably the last large minority group in this society which may be legally discriminated against in employment, housing, and other areas of life. Only when the majority of the society become tolerant of them will they achieve equal rights and full human dignity.

The issue of pornography also is related to basic human and/or legal rights. As long as the majority of society remains intolerant of erotica and supports anti-obscenity laws the First Amendment freedoms of a large minority of the population will be abridged.

Among females significant changes in attitudes toward sexual behaviors of self and spouse closely paralleled those observed on attitudes toward behavior of non significant others. Males showed a parallel pattern as far as their own behavior was concerned but not where the behavior of their spouse was the issue. Concerning their own behavior, both male and female course participants became significantly more accepting of normal sexual behavior short of intercourse (nudity, mutual masturbation, oral-genital contact), but not of extramarital sexual relations and mate-swapping. Females also became more accepting of personal homosexual behavior, and males became more accepting of personal involvement in group sex. Concerning the behavior of spouse, females became more accepting of homosexual behavior, extramarital relations, and premarital

intercourse. Importantly, however, examination of the raw data indicates that even after statistically significant liberalization occurred most course participants still found it difficult, very difficulty, almost impossible, or impossible to conceive of themselves engaging in homosexual relations, extramarital relations, mate-swapping, and group sex. Only in the areas of nudity, mutual masturbation, oral-genital contact, cohabitation, and sterilization, did a majority of both sexes feel that participation would be easy or not very difficult. In this interpreter's view the results indicate attitude changes in a direction and nature sufficient to encourage the proponents of human sexuality education but not sufficient to fulfill the fears of opponents.

If the results of this investigation are duplicated at other colleges and universities the data would supply justification for human sexuality courses on those campuses where tolerant and accepting attitudes are viewed as one aspect of the educated individual or of the mentally healthy individual. On such campuses the college student personnel staffs concerned with the development of the total student would seem to have a warrant, if not a mandate, to take the initiative in creating and supporting a variety of human sexuality education programs. At the same time, college administrations and faculties could be expected to come under increasing criticism and pressure from parents, alumni, and members of the public who oppose

any kind of liberalization of sex attitudes. Because of their overall concern with and responsibility for student development, the student personnel staffs could be expected to become increasingly involved in the demands of such programs, even where they played little part in the program development.

The results of this investigation also suggest that special pregnancy prevention and venereal disease education programs on college campuses may be successful if approached in the right manner. It has long been recognized that simple gains in venereal disease or contraceptive information do not produce corresponding changes in unwanted pregnancy and venereal disease rates because personal attitudes also are involved. Although this investigation did not document behavioral changes resulting from changes in attitudes, the results did indicate that personal attitudes may be changed. If the basic assumption that central attitudes influence behavior is valid the observed changes in central attitudes suggest that behavioral change may also be achieved. Unfortunately, the study data do not identify the specific determinants of attitude change. Data collected on the follow-up questions indicate that at least two-thirds of the males and females participating in the human sexuality course considered the class lectures to be the primary cause of their attitude change. As a secondary cause the largest percentage of males selected the class small group discussions and the largest percentage

of females selected discussions with friends. The assigned readings were selected as a primary or secondary cause of attitude change by very small percentages. Responses to these questions provide further justification for the belief that the simple transmission of knowledge is not effective in changing attitudes. The responses suggest that interaction with another individual even if passive, is a crucial part of the change process. If an accurate inference, pamphlets, newspaper advertisements, and other impersonal programs will be unsuccessful.

An often controversial program on college campuses involves coeducational residence halls. Many parents, faculty, alumni, and members of the public fear that these living situations will produce greater premarital sexual permissiveness or promiscuity. Although exposure to human sexuality education produced changes in attitudes toward sexual behaviors of non significant others, the spouse, and the self, there was very little observable change in attitudes toward the premarital sexual permissiveness of self or non significant others, although the females did show significant changes in attitudes toward the premarital experience of their spouse. These results suggest that coeducational living, which also presents exposure to new knowledge and attitudes, will not produce significant changes in premarital sexual permissiveness.

Recommendations

On the basis of the results obtained from this study several recommendations appear to be appropriate. Each of the following areas is suggested for further research:

1. Replication of the study on other college and university campuses in order to determine if the findings obtained from this investigation are similar for other institutions.
2. Replication of the study on human sexuality courses with different formats, particularly on a course without small group discussions.
3. A longitudinal study with a follow-up a year later to determine the extent to which observed changes endure and to discover whether significant change occurs in attitudes toward the behavior of self and spouse after a longer period of thought.
4. The inclusion of at least 20 or 25 individuals of each sex in each academic class so that differences between the classes can be examined more closely.
5. The use of a Solomon four group design to test for pretest sensitization effects on the attitudes involving the self and spouse.
6. A longitudinal study to determine the effects of attitude change upon sexual behaviors.

The following modifications of the instrument also would appear warranted or desirable:

1. Because the relationship between knowledge gain and attitude change has been shown to be slight or non-existent, the knowledge portion of the questionnaire should be abandoned and greater emphasis put upon the attitude questions.

2. If the knowledge questions are retained the option of giving a "Don't Know" response should be dropped.

3. Consideration should be given to the possibility of providing seven response alternatives for the Likert-type questions of Part III.

4. Additional questions relating to central sexual attitudes involving the self and spouse should be included. These additional questions should give broader coverage to areas already included, e.g. cohabitation, and should also cover topics not presently covered, e.g. anal intercourse, use of vibrators, taking birth control pills, using an intrauterine device (IUD), and self masturbation.

5. The questions dealing with peripheral attitudes, and also those dealing with central attitudes, should be factor analyzed for easier comparisons of change in the two types of attitude.

6. Part IVB should be modified so as to include only questions dealing with the spouse.

7. Validity data should be developed.

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APPENDICES

APPENDIX A

FL 200X
 HUMAN SEXUALITY
 Spring 1972
 Home Ec. Aud.
 Monday evening 1900-2200

- April 3 Pretest (Vicki Schmall, Peter Vennewitz)
- Perspectives in Human Sexuality
 Dr. Rich Connelly and Leah Miller, Family Life, OSU
- April 10 The Psychophysiologic Dynamics of Sex
 Joseph Trainer, M.D. U. of O. Medical School
- April 17 Sexuality throughout the Life Cycle
- April 24 Relationship Development - Sex and Emotions
 Dr. Carl Ridley, Pennsylvania State University
- May 1 Lovemaking with Intimacy
 Dr. Milton Hildebrand U. of C. at Davis
- May 8 Sexual Varieties; Inadequacies and Deviancies
 Ira Paulley, Psychiatrist U of O. Medical School
- May 15 Contraception and Abortion
 Jeanne Radow, R.N. Planned Parenthood, Portland
- May 22 Post test (Vicki Schmall, Peter Vennewitz)
- May 29 NO CLASS - Memorial Day
- June 5 Sexuality and the Law
 Joseph Morray, Lawyer Corvallis
- Summary - Dr. Rich Connelly, Leah Miller

APPENDIX B

HUMAN SEXUALITY
FL 200X

Course Information
Spring 1972

Coordinator: Leah Miller
Office: HE 307
Phone: 754-3172
Office Hours: by appointment

OBJECTIVES

The course is designed to look at the physical, psychological, and sociological aspects of human sexuality and to help the individual integrate these viewpoints in an effort to better understand himself.

LEARNING EXPERIENCES

READING:

Each student should read the following books for the course. They will be available in the University Bookstore. Bibliographies for additional supplementary reading will be distributed during the term.

Brecher and Brecher, An Analysis of Human Sexual Response (\$1.25)

*Hettlinger, Sexual Maturity (.75) * optional

*McCary, Human Sexuality (\$8.95)

*Rubin, Sexual Life After Sixty (.75)

LECTURES AND DISCUSSION

A number of professionals will speak in their areas of competence to provide variety and the most informative and accurate information. Time will be incorporated into their lectures for written and oral questions. The final hour of each week will be spent in small groups for discussion.

WRITTEN ASSIGNMENTS:

Critique Cards:

Each student is expected to submit an unsigned critical evaluation of the presentation and lecture at the end of the period. The critique is really for the benefit of the coordinator and lecturers to give them feedback and thereby help them improve the course. Critique cards should be completed at the conclusion of the question answer period and handed in to your group leader. They should state:

the student's age, sex, class standing,
 whether or not the session was valuable, interesting,
 informative and pertinent,
 whether or not the lecturer was excellent, satisfactory,
 or poor,
 whether or not the topic and speaker should be repeated
 again,
 your overall candid opinion of the worth of the entire
 evening.

Paper:

Each student will choose one of two options for writing
 a paper.

I. Personal Reaction Journal

On a weekly basis respond to the happenings in the class by
 discussing the following items:

1. Relevance of the material presented and discussed.
2. Your opinions and values with regard to that material.
3. The reasons for your opinions and values - religious and/or
 parental teaching, personal experiences which have taught
 you about this area, etc.

Toward the end of the term review your weekly comments and
 summarize your own attitudes and ideas concerning Human Sexuality.
 Discuss briefly how those beliefs and ideas have been changed,
 enhanced, or strengthened by the content of the course. What benefits
 have you derived from the discussions. What did you consider to be
 the most important and valuable part of the course. Discuss the paper
on a personal level rather than on a theoretical level. This option
 would include 1 typewritten page per week plus 3-5 pages of summary.

II. Research Paper

Choose a topic concerning Human Sexuality which is of interest
 to you. Get approval of the topic from your discussion leader. Papers
 should follow correct forms for research writing including footnotes
 and a bibliography. The bibliography should include a minimum of
 10 references which are current (since 1962). Be specific in your
 topic rather than general (i.e. "The Pill vs the IUD" as opposed to
 "Birth Control").

Papers should be typed and double spaced. If typing is impos-
 sible speak with your discussion leader before the paper is submitted
 to work out some alternative.

The length of the paper should be 10-12 pages. Option II should include no less than 8 pages of information plus bibliography and listing of notes.

The introductory page of both options should include:

Name, Age, Class, Major, Marital status, name of discussion leader.

Papers are due and WILL NOT BE ACCEPTED AFTER the following dates:

Option I Wednesday, May 24 - should include class session on May 22.

Option II Monday, May 22

Papers of the journal option will be read only by your discussion leader or Miss Miller.

No papers will be returned. Keep a copy!

ATTENDANCE:

It is expected that students be present for all lecture and discussion sessions. Attendance will be taken.

EVALUATION: PASS - NO CREDIT

To receive a passing grade in the course a student must:

1. Attend all class sessions: lecture & discussion
2. Satisfactorily complete a paper on time
3. Complete a critique card on each week's lecture session.

APPENDIX C

Fictitious Name _____ Sex _____ Class _____

Part I

For these questions, please circle one of the following response categories:

Agree: strong medium slight Disagree: strong medium slight

In answering the following 24 questions, please keep in mind the following definitions:

Love means the emotional state which is more intense than strong affection and which you would define as love.

Strong Affection means affection which is stronger than physical attraction, average fondness, or "liking," but less strong than love.

Petting means sexually stimulating behavior more intimate than kissing and simple hugging, but not including full sexual relations.

Please answer questions 1-24 according to how you feel and not according to what you tolerate or accept in others.

I believe that kissing is acceptable for the male before marriage

- (1) when he is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight
- (2) when he is in love.
Agree: strong medium slight Disagree: strong medium slight
- (3) when he feels strong affection for his partner.
Agree: strong medium slight Disagree: strong medium slight
- (4) when he does not feel particularly affectionate toward his partner.
Agree: strong medium slight Disagree: strong medium slight

I believe that petting is acceptable for the male before marriage

- (5) when he is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight

- (6) when he is in love.
Agree: strong medium slight Disagree: strong medium slight
- (7) when he feels strong affection for his partner.
Agree: strong medium slight Disagree: strong medium slight
- (8) when he does not feel particularly affectionate toward his partner.
Agree: strong medium slight Disagree: strong medium slight

I believe that full sexual relations are acceptable for the male before marriage

- (9) when he is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight
- (10) when he is in love.
Agree: strong medium slight Disagree: strong medium slight
- (11) when he feels strong affection for his partner.
Agree: strong medium slight Disagree: strong medium slight
- (12) when he does not feel particularly affectionate toward his partner.
Agree: strong medium slight Disagree: strong medium slight

I believe that kissing is acceptable for the female before marriage

- (13) when she is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight
- (14) when she is in love.
Agree: strong medium slight Disagree: strong medium slight
- (15) when she feels strong affection for her partner.
Agree: strong medium slight Disagree: strong medium slight
- (16) when she does not feel particularly affectionate toward her partner.
Agree: strong medium slight Disagree: strong medium slight

I believe that petting is acceptable for the female before marriage

- (17) when she is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight
- (18) when she is in love.
Agree: strong medium slight Disagree: strong medium slight
- (19) when she feels strong affection for her partner.
Agree: strong medium slight Disagree: strong medium slight
- (20) when she does not feel particularly affectionate toward her partner.
Agree: strong medium slight Disagree: strong medium slight

I believe that full sexual relations are acceptable for the female before marriage

- (21) when she is engaged to be married.
Agree: strong medium slight Disagree: strong medium slight
- (22) when she is in love.
Agree: strong medium slight Disagree: strong medium slight
- (23) when she feels strong affection for her partner.
Agree: strong medium slight Disagree: strong medium slight
- (24) when she does not feel particularly affectionate toward her partner.
Agree: strong medium slight Disagree: strong medium slight

APPENDIX D

SEX KNOWLEDGE AND ATTITUDE SURVEY

This questionnaire is designed to evaluate your knowledge and attitudes concerning a variety of topics related to human sexuality.

Part I is printed on the separate colored sheets of paper. The questions on this part of the questionnaire are to be answered on the same sheets with the questions. This is not true for the other parts of the questionnaire.

Parts II-VI are to be answered on the IBM answer sheet.

Although the IBM answer sheet is numbered across the page, please note that the questions are numbered so that you mark down the columns rather than across the rows. When you get to number 160, turn the answer sheet over.

It is extremely important for the statistical analysis of this study that the results of the first questionnaire administration be compared on an individual basis with the second questionnaire administration at the end of the term. Please use your father's first name and mother's maiden name to create a fictitious name. Please do not use the name of some celebrity--e.g., James Bond--because this type of fictitious name is likely to be duplicated.

Place this fictitious name on the front side of the IBM answer sheet and also on the first of the colored sheets for Part I.

Please do not write on this part of the questionnaire.

Please use pencil only.

[The value assigned each response to a question in Parts IIIA and IIIB often was not equivalent to the response choice number. Because of this situation the actual assigned values are indicated in brackets following each response or question. This process has not been duplicated with questions in Parts IVA and IVB because assigned values were equivalent to response choice numbers.]

Part II

Demographic Data

The following questions concern your background. Possible responses to these questions are listed with the answer sheet number given in parentheses next to the choices.

1. Sex: (1) male (2) female
5. Age: (1) ages 16-18
(2) ages 19 and 20
(3) ages 21 and 22
(4) ages 23 and 24
(5) ages 25 and over.
9. Marital status: (1) never married
(2) engaged
(3) married
(4) divorced or separated
(5) widowed
13. Class: (1) freshman
(2) sophomore
(3) junior
(4) senior
(5) post baccalaureate or graduate
17. Primary sexual orientation: (1) heterosexual
(2) homosexual
(3) bisexual
21. Race: (1) white
(2) black
(3) Oriental
(4) other
25. Number of children in the household you grew up in, including yourself:
(1) one
(2) two
(3) three
(4) four
(5) five or more

29. Religion: (1) Protestant
(2) Catholic
(3) Jewish
(4) Other
(5) None
33. Regarding your religious beliefs, in what classification would you place yourself?
(1) very devout
(2) devout
(3) moderately devout
(4) slightly devout
(5) inactive
37. The school in which your major field of study is located:
(1) Agriculture or Forestry
(2) Engineering or Business and Technology
(3) Science or Pharmacy
(4) Education or Physical Education
(5) Humanities and Social Sciences or Home Economics
41. Approximate size of community where you lived longest before coming to college:
(1) rural
(2) 1-2,499
(3) 2,500 - 49,999
(4) 50,000 - 499,999
(5) 500,000 and over
45. Father's occupation:
(1) Clerical/Sales
(2) Skilled manual
(3) Unskilled
(4) Professional
(5) Business executive
49. Mother's occupation:
(1) Clerical/Sales
(2) Skilled manual
(3) Unskilled
(4) Professional or business executive
(5) Homemaker

53. Your expected occupation:
- (1) Professional or business executive
 - (2) Clerical/Sales
 - (3) Skilled manual
 - (4) Homemaker
 - (5) Homemaker combined with a career
57. Highest level of education achieved by mother:
- (1) completed grade school
 - (2) completed high school
 - (3) some college or technical school or business school training
 - (4) completed college
 - (5) completed a graduate degree
61. Highest level of education achieved by father:
- (1) completed grade school
 - (2) completed high school
 - (3) some college or technical school or business school training
 - (4) completed college
 - (5) completed a graduate degree
65. What would you estimate your parents' yearly income to be?
- (1) below \$5,000
 - (2) \$5,000 - \$7,499
 - (3) \$7,500 - \$9,999
 - (4) \$10,000 - \$14,499
 - (5) \$15,000 or over

Part III

[Part IIIA]

The following statements concern attitudes held by people in our society. Please pick the one response with which you agree most.

Please be sure to answer every question. Please note that some questions have fewer than five alternatives.

69. An active sex life in the elderly should be:
- (1) considered undignified [1]
 - (2) regarded as socially acceptable [3]
 - (3) encouraged for the benefit it would have in maintaining both physical and mental health. [4]

73. Information about contraceptives should:
- (1) be given to all students starting in grade school [5]
 - (2) be given to all students starting in junior high school [4]
 - (3) be given to all students starting in high school [3]
 - (4) be given only to those teenagers who are sexually active [2]
 - (5) not be given in the schools. [1]
77. The practice of unmarried couples living together should be:
- (1) encouraged on a temporary basis as a means of discovering whether or not the individuals are really compatible [4]
 - (2) encouraged on a permanent basis because a "marriage ceremony" really doesn't mean anything and the State has no business interfering in people's lives [5]
 - (3) discouraged [1]
 - (4) ignored [3]
 - (5) some response not listed. [2]
81. Abortion should be considered:
- (1) murder [1]
 - (2) immoral [2]
 - (3) an accepted medical procedure under certain circumstances [4]
 - (4) an acceptable method of birth control when contraceptive methods have failed [5]
 - (5) some response not listed. [3]
85. In your opinion, how frequently is it permissible for males to have intercourse without affection?
- (1) never [1]
 - (2) very rarely [2]
 - (3) rarely [3]
 - (4) occasionally [4]
 - (5) frequently. [5]
89. Laws concerning pornography should be:
- (1) more strictly enforced [1]
 - (2) abolished for adults but continued for children and adolescents [3]
 - (3) abolished for adults and adolescents, but continued for children [4]
 - (4) abolished completely. [5]

93. For individuals who are married, sexual relations with someone other than the spouse should be considered:
- (1) always harmful to the marriage [1]
 - (2) harmful to the marriage under most circumstances, but beneficial to some marriage relations [3]
 - (3) neither harmful nor beneficial to most marriages [4]
 - (4) beneficial to most marriage relationships. [5]
97. Mate-swapping or "swinging" which usually involves a "one-night stand" or other temporary arrangement should be considered:
- (1) "sick" and unacceptable [1]
 - (2) "sick" but acceptable for those who desire it [3]
 - (3) within the range of normal behavior for those people involved if they feel affection for each other [4]
 - (4) within the range of normal behavior for those people who desire it [5]
 - (5) some response not listed. [2]
101. An unmarried woman who is pregnant should be encouraged to:
- (1) have an abortion [impossible to score accurately]
 - (2) have the child and then put it up for adoption
 - (3) marry the father for the sake of the child, even though she doesn't love the man
 - (4) keep the child and raise it by herself
 - (5) make her own decision.
105. Group sexual relations (orgy-style) in which three or more people are involved should be considered:
- (1) "sick" and unacceptable [1]
 - (2) "sick" but acceptable for those who desire it [3]
 - (3) within the range of normal behavior for those people involved if they feel affection for each other [4]
 - (4) within the range of normal behavior for those people who desire it [5]
 - (5) Some response not listed. [2]
109. People who enjoy sexual relations with members of both their own sex and the opposite sex (commonly called bisexual) should be looked upon as:
- (1) having a psychosexual problem requiring psychiatric treatment [1]
 - (2) having a psychosexual problem which is not severe enough to require psychiatric treatment [3]
 - (3) being within the normal range of sexual behavior [4]

- (4) having a sexual orientation which is preferable to a strictly heterosexual orientation [5]
 - (5) some response not listed. [2]
113. Laws concerning prostitution should be:
- (1) more strictly enforced [1]
 - (2) concerned with establishing health regulations and licensing rather than making it a crime [4]
 - (3) completely abolished [5]
 - (4) some response not listed. [2]
117. Mutual masturbation by a male and female should be considered:
- (1) unacceptable because it is immoral [1]
 - (2) unacceptable because it is a perversion [2]
 - (3) unacceptable because intercourse should be the form of sexual expression of any relationship which has progressed this far [5]
 - (4) acceptable [4]
 - (5) some response not listed. [2]
121. Prostitution should be considered:
- (1) immoral [1]
 - (2) undesirable in society but unavoidable [3]
 - (3) a necessary occupation in society to service those men and women who cannot find partners [4]
 - (4) some response not listed. [2]
125. Parents should allow their children of the opposite sex to see them in the nude:
- (1) never [1]
 - (2) very rarely [2]
 - (3) rarely [3]
 - (4) occasionally [4]
 - (5) often. [5]
129. For individuals who are married, sexual relations with someone other than the spouse should be considered:
- (1) acceptable for the male, but not for the female, under some circumstances (such as extended illness of the spouse or prolonged separation) [3]
 - (2) acceptable for the female, but not for the male, under certain circumstances (such as extended illness of the spouse or prolonged separation) [5]
 - (3) acceptable for both the male and female under some circumstances (such as extended illness of the spouse or

- prolonged separation) [4]
 (4) Unacceptable. [1]
133. The practice of unmarried couples living together should be considered:
 (1) unacceptable [1]
 (2) acceptable until they are ready to have children, and then they should get married [4]
 (3) acceptable on an indefinite basis, even when they have children [5]
 (4) some response not listed. [3]
137. Sex education should be:
 (1) provided entirely by the parents in personal and private instruction within the home [1]
 (2) provided by the home and church [2]
 (3) provided by the home and school [5]
 (4) provided by the home, church, and school [4]
 (5) provided by some other combination not listed. [3]
141. In your opinion, how frequently is it permissible for females to have intercourse without affection?
 (1) never [1]
 (2) very rarely [2]
 (3) rarely [3]
 (4) occasionally [4]
 (5) frequently [5]
145. Public nudity such as that exhibited at some recent gatherings of young people should be:
 (1) prosecuted under indecent exposure laws [1]
 (2) condemned but not legally prosecuted [2]
 (3) ignored [4]
 (4) accepted by society as a natural expression and recognition of the human body's beauty and the naturalness of nakedness [5]
 (5) some response not listed. [3]
149. Adult homosexuals should be looked upon as:
 (1) immoral [1]
 (2) having a psychosexual problem requiring psychiatric treatment [2]
 (3) having a psychosexual problem which is not severe enough to require psychiatric treatment [4]
 (4) being with the normal range of sexual behavior [5]
 (5) some response not listed. [3]

[Part IIIB]

The following statements concern attitudes held by people in our society. Please note your agreement or disagreement by marking the answer choices of 1-5 according to the following schedule:

Strongly Agree = 1 Agree = 2 Uncertain = 3 Disagree = 4 Strongly Disagree = 5

Please be sure to answer every question. Mark "uncertain" only if you definitely are undecided.

153. The expression of love or affection should be an element in most sexual relations. [SA = 1]
157. Homosexuals should be allowed to get married legally. [SA = 5]
2. Abortion should be permitted when it is probable the baby will be mentally retarded or physically deformed. [SA = 5]
6. Mutual masturbation by a male and female should be considered acceptable for couples who have an affectionate relationship but are not engaged. [SA = 5]
10. Premarital intercourse should be considered essential to normal living. [SA = 5]
14. Oral-genital or mouth-genital contacts (i.e., fellatio or cunnilingus) should be considered acceptable for husband and wife if they both agree. [SA = 5]
18. For individuals who are married, sexual relations with someone other than the spouse should be considered unacceptable under most circumstances. [SA = 1]
22. Premarital intercourse should be considered desirable for most men. [SA = 5]
26. Homosexuals should be allowed to work in any position for which they are otherwise qualified. [SA = 5]
30. Oral-genital or mouth-genital contacts should be considered a form of erotic play which sometimes provides a greater degree of erotic stimulation than intercourse. [SA = 5]

34. Abortion should be permitted when either the physical or mental health of the mother is endangered. [SA = 5]
38. Sterilization should be mandatory for individuals who may transmit genes causing mental or physical defects in their children. [SA = 5]
42. Oral-genital or mouth-genital contacts (i.e., fellatio and cunnilingus) should be considered immoral. [SA = 1]
46. Mutual masturbation by a male and female should be considered acceptable for any engaged couples who do not wish to engage in intercourse. [SA = 5]
50. Whether or not to have premarital intercourse should be a mutual decision in which both partners share equally. [SA = 5]
54. Homosexual behavior should be considered unacceptable under any circumstances. [SA = 1]
58. Oral-genital or mouth-genital contacts (i.e., fellatio or cunnilingus) should be considered abnormal or perverted. [SA=1]
62. Men and women should live by the same sexual standards. [SA = 5]
66. Homosexuals should be allowed to serve in the Armed Forces. [SA = 5]
70. Artificial insemination by a donor other than the husband should not be allowed. [SA = 1]
74. At least one noted writer on the topic of sex education believes that parents should provide their unmarried 17 and 18 year old sons and daughters contraceptive advice and materials. Do you agree or disagree? [SA = 5]
78. Sterilization should be mandatory for couples with two living biological children. [SA = 5]
82. Abortion should be permitted when the mother is unmarried, even though she is physically and mentally capable of carrying the pregnancy to term. [SA = 5]

- 86. Premarital intercourse should be considered desirable for a couple because it provides a good indication of what their marital sexual adjustment will be like. [SA = 5]
- 90. Pornography should be considered an acceptable source of erotic stimulation for any adult. [SA = 5]
- 94. Oral-genital or mouth-genital contacts should be considered acceptable for couples who have an affectionate relationship. [SA = 5]
- 98. The most important goal of sexual relations is orgasm. [not scored]
- 102. It should be socially acceptable for a never-married woman to bear and raise a child. [SA = 5]
- 106. Homosexual behavior should be acceptable between consenting adults. [SA = 5]
- 110. Pornography should be considered an acceptable source of erotic stimulation for adolescents. [SA = 5]
- 114. Oral-genital or mouth-genital contacts should be considered acceptable for engaged couples. [SA = 5]
- 118. Masturbation is an acceptable expression of sexuality for all ages unless it has become a substitute for adult interpersonal sexual expression. [SA = 5]
- 122. Abortion should be permitted whenever the woman, in consultation with her physician, feels it would be the best decision. [SA = 5]
- 126. Homosexuals should be allowed to adopt children. [SA = 5]
- 130. For individuals who are married, sexual relations with someone other than the spouse should be considered acceptable if the spouse gives consent. [SA = 5]
- 134. Sterilization should be considered an acceptable method of birth control. [SA = 5]

138. At least one noted writer on the topic of sex education believes parents should offer their unmarried 17 and 18 year old sons and daughters the privacy and safety of their own home for the sexual expression of love. Do you agree or disagree? [SA = 5]
142. Since women have more to lose than men in premarital intercourse, it should be their responsibility for setting premarital sex limits. [SA = 1]
146. A married woman should be able to obtain an abortion without the consent of her husband. [SA = 5]
150. Homosexual behavior should be considered acceptable between two consenting individuals, one an adult and the other an adolescent. [SA = 5]
154. Premarital intercourse should be considered immoral. [SA = 1]
158. Homosexual behavior should be considered acceptable between two consenting teenagers. [SA = 5]
3. Abortion should be permitted only when the mother's life may be endangered. [SA = 1]
7. Mutual masturbation by a male and female should be considered acceptable for any unmarried couples who do not wish to engage in intercourse. [SA = 5]
11. Premarital intercourse should be considered an important step toward achieving manhood or womanhood. [SA = 5]
15. Oral-genital or mouth-genital contacts should be considered acceptable for couples who do not have an affectionate relationship. [SA = 5]
19. For individuals who are married, sexual relations with someone other than the spouse should be considered unacceptable under any circumstances. [SA = 1]
23. Premarital intercourse should be considered desirable for most women. [SA = 5]

Part IV

[Part IVA]

The questions in this section require responses similar to those on the "strongly agree" to "strongly disagree" continuum. Here, however, the continuum will be from "Impossible/Almost Impossible" to "Easy". The complete continuum is given below.

Impossible/Almost Impossible = 1 Very Difficult = 2

Difficult = 3 Not Very Difficult = 4 Easy = 5

If you are not married, some of the questions in this section will require that you imagine yourself to be married. Please answer these questions according to how you would feel if married right now, and not as to how you think you might feel when married at some future date.

Men and women both answer the following questions based on the introductory question: How difficult would it be for you to engage in the following behaviors?

27. Extramarital intercourse with an acquaintance, without consent of your spouse.
31. Engage in group sex (orgy style).
35. Homosexual relations with a stranger to find out what it is like.
39. Allow your partner to orally stimulate your genitals.
43. Engage in mutual masturbation
47. Extramarital intercourse with a friend of your spouse, with consent of your spouse.
51. Homosexual relations with a friend to find out what it is like.
55. Orally stimulate your partner's genitals.
59. Swap mates with acquaintances.
63. Extramarital intercourse with an acquaintance, with consent of your spouse.

- 67. Allow your partner to see you in the nude.
- 71. Undergo sterilization after you have had as many children as you wish to have.
- 75. Extramarital intercourse with a friend of your spouse, without consent of your spouse.
- 79. Allow your small children to see you in the nude.
- 83. Live together with a member of the opposite sex without being married.
- 87. Allow your teenage children to see you in the nude.
- 91. Swap mates with good friends.
- 95. Visit a nudist camp.

[Part IVB]

FOR MEN ONLY: Please answer the following questions based on the introductory question: How difficult would it be for you to engage in the following behaviors?

- 99. Donate semen for artificially inseminating someone else's wife.
- 103. Photograph your wife or lover in the nude.

FOR MEN ONLY: Please answer the following questions based on the introductory question: How difficult would it be for you to accept the following behaviors in your wife?

- 107. Having had an abortion before meeting you.
- 111. An extramarital affair with a mutual friend.
- 115. Premarital intercourse with 1-5 other men.
- 119. Raising an illegitimate child at the time you met her.
- 123. Homosexual contacts during your marriage.
- 127. Having an illegitimate child and putting it up for adoption before meeting you.

- 131. An extramarital affair with an acquaintance.
- 135. Being artificially inseminated with semen from a donor because you were infertile.
- 139. Premarital intercourse with 6-10 other men.
- 143. Having an abortion after meeting you.
- 147. Homosexual contacts before your marriage.
- 151. Premarital intercourse with more than 10 other men.

FOR WOMEN ONLY: Please answer the following questions based on the introductory question: How difficult would it be for you to engage in the following behaviors?

- 155. Have an abortion. (Please be sure you answer these questions on the appropriate lines.)
- 159. Be artificially inseminated with semen from a donor other than your husband.
 - 4. Allow yourself to be photographed in the nude by your husband.
 - 8. Allow yourself to be photographed in the nude by your lover.

FOR WOMEN ONLY: Please answer the following questions based on the introductory question: How difficult would it be for you to accept the following behaviors in your husband?

- 12. Premarital intercourse with 1-5 other women.
- 16. An extramarital affair with an acquaintance.
- 20. Homosexual contacts during your marriage.
- 24. Premarital intercourse with more than ten other women.
- 28. An extramarital affair with a mutual friend.
- 32. Homosexual contacts before your marriage.
- 36. Premarital intercourse with 6-10 other women.

[Part IVC]

The following questions are forced choice. Select the one response which most clearly describes what you believe and mark the appropriate number.

Please be certain to answer question number 40 on the appropriate line.

40. How likely to change are your present standards?
(1) Very likely to change
(2) Moderately likely to change
(3) Slightly likely to change
(4) Not likely to change
(5) Not at all.
44. How romantic do you think your love beliefs are?
(1) Very romantic
(2) Moderately romantic
(3) Slightly romantic
(4) Not romantic.
48. How well do the standards for sexual conduct you have expressed on this questionnaire match those of your mother?
(1) Very closely
(2) Closely
(3) Somewhat
(4) Not at all.
52. How well do the standards for sexual conduct you have expressed on this questionnaire match those of your father?
(1) Very closely
(2) Closely
(3) Somewhat
(4) Not at all.
56. How well do you live up to the standards you have expressed on this questionnaire?
(1) Very closely
(2) Closely
(3) Not too well
(4) Pretty badly.

60. Are you content today with the level of agreement between your behavior and the standards you have expressed?
 (1) Almost fully so
 (2) Mostly
 (3) Somewhat
 (4) Not content.
64. How guilty do you feel over the disparities between your behavior and the standards you have expressed?
 (1) Very guilty
 (2) Somewhat guilty
 (3) Not at all guilty.
68. Do you feel that this questionnaire has gotten at the essence of your beliefs in this area?
 (1) Yes
 (2) No
 (3) Not sure.
72. Do you feel that a serious investigator could rely on the truthfulness of answers that people give on this questionnaire?
 (1) Yes
 (2) No
 (3) Maybe.

[Part V]

Each of the following statements is either true or false. If the statement is true, mark column one; if the statement is false, mark column two; if you feel very uncertain of the answer, mark column three.

(True = 1 False = 2 Don't Know = 3)

76. A woman may tighten and strengthen her vaginal muscles by an exercise which involves muscle contractions similar to those used to hold urination and defecation.
80. Quite often the arrival of the menopause means that a woman begins to have a more active and satisfying sex life.
84. The physiological indication that a man is ready for intercourse is the erection of the penis; the physiological indication that a woman is ready for intercourse is the lubrication of the vagina by internal secretions.

88. A child who has been sexually molested frequently has cooperated in the act or actually provoked it.
92. Most homosexuals can be identified by certain distinguishing characteristics of their body build, appearance, walk, and mannerisms.
96. The phase of intercourse during which the individual is able to respond to sexual stimulation is longer in most females than in most males.
100. Masters and Johnson found that both men and women go through a sexual response cycle which has four phases.
104. About one half of all married women will have had sexual intercourse during their marriages with someone other than their husbands.
108. Exhibitionists are likely to attack the women to whom they have exhibited themselves if she screams or tries to run away.
112. The practice of premarital intercourse is less restricted in most foreign cultures than in the United States.
116. Research studies indicate that about 75 percent of all American males experience premarital intercourse.
120. The only contraceptive device which also protects against venereal disease is the condom (rubber).
124. A woman who is nursing a baby cannot become pregnant.
128. The contraceptive method which has proved to be the most effective in preventing pregnancy is the intrauterine device.
132. Sexual incompatibility or maladjustment is the most significant cause of divorce.
136. Most women who become prostitutes do so because of their overpowering desire for physical pleasure.
140. Often an important factor in an inadequate sexual response is the pressure to perform well.
144. On the average, girls are able to reproduce at an earlier age than boys.

148. A significant proportion of the men arrested for child molestation are relatives of the child they molest or friends of the child's family.
152. Marital sexual adjustment is likely to be adversely affected by a great deal of sex play in childhood and adolescence.
156. The use of marijuana can help increase sexual proficiency.
160. Most men who have been sterilized by having a vasectomy (cutting the tubes which carry the sperm) lose their sex drive and potency.
161. The disappearance of the syphilis chancre (an open sore) or gonorrhea discharge indicates that the body has cured itself.
165. By their middle forties about half of all married men will have had sexual intercourse during their marriages with someone other than their wives.
169. Men who have been circumcised are more likely to ejaculate prematurely than men who have not been circumcised.
173. Abortions performed under sensible medical controls are less dangerous for the woman than normal births.
177. Transvestites (individuals who enjoy or are sexually aroused by dressing in the clothes of the opposite sex) and exhibitionists usually have homosexual tendencies.
181. The average child under the age of five years is capable of and does express sexual responses and reactions.
185. A greater variety of coital positions and methods are used by couples in the upper socio-economic-educational group than in other socio-economic-educational groups.
189. A sexually unresponsive woman may be brought to orgasm if direct stimulation of the clitoris is maintained long enough.
193. Women are more capable than men of having multiple orgasms.
197. Studies have shown that women are as willing as men to engage in oral-genital contacts.

- 201. Most men retain their sexual interests to an older age and maintain it at a higher level of intensity than is true of most women.
- 205. Fertilization of the egg (conception) occurs in the vagina after the sperm are deposited there by the man.
- 209. According to Kinsey, more than one-third of all men have at least one homosexual experience resulting in orgasm sometime in their lives.
- 213. Homosexual men have been found to be more creative than heterosexual men.
- 217. Contact with contaminated toilet seats or drinking glasses is a likely source of venereal disease.
- 221. Premature ejaculation indicates a greater-than-average sex drive.
- 225. A seminal emission during sleep (wet dream) is an indication of an excessive interest in sex.
- 229. Most authorities agree that sexual information given to children before they are ready for it will be damaging to their later development.
- 233. Most women are sexually aroused by a photograph or the sight of a nude man.
- 237. Authorities in sexual matters believe that the importance of the simultaneous orgasm has been overemphasized.
- 241. Conception will not take place unless the woman has an orgasm because the orgasm is needed to draw the sperm into the uterus.
- 245. Impotence almost always has a psychological cause.
- 249. Alcohol can make a man temporarily impotent.
- 253. A woman's orgasm caused by the penis penetrating the vagina produces greater sensation than an orgasm caused by her partner manually stimulating the clitoris.
- 257. Males reach the peak of their sex drive at a younger age than females do.

261. The birth control pill temporarily causes the woman to stop menstruating.
265. Many married people masturbate.
269. A woman is most likely to become pregnant during the three days before the beginning of menstruation.

Part IV

The following questions have to do with your own sexual experience. These questions will help evaluate the relationship of knowledge to attitudes. If you find any of these questions too personal, you do not have to answer them.

With how many different individuals have you had the following sexual experiences?

273. Dating: (1) 0-5
(2) 5-10
(3) 11-15
(4) 16-20
(5) 21 and over
277. Going steady: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
281. Non-orgasmic petting: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
285. Petting until you reached orgasm: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
289. Homosexual relations: (1) 0 (4) 6-10
(2) 1 (5) over 10
(3) 2-5

293. Intercourse: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

297. Intercourse which you paid for or for which you were paid:
(1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

How many different times have you had the following sexual experiences?

301. Non-orgasmic petting: (1) 0
(2) 1-5
(3) 6-10
(4) 11-15
(5) over 15

305. Petting until you reached orgasm: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

309. Homosexual relations: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

313. Intercourse without reaching orgasm: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

317. Intercourse until you reached orgasm: (1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10

162. Intercourse which you paid for, or for which you were paid:
(1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
166. Had an abortion, or been the male responsible for impregnating a woman who did have an abortion:
(1) 0
(2) 1
(3) 2
(4) 3
(5) more than 3
170. Intercourse using the pill, I.U.D., diaphragm, condom (rubber), foam, or jelly for prevention against conception.
(1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
174. Intercourse using the rhythm method or withdrawal for prevention against pregnancy:
(1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
178. Intercourse without contraception:
(1) 0
(2) 1
(3) 2-5
(4) 6-10
(5) over 10
182. At the present time, on the average, how many times per week are you masturbating?
(1) 0
(2) 1
(3) 2
(4) 3-5
(5) more than 5

APPENDIX E

202. How much do you think your sex attitudes have changed since the beginning of this term?
- | | |
|-----------------|------------------|
| (1) Not at all | (3) Somewhat |
| (2) Very little | (4) A great deal |
206. If you feel your sex attitudes have changed, which ONE of the following do you consider primarily responsible for your changes in attitudes:
- (1) FL 200X class presentations
 - (2) FL 200X small group discussions
 - (3) FL 200X assigned readings
 - (4) discussions with friends or relatives
 - (5) personal reading
210. If you feel your sex attitudes have changed, which ONE of the following do you feel was the second most important factor in producing changes in your attitudes?
- (1) FL 200X class presentations
 - (2) FL 200X small group discussions
 - (3) FL 200X assigned readings
 - (4) discussions with friends or relatives
 - (5) personal reading
214. How much do you think your knowledge of sexual matters has increased since the beginning of the term?
- | | |
|-----------------|------------------|
| (1) Not at all | (3) Somewhat |
| (2) Very little | (4) A great deal |
218. If you feel your knowledge of sexual matters has increased, which ONE of the following do you consider primarily responsible for your increase in knowledge?
- (1) FL 200X class presentations
 - (2) FL 200X small group discussions
 - (3) FL 200X assigned readings
 - (4) discussions with friends or relatives
 - (5) personal reading

222. If you feel your sex knowledge has increased, which ONE of the following do you feel was the second most important factor in increasing your knowledge?

- (1) FL 200X class presentations
- (2) FL 200X small group discussions
- (3) FL 200X assigned readings
- (4) Discussions with friends or relatives
- (5) personal reading

Please indicate which of the FL 200X classes you attended by marking column 1 if you attended the class, and column 2 if you did not attend the class.

(attended class = 1 did not attend the class = 2)

- 226. April 10, Dr. Trainer - The Psychophysiologic Dynamics of Sex.
- 230. April 17, Ms. Miller - Sexuality Throughout the Life Cycle
- 234. April 24, Dr. Ridley - Relationship Development: Sex and Emotions'
- 238. May 1, Dr. Hildebrand - Lovemaking with Intimacy
- 242. May 8, Dr. Paulley - Sexual Varieties, Inadequacies and Deviancies
- 246. May 15, Ms. Radow - Contraception and Abortion

APPENDIX F

1129 N. W. 16th Street
Corvallis, Oregon 97330
March 28, 1972

Fall term 1970 I surveyed 111 students on campus to see how much interest there was for starting a class in human sexuality. The results were overwhelmingly in favor of such a class.

In February, 1971, I invited Dr. Arnold Rustin of Portland State University to speak on campus. His lecture "Discussions in Human Sexuality", was delivered before a capacity crowd in the Home Economics Auditorium and an estimated 300-700 people were turned away. The response to this lecture was so favorable that the Residence Hall Association invited Dr. Rustin to make another appearance the first week in April. He did, and again the Home Economics Auditorium was filled to capacity.

The popularity of Dr. Rustin's two appearances and the results of my survey prompted Dr. Richard Connelly and the Family Life Department to organize the Family Life 200X course offered this term and last term.

Now that the course is an actuality, the Family Life Department needs hard research data upon which to justify continuation of the course and request funding of the class. At the present time most of the individuals teaching the class are volunteering their time.

In an effort to accumulate some data for the Family Life Department and also to generate data for my doctoral dissertation, I am administering a questionnaire to a random sample of students taking FL 200X this term and to a control group of students who wanted to take the course but could not get in.

Your name was among those randomly selected to take the survey. Participating in this survey will mean twice taking a questionnaire I have developed -- once at the beginning of the term and again towards the end of the term. Your participation in this survey is extremely important. In order to have a large enough

control group upon which to do the necessary statistical analysis, I must have almost 100% participation by those to whom I send this letter.

The purpose of my research is to attempt to determine whether or not the course "Human Sexuality" produces changes in attitudes and an increase in sex knowledge. A control group of people not taking the course, but interested in taking the course, is essential in order to prove that any changes found are the result of the class and not the mere passage of time.

When taking the questionnaire each individual will be asked to identify his (or her) questionnaire by means of a fictitious name. This will allow me to measure changes in knowledge and attitudes by comparing the results of the first and second questionnaire administration while preserving the anonymity of the individual responding to the questionnaire.

If you are willing to participate in this research, please come to room 229 in the Home-Ec building during one of the following time periods:

Monday, April 3, 1972: 1:00-5:00 p.m.

Tuesday, April 4, 1972: All day

Wednesday, April 5, 1972: 1:00-5:00 p.m.

So that I may have some idea as to how many people to expect and whom to expect for these questionnaire administration sessions, please fill out the enclosed postcard and drop it in the mail as soon as possible.

Taking the questionnaire should be interesting, enjoyable, and lead to greater awareness of one's own sex beliefs and knowledge.

Sincerely yours,

Peter J. Vennewitz

ls

Enclosure

APPENDIX G

April 7, 1972

This letter is quite frankly an almost desperate attempt to persuade you to participate in the research project which I outlined in a letter dated March 28, 1972.

For five years I have been in graduate school. In that time I've completed all the course work and passed the eight hour written exam and two hour oral exam necessary to earn a Ph.D. All that remains for me to do is complete this research project and write a dissertation based upon the research.

The research I'm doing involves comparing changes in attitudes and knowledge among two major groups, i.e. students who got into FL 200X and students who wanted into FL 200X but were closed out. The research also involves comparing subgroups divided by sex and by college class. In order to make valid statistical analyses a minimum number of individuals must be in each group and subgroup. Although the number of students admitted to FL 200X who are participating in the research is more than enough, the number of people who were closed out of the class and are available for inclusion in my research is the barest minimum necessary. Therefore, I need almost 100% participation from the individuals who wanted into the class but were not admitted.

Obviously, this research means a very great deal to me. I would be willing to pay you for taking the questionnaire but this would foul up the research being done by another graduate student involving the other half of the FL 200X class and the other half of the students closed out of the class. Consequently, the only rewards you will get from participating in this research will be intangible. You will learn something about your own attitudes and knowledge from taking the questionnaire. You will help another student. You also will help the Family Life Department justify making the class a permanent part of the curriculum. If the class becomes a permanent part of the curriculum you will have the satisfaction of knowing that you helped make it so and you will have more opportunities, unless you are a senior, of getting into the class.

I've taken the liberty of including the questionnaire and answer sheets with this letter. Whether or not you take the questionnaire, please return the materials to West Bay (the Business Office of the Memorial Union--on the main floor just west of the main steps to the quad) before 6:00 p.m. on Monday. Because you will use a fictitious name on the answer sheets, please check your name off the list at the West Bay counter.

Please do not discuss the questionnaire with anyone while taking it, or while you still have it in your possession. Such discussion will introduce extraneous variables not present when the majority of people filled out the questionnaire in Home Economics 229 this past week. If you would like a copy of the questionnaire I will be happy to give you one at the end of the term. Until then, however, it is important that they not be floating around on campus.

Thank you for your consideration and help.

Sincerely,

Pete Vennewitz

APPENDIX H

May 17, 1972

Dear

About seven weeks ago I asked you to participate in my research on sex knowledge and attitudes. At that time I indicated that I needed your cooperation in taking a questionnaire twice--once at the beginning of the term and a second time at the end of the term.

Because the answer sheets bear fictitious names, and some people did not cross their names off the separate list provided, I am sending this letter to all who received my original letter in order to reach everyone who has taken the questionnaire. If you did not take the questionnaire in April you may discard this letter without reading further. On the other hand, please continue reading if you did take the questionnaire.

The second administration of the questionnaire (which, incidentally, has been shortened from 204 questions to 162 questions) will be handled at the following times during the time periods indicated:

Monday,	May 22	8:30-12:00 a.m.	Room 206, Education Hall
		1:00-5:00 p.m.	Room 411, Education Hall
Tuesday,	May 23	8:30-12:00 a.m.	Room 411, Education Hall
		1:00-5:00 p.m.	Room 411, Education Hall
Wednesday,	May 24	8:30-12:00 a.m.	Room 206, Education Hall
		1:00-5:00 p.m.	Room 411, Education Hall
Thursday,	May 24	8:30-12:00 a.m.	Room 411, Education Hall
		1:00-5:00 p.m.	Room 411, Education Hall

In the first letter you received from me I did not mention the possibility of payment for taking the questionnaire. At that time I could not offer to pay anyone because it would have interfered with another researcher's work. The situation has changed and I now will

pay \$2.00 to everyone who takes the second administration of the questionnaire and has already taken the questionnaire.

Regardless of whether or not you need or want the \$2.00, I pray you will take the questionnaire again this coming week. Unless you take the questionnaire again your cooperation in taking the questionnaire the first time will have been of no benefit to me. The hypotheses studied in this piece of research require the comparison of responses given at two different points of time.

Again, thank you for your cooperation in taking the questionnaire the first time. I look forward to seeing you again this next week.

Sincerely,

Pete Vennewitz

APPENDIX I

May 26, 1972

Dear

Although letters and telephone calls from me may be starting to bug you, I'm writing you this one last letter in the hope I can persuade you to take my questionnaire.

I realize this is a very busy time of the school year. Therefore, in order to make taking my questionnaire as convenient as possible I have spent 37 and 1/2 hours administering the questionnaire this week. Even so, the press of final projects, term papers, and late midterms has made it inconvenient for many people to come in and take the questionnaire. The only way I figure I can make taking the questionnaire more convenient is to allow people to fill it out at home. Thus, I am sending the questionnaire and answer sheets with this letter. I hope you will take a break from studying for finals and complete the questionnaire.

The 40-60 minutes it takes you to complete the questionnaire will help make the hundreds of hours I've spent on my dissertation worth something. Without your cooperation I will not have a large enough control group to make the kind of comparisons necessary to make the research meaningful.

In order to collect the \$2.00 you'll earn by completing the questionnaire, take the two answer sheets to room 414 in Education Hall sometime during the following hours:

Tuesday, May 30 8:30-12:00 a.m. & 1:00-5:00 p.m.

Wednesday, May 31 8:30-12:00 a.m. & 1:00-5:00 p.m.

Either my wife, a friend, or I will be there to give you the \$2.00.

If you wish, you may keep the questionnaire.

If you have any questions, please call 752-5239 after 5:30 p.m. Monday, Tuesday, or Wednesday of next week.

Good luck on finals.

Sincerely,

APPENDIX J

Comparison of group means on pretest administration of Part IIIA questions

Item Number	Male			Female		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
	(N=12)	(N=61)	(N=38)	(N=23)	(N=106)	(N=51)
69	3.83	3.67	3.39	3.52	3.58	3.59
73	4.08	3.97	3.84	3.70	3.78	3.75
77	3.17	2.77	2.97	2.39	2.58	2.53
81	4.33	4.41	4.08	4.00	4.28	4.22
85	3.33	3.44	3.08	2.17	2.57	2.35
89	4.58	3.72	3.82	2.87	2.95	2.96
93	3.08	2.44	2.47	2.13	2.20	2.31
97	3.75	3.92	3.39	2.83	3.18	3.33
105	4.17	3.84	3.55	2.74	3.02	3.10
109	2.67	2.23	2.29	2.26	.185	2.02
113	4.00	3.98	3.97	3.17	3.42	3.55
117	4.00	3.98	4.00	3.74	3.88	3.78
121	3.58	3.02	3.05	2.96	2.73	2.69
125	4.08	3.57	3.26	3.17	3.32	3.43
129	2.75	2.66	2.55	1.91	1.92	1.88
133	4.08	3.82	3.74	3.09	3.42	3.39
137	4.25	4.10	4.47	4.35	4.18	4.18
141	3.17	3.03	2.84	1.70	2.08	2.12
145	4.50	3.66	3.66	3.35	3.25	3.49
149	3.08	2.97	3.29	3.26	2.86	3.10

NOTE: Item 101 will be left out of all tables because it was found impossible to score accurately.

APPENDIX K

Comparison of group means on pretest administration of Part IIIB questions.

Item number	Male			Female		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
	(N=12)	(N=61)	(N=38)	(N=23)	(N=106)	(N=51)
2	4.50	4.61	4.39	4.26	4.55	4.49
3*	4.25	4.28	4.37	3.83	4.42	4.27
6	4.17	3.97	3.97	3.35	3.74	3.63
7	4.33	4.05	4.16	3.57	3.75	3.76
10	3.83	3.51	3.39	2.39	2.68	2.69
11	3.17	2.41	2.45	1.74	2.21	2.20
14*	4.75	4.72	4.53	4.57	4.54	4.47
15	3.58	3.05	3.03	1.70	1.98	1.98
18	2.83	2.33	2.24	1.91	1.84	1.82
19*	3.83	3.34	3.42	3.00	2.83	2.94
22	4.08	3.74	3.95	2.70	3.26	3.16
23	3.67	3.26	3.42	2.57	2.87	2.96
26*	4.50	4.41	4.26	4.43	4.48	4.59
30	4.50	4.23	4.16	3.52	3.92	3.86
34	4.75	4.69	4.45	4.57	4.76	4.45
38*	2.75	3.23	2.76	3.13	3.25	2.82
42	4.75	4.75	4.50	4.52	4.48	4.43
46	4.50	4.20	4.34	3.91	4.22	4.04
50*	4.83	4.61	4.79	4.48	4.83	4.75
54*	3.92	3.64	3.58	3.65	3.75	3.84
58	4.58	4.70	4.61	4.43	4.43	4.45
62*	4.25	3.92	3.79	4.04	3.58	3.69

Appendix K (continued)

Item number	Male			Female		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
66	3.33	3.49	3.37	3.26	3.50	3.39
70	3.50	3.97	3.74	3.43	3.74	3.92
74	4.25	3.72	4.11	3.52	3.88	3.39
78	2.58	2.48	2.18	1.61	2.13	1.94
82	4.17	4.00	3.82	3.48	4.06	3.94
86	3.58	3.54	3.82	2.48	3.35	2.80
90	3.83	3.46	3.24	2.78	2.90	2.80
94	4.17	3.97	3.89	3.00	3.13	3.14
98*	3.17	3.43	3.66	3.87	3.66	3.92
102	3.92	3.67	4.05	3.43	3.58	3.51
106	4.08	3.77	3.66	3.35	3.57	3.71
110	3.33	3.11	2.92	2.17	2.32	2.24
114	4.42	4.16	4.13	3.39	3.77	3.59
118*	4.33	3.79	3.71	3.43	3.76	3.96
122	4.42	4.59	4.39	4.13	4.45	4.27
126	2.67	2.38	2.34	2.09	2.23	2.20
130	3.92	3.20	3.16	2.43	2.97	2.94
134*	4.42	4.43	4.24	4.39	4.27	4.43
138	3.50	3.10	3.03	2.30	2.58	2.29
142*	3.75	3.13	3.11	3.26	3.27	3.43
146	2.75	2.46	1.97	2.39	2.48	2.71
150	2.42	2.43	2.63	2.09	2.24	2.47
153*	1.58	1.67	1.55	1.22	1.25	1.35
154	4.58	4.52	4.58	3.96	4.37	4.33
157*	3.67	3.11	3.16	3.26	3.02	3.08
158	3.00	2.80	3.05	2.48	2.58	2.71

* Items left out of summary score computations.

APPENDIX L

Comparison of group means on pretest administration of Part IVA questions.

Item number	Male			Female		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
	(N=15)	(N=61)	(N=38)	(N=26)	(N=106)	(N=51)
27	2.20	2.33	2.34	1.42	1.44	1.29
31	1.60	2.36	2.42	1.62	1.33	1.37
35	1.00	1.39	1.18	1.08	1.12	1.04
39	4.00	4.70	4.47	3.96	4.16	4.06
43	3.20	4.34	4.32	3.42	4.18	4.18
47	2.07	2.84	2.61	1.85	1.64	1.49
51	1.00	1.48	1.21	1.50	1.18	1.10
55	3.60	4.38	4.39	3.73	3.82	3.75
59	1.53	2.36	2.11	1.92	1.51	1.51
63	2.13	2.70	2.32	1.77	1.57	1.41
67	4.80	4.84	4.92	4.73	4.73	4.84
71	3.67	3.82	3.53	3.88	3.62	3.76
75	2.00	2.07	2.08	1.42	1.39	1.31
79	3.27	4.10	4.03	4.15	4.05	4.33
83	3.33	4.16	4.13	3.62	3.64	3.43
87	2.60	3.46	3.29	3.12	3.15	3.43
91	1.53	2.46	2.11	1.65	1.51	1.39
95	2.73	3.54	3.66	3.00	2.91	2.69

APPENDIX M

Comparison of group means on pretest administration of Part IVB questions.

		Males			Females		
<u>Item number</u>		Reliability	Experi-		Reliability	Experi-	
Males	Fem.		mental	Control		mental	Control
		(N=15)	(N=61)	(N=38)	(N=26)	(N=106)	(N=51)
103	4	3.67	3.97	4.18	3.77	3.65	3.24
111	28	1.67	2.64	2.53	1.70	1.54	1.49
115	12	2.47	3.08	3.05	3.69	3.15	3.37
123	20	1.27	2.07	1.76	1.73	1.54	1.49
131	16	1.40	2.30	2.16	1.92	1.76	1.86
135	159	2.47	2.98	3.26	2.58	2.52	2.41
139	36	1.80	2.43	2.39	3.08	2.68	2.73
143	155	2.33	3.23	3.26	3.04	3.08	2.86
147	32	1.60	2.43	2.32	2.27	1.96	1.86
151	24	1.73	2.10	2.00	2.88	2.47	2.69

APPENDIX N

Comparison of group means on pretest administration of Part V questions.

Item Number	Males			Females		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
	(N=15)	(N=61)	(N=38)	(N=26)	(N=106)	(N=51)
76	2.47	2.36	2.79	2.81	2.75	2.82
80	1.53	1.89	1.63	2.00	1.99	1.75
84	2.60	2.59	2.79	2.81	2.75	2.86
88	2.13	1.79	1.89	1.54	1.48	1.57
92	2.33	2.57	2.55	2.69	2.28	2.39
96	2.87	2.69	2.87	2.65	2.66	2.82
100	2.00	2.26	2.24	2.23	2.24	2.25
104	1.87	2.11	1.97	2.12	2.23	2.39
108	2.33	2.51	2.42	2.54	2.25	2.47
116	2.47	2.49	2.61	2.62	2.69	2.55
120	1.93	2.33	2.68	2.35	2.42	2.43
124	2.67	2.75	2.66	2.77	2.58	2.80
128	2.33	2.67	2.47	2.65	2.67	2.76
136	2.53	2.52	2.63	2.62	2.53	2.82
140	2.73	2.84	2.82	2.92	2.78	2.94
144	2.87	2.74	2.76	2.65	2.64	2.66
148	2.00	2.13	2.18	2.31	2.25	2.22
152	2.00	2.16	2.16	2.27	2.20	2.25
160	2.80	2.85	2.74	2.85	2.85	2.78
161	2.93	2.90	2.89	2.88	2.92	2.94
165	2.13	2.21	2.26	2.08	1.93	1.92
169	2.53	2.49	2.26	2.35	2.31	2.41
173	2.53	2.51	2.58	2.38	2.41	2.27

Appendix N (continued)

Item Number	Males			Females		
	Reliability	Experi- mental	Control	Reliability	Experi- mental	Control
177	1.80	2.00	1.76	1.62	1.63	1.76
181	2.27	2.30	2.11	2.65	2.55	2.49
185	1.80	2.03	2.24	2.08	2.17	2.24
189	1.47	1.56	1.76	1.50	1.50	1.75
193	2.60	2.77	2.97	2.65	2.66	2.80
197	1.93	2.13	2.05	2.04	1.97	2.06
201	1.87	1.85	1.87	2.04	2.04	1.88
205	2.47	2.64	2.55	2.54	2.43	2.65
209	2.00	2.07	1.89	2.23	1.97	2.24
213	1.93	2.18	2.26	2.04	2.01	2.16
217	2.73	2.82	2.71	2.92	2.79	2.73
221	2.20	2.64	2.66	2.62	2.50	2.71
225	2.60	2.77	2.76	2.85	2.74	2.76
229	2.40	2.28	2.18	2.38	2.28	2.22
233	2.33	2.25	2.50	2.31	2.58	2.41
237	2.13	2.38	2.47	2.27	2.40	2.67
241	2.80	2.90	2.92	2.65	2.84	2.84
245	1.93	2.36	2.37	2.27	2.36	2.47
249	2.13	2.34	2.61	2.12	2.20	2.24
257	2.27	2.46	2.37	2.38	2.59	2.76
261	1.47	1.72	1.74	1.54	1.42	1.31
265	2.67	2.59	2.68	2.69	2.58	2.47
269	2.00	2.56	2.18	2.23	2.46	2.53

NOTE: Items 112, 132, 156, and 253 will be left out of all tables because they were found to be impossible to score accurately.

APPENDIX O

Reliability data for Part IIIA questions based upon test-retest one week apart.

Item number	Reliability coefficient based upon Product Moment Correlations			Reliab. Coef. based on Cra- mer's statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
	(N=12)	(N=23)	(N=35)	(N=12)	(N=23)	(N=12)	(N=23)
69	1.00	.74	.82	1.00	.74	.39	.51
73	.66	.92	.89	.71	.82	.51	1.02
77	.86	.93	.92	.94	.94	1.11	1.23
81	.72	.87	.84	.74	.81	.65	.90
85	.87	.93	.92	.70	.73	1.23	1.47
89	.62	.89	.83	.85	.81	1.16	1.46
93	.78	.73	.76	nc	.74	1.24	1.01
97	.31	.79	.73	.52	.55	1.29	1.75
105	-.01	.70	.56	.63	.64	1.27	1.54
109	.82	.79	.81	.80	.72	1.37	1.25
113	nc	.83	.84	nc	.84	.00	1.30
117	-.64	-.33	-.33	.71	.83	.43	.54
121	.42	.73	.70	.59	.68	.67	.82
125	.74	.85	.84	.68	.85	1.00	1.27
129	.50	.48	.52	.50	.49	1.54	1.04
133	.50	.84	.81	.62	.84	.79	1.41
137	.29	.36	.33	.29	.36	.45	.57
141	.31	.84	.74	.64	.84	1.19	1.02
145	.17	.90	.79	.77	.90	.67	1.37
149	.83	.62	.68	.82	.62	1.24	1.14

APPENDIX P

Reliability data for Part IIIB questions based upon test-retest one week apart.

Item Number	Reliability Coefficients			Standard Deviations	
	Males	Fem.	M's+F's	Males	Fem.
	(N=12)	(N=23)	(N=35)	(N=12)	(N=23)
2	.86	.74	.77	.90	1.25
3*	.59	.31	.38	.75	1.19
6	.59	.53	.59	.58	1.19
7	.64	.63	.65	.89	1.20
10	.84	.81	.86	1.34	1.34
11	.94	.76	.88	1.53	.81
14*	.55	.22	.30	.45	.59
15	-.20	.78	.60	1.16	.82
18	.48	.93	.75	1.64	1.35
19*	.66	.69	.70	1.03	1.35
22	.87	.92	.92	.90	1.46
23	.80	.88	.85	1.15	1.27
26*	.51	.29	.33	.52	.66
30	.60	.55	.63	.67	1.04
34	.77	.71	.71	.45	1.08
38*	.63	.68	.60	.22	1.18
42	.48	.77	.62	.62	.59
46	.52	.93	.84	.67	1.00
50*	.19	.78	.70	.39	1.16
54*	.71	.38	.44	.79	1.15
58	.57	.80	.68	.90	.59
62*	.71	.64	.64	.87	.98
66	.63	.69	.64	1.44	.96
70	.71	.77	.74	1.38	1.08

Appendix P (continued)

Item Number	Reliability Coefficients			Standard Deviations	
	Males	Fem.	M's+F's	Males	Fem.
74	.77	.70	.73	1.14	1.44
78	.78	.74	.80	1.38	.89
82	.92	.91	.88	1.03	1.44
86	.69	.80	.79	1.44	1.31
90	.80	.57	.65	1.03	1.00
94	.56	.70	.75	.94	1.09
98*	.82	.32	.82	1.40	1.18
102	.60	.78	.73	1.08	1.24
106	.60	.83	.79	.67	1.19
110	.24	.71	.71	.89	.94
114	.71	.88	.88	.67	1.23
118*	.69	.27	.49	.65	.84
122	.76	.95	.88	.67	1.14
126	.89	.78	.82	1.07	1.04
130	.75	.74	.81	1.00	1.24
134*	.73	.50	.54	.90	.72
138	.91	.83	.88	1.31	1.22
142*	.52	.54	.53	1.22	1.36
146	.41	.77	.58	1.42	1.12
150	.38	.69	.70	1.08	.85
153*	.53	.53	.54	.67	.67
154	.51	.86	.79	.67	1.19
157*	.85	.85	.92	1.07	1.18
158	.76	.85	.83	1.13	1.04

* Items left out of summary score computations.

APPENDIX Q

Reliability data for Part IVA questions based upon test-retest one week apart.

Item Number	Reliability Coefficients			Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.
	(N=15)	(N=26)	(N=41)	(N=15)	(N=26)
27	.92	.64	.86	1.21	.64
31	.93	.89	.91	1.12	.94
35	.94	.78	.74	.00	.27
39	.73	.89	.80	1.56	1.22
43	.68	.80	.75	1.74	1.47
47	.80	.60	.71	1.33	.92
51	.94	.77	.81	.00	.95
55	.89	.92	.90	1.64	1.28
59	.87	.64	.70	.92	1.23
63	.84	.53	.67	1.30	1.21
67	.48	.31	.36	.56	.67
71	.82	.63	.71	1.54	1.21
75	.48	.61	.53	1.36	.81
79	.64	.84	.78	1.39	1.05
83	.80	.95	.89	1.68	1.36
87	.85	.87	.86	1.45	1.07
91	.75	.76	.75	.92	.94
95	.94	.52	.75	1.49	1.17

APPENDIX R

Reliability data for Part IVB questions based upon test-retest one week apart.

Item Number	<u>Reliability Coefficient</u>		<u>Standard Deviation on Pretest</u>	
	Males	Fem.	Males	Fem.
Male / Female	(N=15)	(N=26)	(N=15)	(N=26)
111 28	.76	.89	.90	.74
115 12	.90	.88	1.13	1.39
123 20	.69	.78	.59	.83
131 16	.91	.47	.83	.80
139 36	.81	.88	1.01	1.47
147 32	.49	.79	.91	1.12
151 24	.83	.86	1.22	1.49
135 159	.81	.72	1.19	1.21
103 4	.75	.72	1.68	1.21
143 155	.87	.88	1.35	1.40
99	.81	nd	1.72	nd
107	.81	nd	1.18	nd
11	.13	nd	.98	nd
129	.37	nd	1.40	nd
8	nd	.58	nd	1.40

nd - No equivalent data.

APPENDIX S

Reliability data for Part IVC questions based upon test-retest one week apart.

Item Number	Reliability coefficients based upon Product Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
	(N=15)	(N=26)	(N=41)	(N=15)	(N=26)	(N=15)	(N=26)
40	.91	.69	.88	.85	.60	1.52	.82
44	.98	.84	.97	.79	.84	.90	.50
48	.98	.97	.98	.82	.85	1.45	.92
52	.98	.98	.98	.78	.84	1.16	2.06
56	.94	.69	.92	.74	.73	.70	.58
60	.96	.72	.91	.67	.64	1.03	.76
64	.96	.60	.96	.73	.59	1.10	.45
68*	**	**	**	**	**	**	**
72*	**	**	**	**	**	**	**

* Reliability data not collected because the group upon which data was generated took only one-half the questionnaire and could not make the judgments necessary to answer the questions.

APPENDIX T

Reliability data for Part V questions based upon test-retest one week apart.

Item Number	Reliability coefficients based upon Product Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
	(N=15)	(N=26)	(N=41)	(N=15)	(N=26)	(N=15)	(N=26)
76	.54	.60	.60	.68	.60	.83	.40
80	.95	.64	.77	.85	.55	.83	.85
84	.42	.71	.54	.62	.72	.74	.49
88	.34	.69	.59	.43	.65	.83	.76
92	.92	.87	.90	.92	.75	.90	.68
96	-.07	.50	.42	nc	.65	.52	.69
100	nc	.61	.53	nc	.79	.00	.51
104	.64	.23	.42	.85	.33	.83	.65
108	.87	.55	.70	.76	.76	.83	.65
116	.40	.61	.50	.72	.61	.64	.50
120	.39	.95	.88	nc	.85	.26	.85
124	.81	.67	.73	.82	.75	.62	.59
128	.58	.97	.80	.68	.83	.90	.75
136	.29	.33	.31	.44	.33	.74	.70

Appendix T (Continued)

Item Number	Reliability coefficients based upon Product Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
140	.81	nc	.70	nc	nc	.59	.27
144	.64	.65	.63	.68	.70	.52	.69
148	.17	.80	.59	nc	.72	.65	.74
152	.20	.73	.50	.51	.67	.85	.73
160	-.14	-.09	-.11	nc	nc	.56	.46
161	nc	.72	.66	.97	.86	.26	.43
165	.83	.58	.68	.75	.57	.74	.69
169	.36	.85	.65	.52	.88	.64	.63
173	.64	.78	.72	.54	.75	.74	.80
177	.33	.75	.58	nc	.77	.86	.70
181	.42	.96	.67	.63	.88	.88	.63
185	.94	.84	.87	.89	.78	.77	.69
189	.55	.57	.56	.46	.57	.74	.71
193	.86	.72	.77	.73	.68	.74	.70
197	.92	.16	.50	.85	.34	.88	.66
201	.51	.50	.51	.62	.61	.83	.82

Appendix T (Continued)

Item Number	Reliability coefficients based upon Product Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
205	nc	.69	.49	nc	.69	.92	.86
209	.34	.66	.54	.51	.57	.65	.51
213	.42	.64	.54	.65	.58	.59	.53
217	.42	.69	.54	.42	.69	.70	.39
221	.40	.46	.46	.50	.54	.86	.64
225	.66	.68	.65	.79	.53	.74	.46
229	.48	.46	.47	.45	.59	.83	.70
233	.68	.76	.73	.68	.74	.82	.88
237	.67	.75	.72	.71	.69	.83	.78
241	.83	.55	.63	.80	.53	.56	.63
245	.46	.44	.47	.49	.60	.96	.87
249	.91	.70	.77	.81	.58	.83	.86
257	.18	.40	.31	.57	.50	.60	.75
261	.51	.91	.78	.59	.91	.74	.90
265	.26	.50	.38	.86	.50	.49	.47
269	.56	.71	.65	.65	.77	1.00	.95

APPENDIX U

Reliability data for Part VI questions based upon test-retest one week apart.

Item Number	Reliability coefficients based upon Product Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
	(N=15)	(N=26)	(N=41)	(N=15)	(N=26)	(N=15)	(N=26)
162	.83	1.00	.86	.65	1.00	.98	.00
166	.26	1.00	.34	.76	1.00	1.33	.27
170	.93	.95	.94	.87	.86	1.89	1.87
174	.93	.89	.91	nc	.64	1.59	1.40
178	.89	.93	.90	.65	.68	1.91	1.36
182	.74	.36	.44	.74	.75	.46	.68
273	.83	.79	.76	.71	.61	1.60	1.57
277	.80	.95	.84	.85	.79	1.06	.89
281	.62	.83	.65	.54	.69	1.55	1.33
285	.78	.97	.86	.66	.95	1.41	.80
289	1.00	.85	.75	1.00	.85	.26	.37
293	.74	.97	.81	.84	.92	1.62	.98

Appendix U (Continued)

Item Number	Reliability coefficients based upon Produce Moment Correlations			Reliability Coef. based on Cramer's Statistics		Standard Deviation on Pretest	
	Males	Fem.	M's+F's	Males	Fem.	Males	Fem.
297	.96	1.00	.97	.73	1.00	.91	.00
301	.54	.77	.61	.66	.57	1.75	.60
305	.79	.75	.78	.70	.59	1.41	1.57
309	1.00	.32	.34	1.00	.69	.26	.89
313	.70	.97	.83	.65	.77	1.28	1.79
317	.95	.96	.91	.89	.69	1.88	1.52

APPENDIX V

Reliability data for Parts IIIA, IIIB, IIIA and IIIB, IVA, IVB, IVA and IVB, and V based upon split-half correlations corrected by the Spearman-Brown Prophecy Formula.

		Experimental Males (N=61)		Control Males (N=38)		Experimental Females (N=106)		Control Females (N=51)	
	Number of questions	Reliability Coefficient	Standard error of Measurement	Reliability Coefficient	Standard error of Measurement	Reliability Coefficient	Standard error of Measurement	Reliability Coefficient	Standard error of Measurement
Part									
PRETEST									
IIIA	20	.82	4.10	.88	3.94	.85	4.04	.88	4.16
IIIB	34	.76	6.35	.92	5.55	.89	5.23	.93	5.30
IIIA & IIIB	54	.87	7.42	.94	7.21	.92	6.80	.94	7.65
IVA	18	.86	4.02	.86	3.84	.76	3.86	.86	3.07
IVB	10	.92	2.39	.92	2.06	.88	2.45	.86	2.55
IVA & IVB	28	.93	4.69	.91	4.16	.89	4.49	.92	3.82
V	46	.76	3.01	.85	2.60	.86	2.29	.74	3.15
POST TEST									
IIIA	20	.76	4.05	.85	4.62	.87	3.64	.89	3.99
IIIB	34	.75	6.30	.91	5.71	.89	5.62	.93	5.53
IIIA & IIIB	54	.82	7.83	.93	7.75	.93	6.67	.95	7.04
IVA	18	.89	3.10	.89	3.38	.86	3.08	.86	3.03
IVB	10	.94	2.03	.88	2.41	.87	2.50	.86	2.14
IVA & IVB	28	.94	3.67	.91	4.71	.92	3.93	.90	4.37
V	46	.74	2.52	.88	2.47	.58	2.81	.83	2.37

APPENDIX W

Reliability data for all parts of questionnaire based upon test-retest correlations on groups given questionnaire one week and seven weeks apart.

Part	Number of Questions	<u>One week test-retest reliability coefficients</u>		Seven week test-retest reliability coefficients and standard deviations			
		Males (N=12)	Females (N=23)	Males (N=38)		Females (N=51)	
				Reliability Coefficient	Pretest & Post test Standard Deviation	Reliability Coefficient	Pretest & Post test Standard Deviation
I or P.S.P.S.	6	.91	.94	.87	1.06 1.10	.83	1.38 1.37
IIIA	20	.94	.94	.81	11.58 11.85	.90	12.23 12.10
IIIB	34	.91	.91	.93	19.83 19.03	.92	20.38 21.28
IIIA & IIIB	54	nc	nc	.93	30.07 29.81	.95	31.35 32.03
		(N=15)	(N=26)				
IVA	18	.94	.96	.87	10.39 10.26	.84	8.30 8.20
IVB	10	.95	.90	.87	7.35 7.09	.82	6.89 5.79
IVA & IVB	28	nc	nc	.90	15.99 15.70	.88	13.65 14.10
V	46	.88 ^a	.77 ^a	.85 ^b	6.68 7.28	.75 ^b	6.18 5.79

a Scored 3 for correct, 2 for don't know, and 1 for incorrect. b Scored only on number correct. nc—not calculated

Appendix X

Cumulative distributions of number of questions on which significant change occurred from pretest to posttest.

Significance	Experimental			Control		
	Males	Females	M's & F's Same Item	Males	Females	M's & F's Same Item
Part IIIA (No. Questions = 20)						
p .05	6	7	5	1	2(1)	0
p .01	3	5	3	0	0	0
p .002	1	4	1	0	0	0
Part IIIB (No. Questions = 34)						
p .05	14(1) *	25(2)	14(1)	3(2)	5(1)	0
p .01	7	18(2)	6	1(1)	1	0
p .002	3	14(2)	2	1(1)	0	0
Part IVA (No. Questions = 18)						
p .05	5	5	3	0	0	0
p .01	4	3	2	0	0	0
p .002	1	1	0	0	0	0
Part IVB (No. Questions = 10)						
p .05	1	5	0	1	1	0
p .01	0	3	0	0	1	0
p .002	0	2	0	0	0	0
Part V						
p .05	13	25(1)	12	1	8(1)	0
p .01	10	20	10	0	4	0
p .002	9	13	7	0	2	0

* Numbers enclosed in parentheses indicate how many of the larger number changed in conservative direction.

APPENDIX Y

Pretest - posttest comparisons of means for Parts IIIA, IIIB, IIIA & IIIB, IVA, IVB, IVA & IVB, and V.

	Experimental Males ^a		Experimental Females ^b		Control Males ^c		Control Females ^d	
	Value of t	Significance	Value of t	Significance	Value of t	Significance	Value of t	Significance
IIIA	5.27	.001	6.79	.001	.56	ns	1.20	ns
IIIB	3.60	.001	5.35	.001	-2.00	.05	.12	ns
IIIA & IIIB	5.32	.001	7.05	.001	- .96	ns	.73	ns
IVA	3.52	.001	3.02	.025	1.44	ns	1.18	ns
IVB	.30	ns	4.24	.001	2.24	.025	2.21	.025
IVA & IVB	2.40	.01	4.17	.001	2.27	.025	2.20	.025
V	8.96	.001	17.14	.001	1.40	ns	3.81	.001

a df = 60

b df = 105

c df = 37

d df = 50